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## PATAGONIAN SCALLOP (Zygochlamys patagonica) FISHERY

Assessment against MSC Principles and Criteria

## **Public Comment Draft Report**

December 2011

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## Contents

1.	Executive Summary				
2.	Authorship and Peer Reviewers				
3.	3. Description of the Fishery				
3	3.1.	Unit(s) of Certification and scope of certification sought	9		
	3.1.1	Scope of Assessment in Relation to Enhanced Fisheries	9		
	3.1.2	Scope of Assessment in Relation to Introduced Species Based Fisheries (ISBF)	9		
3	3.2.	Overview of the fishery	9		
3	3.3.	Principle One: Target Species Background	19		
3	3.4.	Principle Two: Ecosystem Background	26		
3	3.5.	Principle Three: Management System Background	34		
4.	Eval	uation Procedure	78		
	4.1	Harmonised Fishery Assessment	78		
	4.2	Previous assessments	78		
	4.3	Assessment Methodologies	90		
	4.4	Evaluation Processes and Techniques	91		
	4.4.1	Site Visits	91		
	4.4.2	Consultations	91		
	4.4.3	Evaluation Techniques	94		
5.	Trac	eability	98		
5	5.1.	Eligibility Date	98		
5	5.2.	Traceability within the Fishery	98		
5	5.3.	Eligibility to Enter Further Chains of Custody	101		
5	5.4.	Eligibility of Inseparable or Practically Inseparable (IPI) stock(s) to Enter Further Ch	ains		
C	of Cust	ody	101		
6.	Eval	uation Results	102		
$\epsilon$	5.1.	Principle Level Scores	102		
$\epsilon$	5.2.	Summary of Scores	102		
$\epsilon$	5.3.	Summary of Conditions	103		
6.3.1. Recommendations					
$\epsilon$	5.4.	Determination, Formal Conclusion and Agreement	104		
$\epsilon$	5.5.	Changes in the fishery prior to and since Pre-Assessment	104		
References					
Scientific Publications Consulted:					
Appendices					
Appendix 1 Scoring and Rationales					
Appendix 1.1 Performance Indicator Scores and Rationale10					
Appendix 1.2 Risk Based Framework (RBF) Outputs179					
	Appendix 1.2.1 Scale Intensity Consequence Analysis (SICA)				

Appendix 1.2.2 Productivity-Susceptibility Analysis (PSA)	
Appendix 1.3 Conditions	
Appendix 2. Peer Review Reports	
Appendix 3. Stakeholder submissions	
Appendix 4. Surveillance Frequency	
Appendix 5. Client Agreement	
Appendix 5.1 Objections Process	

## Glossary

ABP	Argentine Biogegraphic Province				
ACC	Antarctic Circumpolar Current				
BC	Brazil Current				
CCAMLR	Conservation of Antarctic Marine Living Resources				
CFP	Consejo Federal Pesquero (Federal Fishing Council)				
CITES	Convention on International Trade in Endangered Species of Fauna and Flora				
CONVEMAR	Convention for the Sea				
CPUE	Catch per Unit Effort				
CZ Confluence Zone					
EEC European Economic Community					
EEZ Economic Exclusive Zone					
ETP	Endangered, threatened or protected				
Ex-SAGPyA	ex-Secretaría de Agricultura, Ganadería, Pesca y Alimentos (ex- Secretariat of				
	Agriculture, Livestock, Fisheries and Food)				
FAM	Fisheries Assessment Methodology				
FONAPE	Fondo Nacional Pesquero (National Fishing Fund)				
FRV	Fishing Research Vessel				
FV	Fishing Vessel				
INIDEP	Instituto Nacional de Investigación y Desarrollo Pesquero (National Fishery Research and Development Institute, Argentina)				
INTA	Instituto Nacional de Tecnología Agraria (National Agricultural Technology Institute)				
MBP Magellan Biogeographic Province					
MC	Malvinas Current				
MINAGRI	Ministerio de Agricultura, Ganadería y Pesca (Ministry of Agriculture, Livestock and				
	Fisheries				
MSC	Marine Stewardship Council				
MSY	Maximum Sustainable Yield				
MU	Management Unit				
NGO	Non-governmental organization				
OIA	Organización Internacional Agropecuaria				
PNA	Prefectura Naval Argentina (Argentine Coast Guard)				
PSA	Productivity and Susceptibility Analysis				
RBF	Risk Based Framework				
SAyDS	Secretaría de Ambiente y Desarrollo Sustentable (Secretary of Enviroment and				
	Suitable Development).				
SENASA	Servicio Nacional de Sanidad Animal (National Health Service and Food Quality)				
SICA	Scale, Intensity and Consequence Analiysis				
SSPyA	Subsecretaría de Pesca y Acuacultura (Under-Secretariat of Fisheries an				
TAC	Aquacunure) Totol Allowable Cotob				
TAU TDDEM	Total Allowable Catch				
	Arganting Uruguayan Common Fishing Zong				
	Argentine-Oruguayan Common Fishing Zone				

## 1. Executive Summary

- 1. The The Patagonian scallop (*Zygochlamys patagonica*) fishery re-assessment team was composed by Dr. Enrique M. Morsan, Dr. H. John Cranfield, Lic. R.Jorge Bridi, Dr. L.Bruno Prenski and Lic. Mariana Sánchez De Bock.
- 2. The Patagonian scallop (*Zygochlamys patagonica*) fishery, within the Argentine Economic Exclusive Zone, had been assessed against the Principles and Criteria of the MSC in 2006. The Client was Glaciar Pesquera S.A., one of two companies, each operating two factory vessels, fishing the resource.
- 3. This assessment for re-certification has been requested by both companies, Glaciar Pesquera S.A. and Wanchese S.A., which are the ones exploiting the resource.
- 4. The Assessment Process in which this report is based, followed the Fisheries Assessment Methodology and Guidance to Certification Bodies, including the Default Assessment Tree and Risk-Based Framework (FAM Version 2, Release date: 31 July 2009) established by the MSC.
- 5. The Assessment Process was structured based on the analysis of available information (produced during the period in which the Certification was in force and collected in each Annual Surveillances 2007 2010, and new information produced during 2011), and interviews with researchers, Authorities and stakeholders.
- 6. The modification of the methodology used by the MSC, which imply the use of a new Assessment Tree, led to a search for additional information considered during Certification and Surveillances (2004 2010).
- 7. Based on the analysis of such information, suiting the parameters of the Assessment Tree, the Assessment Team decided to apply RBF in two Performance Indicators (2.2.1. By- catch outcome and 2.4.1. Habitat outcome).
- 8. A workshop to analyze the Scale, Intensity and Consequence Analiysis (SICA) was conducted with stakeholders and researchers. revealing the need fort more by-catch, habitat and ecosystem-related research.
- 9. Management of this fishery involves the CFP, SAGyP, SSPyA and its research institute, INIDEP, the fishing companies and various Federal Government Agencies including, the Coastguard. Non Governmental Organizations are not a structural component of the decision making process, although a legal framework for their appeals to be taken into account exists.. The <u>Assessment Team of OIA has recommended that the fishery be re-certified</u>, with conditions. The Team awarded a pass mark for each of the 3 Principles:

Principle 1	86.9
Principle 2	87.7
Principle 3	94.8

- 10. The fishery achieved the minimum pass mark of 60 in all performance indicators. Although, in line with MSC requirements, when the score awarded for each indicator did not reach 80, conditions have been applied, which require achievement within specified time periods. As well the Assessment Team has recommended that the client considers the possibilities of improvement in several areas where, even though a score of 80 was achieved, the conditions allow further upgrades.
- 11. The Client will develop an Action Plan following the Conditions established by the Assessment Team (Table 6.3 Summarized these Conditions) that will be approved by the Assessment Team and the Certification Body, OIA prior to the issuance of the new Certificate. Milestones for each Condition will be assessed during the Annual Surveillances and Action Plan will be revised when required.

## 2. Authorship and Peer Reviewers

#### Assessment Team

**Dr. Enrique Mario Morsan. Team Leader and Principle 1 Expert.** Instituto de Biología Marina y Pesquera "Almirante Storni", Universidad Nacional del Comahue, Argentina.

Dr. Enrique Morsan has 25 years experience as a fisheries scientist and 13 as a Professor in Marine Biology and Fishery in the Universidad Nacional del Comahue, Argentina. He graduated from the Universidad Nacional del Sur in Argentina and has worked as a scientist with the Instituto de Biología Marina y Pesquera "Alte. Storni", the Universidad Nacional del Comahue and the Río Negro Province Government. Since 1998, Dr Morsan has held the positions of Professor of Fishery Biology and from 2000 Director of Student Research.

He is a specialist in stock assessment of molluscs and has considerable experience in marine invertebrate biology, ecology and resource assessment, and improved fishing methods, particularly in relation to the overall fishery in the San Matías Gulf.

Dr. Morsan has been responsible for major studies on population dynamics of Purple clam (*Amiantis purpurata*), Southern geoduck (*Panopea abbreviata*), Common mussel (*Mytilus edulis platensis*), Argentine squid (*Illex argentinus*), Tehuelche scallop (*Aequipecten tehuelchus*) and Yellow clam (*Mesoderma mactroides*), and the parasitology of the Puelche oyster (*Ostra puelchana*). He has published their results in 24 papers in local and international journals, 3 book chapters, and several disclosure articles. Now, he conducts a research project that focuses in spatial pattern and dynamic processes of population biology of species affected by artisanal fisheries, and he is Advisor of 5 Doctoral Thesis, and Director/Co-director of graduate student scholarships.

Dr. Morsan has been invited as specialist science reviewer for the MSC Assessment of the Patagonian scallop *Zygochlamys patagonica*, including Pre-Assessment and several Surveillances. He has work in Experimental Evaluation of Fishery of Samborombom Bay Mullet (*Mugil lisa*), applying of Small-Scale and Data Deficient Fisheries protocol. Also, he was member of assessment team in the Diagnosis and assessment of sustainably of artisanal fishery of centolla (*Lithodes santolla*) and centollón (*Paralomis granulosa*) in Beagle Channel and the Southern Red Kind Crab fishery full assessment process.

Dr. Henry John Cranfield. Principle 2 Expert. Seabed Processes Consultancy, New Zealand.

Dr. John Cranfield has over 40 years experience as a fisheries scientist involved in fisheries management issues and fisheries research in New Zealand with the Ministry of Agriculture and Fisheries, then as a senior scientist with the National Institute of Water and Atmosphere Research Limited, and latterly as a fisheries consultant. He graduated from Canterbury University, commenced studies on freshwater recreational fisheries of New Zealand and then studied the fishery for *Ostrea chilensis* in Foveaux Strait, southern New Zealand. He subsequently studied the morphology and settlement behaviour of the European oyster, *Ostrea edulis*, at the Marine Sciences Laboratory, Menai Bridge, University College of North Wales. On return to New Zealand, Dr. Cranfield studied the Foveaux Strait oyster fishery further, studied the recruitment mechanisms of *Pecten novaezelandiae*, studied the biological data available for the scallop species *Zygochlamys delicatula* for which a small fisheries potential of seven species of surf clams of the families Mesodesmatidae (*Paphies donacina*), Mactridae (*Spisula aequilatera*, *Mactra murchisoni*, and *M. discors*) and Veneridae (*Dosinia anus*, *D. subrosea*, and *Bassina yatei*).

Dr Cranfield is a specialist in stock assessment of molluscs and the effects of fisheries for these species on the seafloor. He has experience on how fishing modifies sediment composition of the seafloor, how fishing affects benthos, and how these changes alter physical and biological processes at the seabed and affect fishery production. Dr Cranfield has identified successional stages in regenerating benthic habitat and indicator species and highlighted methods for avoiding, remedying, and mitigating the effects of fishing on the environment. He has expert knowledge of the biology and ecology of shellfish, especially growth, breeding biology, larval morphology and distribution in the plankton as well as larval fine structure, and histochemistry and how these effect settlement behaviour. Dr Cranfield also has experience in distribution, recruitment, biology, and zonation of surf clams on beaches around New Zealand coasts, the burying behaviour of surf clams and how variation in the dilatant and thixotropic properties of sand affects recruitment and mortality of surf clams as well as the efficiency of hydraulic dredges.

Dr. Leszek Bruno Prenski. Principle 1 and 2 Expert. Independent consultant.

Dr. Prenski is a fisheries scientist, with over thirty years of experience in fisheries policy and fishery management issues. Among many others, he has been a Technical Director of CaPeCA (Argentinean Freezers Fishery Association), Demersal and Inland Fisheries Research Area Coordinator,; Researcher at INIDEP (National Fishery Research and Development Institute, Argentina), ICSEAF (International Commission for the Southern Atlantic Fishery, Poland). Has also been a Member of the administration council of the SENASA (National Service of Food and Agriculture Sanity and Quality) in representation of the fishery sector, External adviser of the Foreign Office in the Commission of the Joint Marine Front between Argentina and Uruguay, and Technical Coordinator in the CCAMLR (Commission for the Conservation of the Marine Living Resources).

Lic. Raúl Jorge Bridi. Principle 3 Expert. Under-Secretariat of Natural Resources, Río Negro Province, Argentina.

Lic. Raul Jorge BRIDI: graduated in 1987 in marine biological science with the main focus on fishery science. Currently holds the position of Natural Recourses General Director of Río Negro Province – Argentina. He has almost 20 years experience and practical knowledge on both fisheries policy and fisheries management and enforcement under Argentinean legislation.

He integrated the main argentine fishing authority -the Federal Fishing Council- and has worked as Fisheries Director of Río Negro Province for eight years between 1992 and 1999, as Secretariat of the Fishing, Port and Maritime Interest Commission of Argentinean Senate, as assessor and lead assessor for tree Argentinean Fishing and Aquaculture National Subsecretariat, and as assessor of the Río Negro Province Congress.

He has worked with the senior management teams of public sector bodies, and advised corporate managers on various aspects of policy, reform, and development and improved decision-making, both in national and provincial governments.

Lic. Bridi has previously been involved in Marine Stewardship Council (MSC) assessments for Patagonian Scallop Fishery (Argentina), Argentinean Bonaerense Anchovy Fishery and Argentinean Hoki Bottom and Semi-pelagic trawl net Fishery.

**Lic. Mariana Sánchez De Bock.** Lic. Mariana Sánchez De Bock graduated in Biological Science from the Facultad e Ciencias Exactas y Naturales (Faculty of Exact and Natural Sciences), Universidad de Buenos Aires. She was awarded a scholarship for undergraduate students from University of Buenos Aires to participate in a research project on "Sex differentiation on the freshwater crayfish *Cherax quadricarinatus* (Parastacidae): modulation by hormonal and environmental factors, and its applications on aquaculture".

She has also participated in a marine ecology research project on "Composition variability of sandy beach macroinfaunal communities in relation with morphodynamics and human disturbances in Buenos Aires, Argentina". Lic. Mariana Sánchez De Bock has presented outcomes of both research projects at National and International Congresses, and published four scientific papers in international magazines.

She was selected as undergraduate Teacher in Zoology and Biometry in the Universidad de Buenos Aires. She has been involved in several field and laboratory internships, including studies on sea birds and dolphins monitoring and in biological control in the South-American Biology Control Laboratory (USDA). Since 2007 she has been associated with OIA in regard to Certification of the MSC Sustainable Fisheries. She has participated in numerous Pre-assessments, collaborated in fieldwork for the Small Scale Data Deficient Fisheries Pilot Assessment in Samborombon Bay, and has been involved in several Surveillance Audits of the MSC Certified Patagonian Scallop Fishery. She has been involved in two SICA workshops in the Southern Red Kind Crab fishery full assessment process and in this re-certification process. She has been in the MSC Annual Auditor Training Course in 2011. As OIA staff member she has participated as well in the development of the OIA Organic Aquaculture Standard and the implementation of this new certification programme.

#### Peer Reviewers

#### 1) Dr. WILLIAM DUPAUL

# Dr. DuPaul has peer reviewed the Full Assessment Report of the Patagonian Scallop Fishery in 2006.

In the late 1980's Dr. DuPaul began his research experience with sea scallops (P. magellanicus) with a preliminary investigation on the relative selectivity of sea scallop dredges equipped with 3" rings and scallop trawls with 3.5" mesh. These investigations led to a study examining the selectivity of scallop trawls with a variety of mesh sizes tested. Eventually regulations were in place to require 5" mesh on scallop trawls. In 1989-1990, he began looking at the selectivity and catch rates of scallop dredges equipped with rings larger than 3" and eliminating various amounts of chaffing gear.

In the early 1990's, Dr. DuPaul began two new research projects on the important biological aspects of sea scallops of importance to scallop management. The first involved a long term and intensive study on the relationship of shell height to meat weight and the implications of geographical distribution, depth, season and reproductive state. This work was followed by studies on the reproductive cycle and fecundity of sea scallops in the mid-Atlantic Region of the US.

In 1994 through 2000 he embarked on a long term study on the selectivity and efficiency of scallop dredges with 3.0", 3.25", 3.5" and 4.0" rings. As a result, a series of regulations were developed to change the ring size on scallop dredges. Currently, the ring size is regulated at 4". Most recently, his research on scallop gear has been on the efforts to reduce finfish bycatch and the gear interactions with protected sea turtles. In 1998, Dr. DuPaul participated in the development of an industry cooperative survey of scallop resources on Georges Bank. This was followed by a survey of scallop resources in the mid-Atlantic closed areas. Currently, he is conducting a survey on Georges Bank and the mid-Atlantic using both a commercial scallop dredge and the survey dredge used by NMFS. It is probably important to note that in the 1990's, he conducted a survey involving the Patagonian scallop in the Rio de La Plata area which stimulated the interest of US scallop interests. He has also participated in the scallop fishery in Alaska, examining issues of gear selectivity and observer training.

Dr. DuPaul currently serves on the New England Fishery Management Council's Scallop Plan Development Team and is a member of the National Marine Fisheries Service Stock Assessment Workshop, Invertebrate Sub-Committee (Scallops). In summary, his expertise is in the area of fishing gear selectivity and efficiency, fishing vessel operations and resource surveys. He can barely hold his own (mathematically) in the area of population dynamics.

#### 2) DR. ANDREW BRAND

Dr. Brand has interest in research areas of biology, ecology, aquaculture and fisheries of bivalve molluscs, especially scallop (Family Pectinidae), including pure and applied research on scallops in the Irish Sea and elsewhere, fishery stock assessments, studies of rotational fishing strategies, suspended and seabed cultivation, predator-prey interactions and re-stocking depleted fishing grounds. Others issues of concern are benthic ecology, particularly ecosystem effects of fishing, stocks assessments of Irish Sea herring and Sub-tropical and tropical marine ecology, with projects in the Egypt, the Philippines, Chile and Bermuda.

He has 40 years experience as a University academic, involving undergraduate teaching, postgraduate training and research: lecturing on marine physiology, marine ecology, fisheries biology and aquaculture.

In 1966 through 2006, Dr. Brand was Fishery Advisor to the Isle of Man Government, carrying out stock assessments for herring, scallops and other species, advising on fishery management and representing the Manx Government at local, national and international meetings. Also, he is occasional member of ICES Herring Assessment, Pectinid Stocks and Ecosystem Effects of Fishing Working Groups and current member of the Editorial Board of Journal of Shellfish Research.

Now, he is Honorary Senior Fellow in the University of Liverpool and independent Fisheries Consultant.

Recently, Dr. Brand has participated as assessor and independent reviewer for Marine Stewardship Council (MSC) assessments of scallops, mussels and oyster fisheries. He has been involved as assessment team member in "Seafood Romo East Justland and Isefjord blue shell mussel dredge fishery", "Clearwater Seafoods Banquereau and Grand Banks Arctic surf clam fishery", "Dutch Oyster Association Oyster Fishery", among other MSC fisheries assessments.

#### Team member(s) trained for using Risk Based Framework (RBF)

Enrique Morsan, Jorge Bridi, Bruno Prenski and Mariana Sánchez De Bock have been trained in the use of RBF.

Enrique Morsan has participated as Assessment Team member in the Small Scale Data Deficient Fisheries Pilot Assessment in Samborombon Bay and have undertaken a SICA and PSA assessment for the Southern Red King Crab fishery, in which he participated as Team Leader.

Bruno Prenkssi and Jorge Bridi have been trained by OIA staff for application of RBF in the full assessment process of Argetine anchovy. Mariana Sanchez De Bock has been trained to assist the assessment team in this pilot project and for appling the RBF in the Southern Red King Crab fishery.

John Cranfield was briefly trained for this Re-Assessment process at OIA by Enrique Morsan and Mariana Sánchez De Bock.

### **3. Description of the Fishery**

#### **3.1.Unit(s) of Certification and scope of certification sought**

Species:	Patagonian scallop or Vieira patagónica (Zygochlamys patagonica, King			
Geographic Area:	Argentine Continental Shelf, between the latitudes 36° 45' to 48° SL and			
	the longitudes 54° 20' to 65° 20' WL, in waters approximately 60-120 meters deep, between the northern boundary with Uruguay and a line drawn between the Malvinas Islands and Tierra del Euego in the south			
Stock:	The Patagonian scallop extends from 42°S in the Pacific Ocean to 35°S in the Atlantic.			
Fishing Method:	Benthic Otter Trawl Net.			
Fishery Management:				
Legal:	Argentine National legislation ( <u>www.infoleg.gov.ar</u> )			
<b>Enforcement:</b>	Secretariat of Agriculture, Livestock and Fisheries, Sub- secretariat of			
	Fisheries and Aquaculture, Federal Fishing Council.			
Practice:	Fishing vessels Atlantic Surf I and Atlantic Surf III of the fishing company Glaciar Pesquera S.A. and fishing vessels Erin Bruce and Miss Tide of the fishing company Wanchese Argentina S.A.			

There are 15 management units, however fishing is allowed outside these units to promote search of new potential commercial fishing grounds. The incorportated MU 14 by Resolution CFP N° 2/2009 is established from the 200 nautic miles from the baseline to the exterior of the Argentine Continental Shelf within parallels 45° and 47° South. Therefore the unit of certification is the whole Argentine Continental Shelf and adjacent waters.

There are no other Eligible Fishers. The Management Authority, through the Resolution CFP  $N^{\circ}$  14/2008, established a quota and catch allocation only for the four fishing vessels aforementioned until 2013.

#### **Issues of Scope**

The Patagonian Scallop Fishery is not conducted under a controversial unilateral exemption to an international agreement. It is fully conducted under Argentinean waters without the appeal of any international agreement.

The Patagonian Scallop Fishery does not use destructive fishing practices such as poisons or dynamite to capture scallops. The fishing gear is the Otter Net, as stated/defined in the Unit of Certification.

#### 3.1.1 Scope of Assessment in Relation to Enhanced Fisheries

Not Applicable

#### 3.1.2 Scope of Assessment in Relation to Introduced Species Based Fisheries (ISBF)

Not Applicable

#### **3.2.Overview of the fishery**

a. Summary of management framework

The marine fishing activities in Argentina are regulated by the Federal Fishing Law N° 24.922, its Complementary Decree N° 748/99 and several resolutions and norms dictated by the Consejo Federal

Pesquero (CFP – Federal Fisheries Council), the SAGyP and the SSPyA. The Argentine Provinces have their own fishing laws, which rule within 12 nautical miles from the coast. The Federal Fishing Law specifies all the requirements fishing activities must fulfill, a regimen of sanctions and the responsibilities of the agencies in charge of its implementation (CFP and SAGyP). In addition to the abundance of regulations currently in force, some resolutions merit highlighting, such as Resolution exSAGPyA N° 150/96 and the Resolutions CFP N° 4 and 5, 2005. These include special measures designed specifically to achieve effective administration of the Patagonian Scallop Fishery. A copy of the Law 24.922 and its Complementary Decree are appended to this report as Appendix III.

The CFP establishes the national fisheries policy and some management operational matters (Federal Fishing Law 24.922, Articles 7, 9, 10, 11, 14, 17, 18, 21, 26, 27, 28, 29, 36, 40, 44 y 45). The CFP is composed by:

- a) One representative for each province with maritime coast;
- b) The Secretary of Fisheries;
- c) One representative for the Secretaria de Recursos Naturales de Desarrollo Sustentable (Secretariat of Natural Resources and Sustainable Development);
- d) One representative of the Ministerio de Relaciones Exteriores, Comercio Internacional y Culto (Ministry of Foreign Affairs, International Trade and Culture);
- e) Two representatives designated by the Poder Ejecutivo Nacional (National Executive Power);
- f) The Secretary of Fisheries shall be the President. All the members of the Council shall have only one vote. A qualified majority shall adopt the resolutions.

The CFP shall:

- a) Establish the national fisheries policy;
- b) Establish the fisheries research policy;
- c) Establish the maximum licensed catch per species, bearing in mind the maximum sustainable production of each one of them, according to data provided by the Instituto Nacional de Investigación y Desarrollo Pesquero (INIDEP - National Institute of Fisheries Research and Development). Furthermore, CFP will establishes the quotas of annual catch per vessel, per species, per fishing zones and per type of fleet;
- d) Approve the licenses of commercial and experimental fishing;
- e) Advise the Subsecretaría de Pesca y Acuacultura (SSPyA Undersecretariat of Fisheries and Aquaculture) in matters of international negotiation;
- f) Plan the national fisheries development;
- g) Fix the guidelines of co-participation of the Fondo Nacional Pesquero (FONAPE National Fishing Fund.);
- h) Pronounce on experimental fishing;
- i) Establish the catching fees and fix canons for the practice of fishing;
- j) Modify the distribution percentages of the Fondo Nacional Pesquero (FONAPE National Fishing Fund.) established in the sub section e) of section 45 of Law 24922;
- k) Rule on the practice of the artisanal fleet establishing a reserve of the fishing quota for the different species assigned to this sector;
- 1) Establish the items to be considered by the Consejo Federal Pesquero requiring a qualified majority through the voting of its members;
- m) Promulgate its own functioning regulations, which shall be approved with the affirmative vote of the two third parts of the total of its members.

In addition to the responsibilities mentioned above, the CFP shares several others with the Management Authority (MINAGRI), which are specified in most of the articles of the Law 24.922. The CFP has an Advisory Commission integrating by all the fishing unions and working groups.

The Instituto Nacional de Investigación y Desarrollo Pesquero (INIDEP - National Institute of Fisheries Research and Development) proposes the Management Plan and additional measures to the CFP, which includes the legal and administrative aspects and considers its approval. The Subsecretaría de Pesca y Acuacultura (SSPyA, Sub-Secretariat of Fisheries and Aquaculture) has the

responsibility to implement the Management Plan. INIDEP is financed by the National Fund, National Fishing Fund, the two private companies involved in the Patagonian scallop fishery and external sources of funding. The President of the CFP is designated by law as the ex Secretaría de Agricultura, Ganadería, Pesca y Alimentos (SAGPyA – Secretariat of Agriculture, Livestock, Fisheries and Food), actual Ministerio de Agricultura, Ganadería y Pesca (MINAGRI – Ministry of Agriculture, Livestock and Fisheries) (Article 8° of the Federal Fishery Law 24.922) or his delegate.

b. The target species and its fishery

The Patagonian scallop (*Zygochlamys patagonica*, King and Broderip, 1832; Figure 1) appears to be the dominant species of the benthic ecosystem of the beds located on the Argentine Continental Shelf (See Bremec et al., 2000). It is the target species for a new small fishery limited to two Argentine registered companies, each with two factory trawl vessels (Figure 2, 3 and 4), which operate year round.



Figure 1. Patagonian scallop (Zygochlamys patagonica, King and Broderip, 1832).



Figure 2 The vessel "Atlantic Surf III", Glaciar Pesquera S.A.



Figure 3 The vessel "Miss Tide", Wanchese Argentina S.A.



Figure 4. On board operations on scallop otter net vessel

The first management measures were outlined in 1996 (CFP Resolution 150/96), after an experimental research phase. Two companies (Glaciar Pesquera S.A. and Wanchese Argentina S.A.) were authorized to fish, starting from 1996.

The formal Management Plan established in 1999 was abolished 1 year later (2000). Since then the CFP has demonstrated, through the management measures adopted, to have an adaptive criteria through operational measures with short- and long-term impacts. Some measures are related to annual survey results, such as open-closed areas and establishment of a Total Allowable Catch (TAC). The long-term management measures were:

- 1. a minimum legal size for scallops set at 55 mm of total height (3-4 years of age).
- 2. no-take zones were established in each bed for protection of the parental stock.
- 3. no-take zones were established in each bed for research purposes.
- 4. beds were only opened to fishing when the ratio of juvenile commercial sized scallops was at least 1:1.
- 5. no fishing season imposed.
- 6. fishing effort fixed at four vessels.
- 7. the harvest rate fixed at 0.4 biomass of commercial sized scallops and used to establish the TAC.
- 8. immediate return to the sea of all individuals smaller than 55 mm in order to allow their survival.

9. creation of a government – private fishing company Technical Commission to analyze and monitor the fishery.

Two Management Areas have been defined since 1999: "North", between  $36^{\circ} 45^{\circ} - 39^{\circ} 30^{\circ}$  S, and "South", between  $39^{\circ} 30^{\circ} - 43^{\circ} 30^{\circ}$  S. CFP Resolution N°4/2005 re-defined the management units of the Fishery by reducing their size and numbering them in 2007. The smaller management units allow more precise management. The new system numbers the units from north to south as 1.1, 1.2, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13. Four new management units were established below the former south zone. The new management units include all of the areas within the resource that have been fished.

In August 2005, the CFP approved management measures (Resolution N° 4/05) that complement the Federal Fishing Law and its Complementary Decree, and form a tactical and strategic Management Plan. These measures (Appendix II) will regulate the Patagonian scallop fishery over the next 4 (+ 1) years. This plan confirms that only four vessels are authorized in this fishery (Resolution N° 5/05), thus ratifying the measures established by Resolution SAGPyA N° 150/96.

Currently, the Commission created by Resolution CFP N° 4/05 for the Analysis and Monitoring of the Patagonian Scallop Fishery, is analyzing proposals related to improving the management of the fishery, namely:

- 1. Re-definition of thebeds limits, , in order to include areas of lower density of scallops.
- 2. Treatment of the beds as individual management units.
- 3. Review of the magnitude and location of no-take zones or reproductive and experimental reserves established in 1996.

In 2008, the CFP abolished Resolution N° 9/2006 and replaced it with Resolution CFP N° 4/2008. The new Resolution maintains the management units established in 2007 (See Figure 5). The CFP Resolution N° 4/2008 also states that no fishing vessel can fish management units not having an established TAC. An estimate of the Biologically Acceptable Catch is required before fishing can commence. This will normally require a research survey, unless INIDEP can provide provisional approval based on known biological indicators. In such a case, the CFP will establish a TAC following a precautionary approach. (Art. 6 of Resolution CFP N° 4/2008).

Based in information of INIDEP which describes scallop concentrations in deeper water beyond of 200 nautical miles, between  $45^{\circ}00'$  and  $47^{\circ}00'$  S, in 2009 the CFP established MU 14, in SS. This MU is considered to be continuous with existing beds of MU 10.



**Figure 5**: Left: Fishing zone divided into two management Units ("North" and "South") and a zone "Out of Management Unit South". Rigth: Fishing zones divides into 14 Management Units, applied since 2007.

#### Fishing practices

The only retained species in this fishery is Patagonian scallop (*Zygochlamys patagonica*) (biological and ecological background in section 3.3). Scallops are not captured in any other Argentinian fishery and therefore suffer no incidental or direct mortality, outside the scallop fishery.

The present fishery is operated by four factory vessels (two from each company), working 24 hours per day, throughout the year. The vessels (45-59 m long) perform between 6 and 13 trips/year. The duration of fishing trips ranges between 20 and 55 days. The vessels each operate two otter trawl nets with booms and make 40-60 tows/day/net. The average towing time is 15 minutes (See Table 1). The catch is processed mechanically on board. The fishing gear is claimed to be non-selective. Initially trawl efficiency was estimated to range between 21 - 31 % (Lasta and Iribarne, 1997). Later estimation with improved fishing gear increased this figure to 50% (M. Lasta, pers. comm.). A limited experiment by Lasta and Bremec (1997) gives direct evidence of the lack of size selectivity, even when the gear mesh sizes have been increased from 80 mm to the current 120 mm. The fishermen are interested in improving gear selectivity in order to decrease the catches of incidental non-commercial species and other non living material which reduce the efficiency of the on board factories. One of the companies expressed its intention to try with square mesh nets in order to meet this objective.

The catch, composed of scallops, other benthic invertebrates and shell hash, is mechanically processed on board. The by-catch and free living non-commercial size scallops (less than 55 mm – Resolution CFP N° 4/2005) are separated by drums (Figure 6) and returned to the sea within 30 minutes of landing, whilst the commercial sized scallops are retained and processed as follows:

- (i) steaming to open and separate soft tissues from the valves (Figures 7), which are discarded and thrown to the sea,
- (ii) peeling of the callus (muscle) to remove soft tissues (Figures 8 and 9),
- (iii) freezing (Individually Quick Frozen or in clusters, depending on the fishing company),
- (iv) muscle classification by size (Glaciar Pesquera S.A., Figure 10) or unclassified (Wanchese Argentina S.A.),
- (v) packed in 15 Kg. cartons, and
- (vi) stored frozen.



Figure 6. Drum for separating commercial size scallops from catch.



Figure 7. Steaming machinery.



Figure 8. Unpeeled scallops after steaming process.



Figure 9. Peeling machinery.



Figure 10. Scallop muscle (final product) to be frozen

The biomass captured is calculated by transformation of scallop muscle weight using a conversion factor of 7.14. This conversion factor has remained unchanged. Catch data from 1995 to 2009 is presented on Figure 11.



*Figure 11.* Evolution of muscle production (t), commercial scallop catch (t) and fishing effort (nets). Numbers: vessels in activity.

Muscle production varied throughout the years as consequence of skill and effiency in on-board processing (Figure 12).



Figure 12. Muscle landing (kg) for vessel trip.

						Atlantic Surf	Atlantic Surf
Year	Fleet	Erin Bruce	Miss Tide	Mr. Big	Atlantic Surf I	II	III
1995	201	201					
1996	661	188		107	165	201	
1997	845	203		242	256	144	
1998	653	201		232	220		
1999	783	257		262	264		
2000	775	254		224	298		
2001	725	249		194	244		39
2002	1075	269		277	284		245
2003	969	215		230	269		255
2004	900	158		225	267		251
2005	652			235	211		206
2006	913		195	226	250		242
2007	649	64	157	28	219		182
2008	728	171	165		161		232
2009	989	247	253		255		235

Table 1. Annual fishing activity (in fishing days) for fleet and vessel.



Figure 13. Annual fishing activity (fishing days in days, not time at sea) for fleet and vessel. Data from Table 3.



*Figure 14*. *Annual evolution of the muscle production for fleet and vessel (average and Sd).* 

#### **3.3.Principle One: Target Species Background**

#### a. Life history of the Patagonian scallop

The Patagonian scallop, *Zygochlamys patagonica* is distributed from 42° S in the Pacific to 35° S in the Atlantic, between 40 to 200 m depth (Waloszek and Waloszek, 1986; Lasta and Zampatti, 1981; Defeo and Brazeiro, 1994). It inhabits soft bottom, mainly muddy-sandy substrates. Studies on reproduction indicate that sexes are separate (Waloszek and Waloszek, 1986; Campodónico et al., 2004) and that the sex ratio does not differ significantly from 1:1 (Campodónico et al., 2001). Commercial populations are mainly found along the shelf-break frontal system at a depth of approximately 100 meters, in the zones with the highest concentrations of plankton (See Bogazzi et al., 2005).

**Reproduction**. Sexual maturity was estimated initially by Waloszek and Waloszek, (1986) at 45 mm shell height, at approximately 2 years of age. Gametes are emitted in two pulses, one takes place during spring and the other from late summer to early autumn, the largest one being the spring pulse (Waloszek and Waloszek, 1986).

Campodonico et al. (2009) studied the reproductive cycle, sex ratio and size-at-maturity in Reclutas Bed. Sex-ratio was determined as 1:1. The size for first sexual maturity was estimated from males of an average of 36.63 mm and females of 36.31 mm of shell height. The relative gonadal condition index (RGCI) showed an annual cycle with higher values during winter–spring and lower values during summer–autumn. Individuals in early and advanced maturity were found throughout the year; however, they were found more frequently between June and September. Spawning began in October (early spring) and extended through March (late summer–early autumn) coexisting with early and advanced maturity stages.

**Growth rate**. Individual growth of *Z. patagonica* has been intensively studied during the last 10 years. Age and growth were previously studied analyzing external growth rings (Waloszek and Waloszek, 1986, Lasta et al, 2001), although ring overlapping in older individuals makes this difficult. Maximum shell growth rates were found between June and end of August (winter) whereas tissue growth rates were maximum during spring (Valero, 2001). The von Bertalanffy growth equation has been fitted; parameter estimates are 53-90 mm asymptotic height with a strong latitudinal variation,

and 0.17-0.50/year for k (Ciocco et al., 2005; Valero, 2001, Orensanz et al., 1991). Seasonal variations in temperature have been reported as one of the processes leading to shell growth reduction (the bottom temperatures are 1-2°C higher in winter than in summer). Food availability may also cause decreasing rates of growth. *Zygochlamys patagonica* is a filter-feeding species, mainly ingesting phytoplankton. The period of high cell abundance in gut contents (November) and maximum growth in tissue mass are coincident with the peak of spring primary production (Schejter et al. 2000, 2001 and 2002).

Lomovasky et al. (2007, 2008) used the analysis of internal growth rings by acetate peels to study geographic variation of growth rate. During 2009, growth studies were focused on the establishment of maximum age and the estimation of growth parameters in seven beds (Lomovasky & Ribeiro, 2010). The maximum number of growth-band readings was between 19 and 25. This study also provides evidence of growth pattern variation along the range of latitudinal distribution of *Z. patagonica* beds, with a significant increase in maximum size from MU3 to MU6.

The legal commercial size of 55 mm of height is reached at ages varying from 3 to 5 years, over much of the longitudinal range.

**Natural mortality and Recruitment.** The first estimation of natural mortality (M) was obtained using a size-converted catch curve that resulted in an estimate 1.039/y (Lasta et al., 2001). Valero (2002) estimated M using an integrated age-structured size-based model to describe monthly dynamics of abundance and shell growth in an area closed to fishing in Reclutas Bed. The model consisted of survival equations, which accounted for M, cohort-specific, individual growth and variability of size at age and a selectivity ogive obtained for the sampling gear. This model was fitted to monthly time series of size frequency distribution and local density estimates. Estimates of M ranged from 0.31–0.46/y, depending on model parameter estimates.

Based mostly on growth parameter information resulting from the von Bertalanffy equation, Milessi et al. (2010) obtained empirical estimates of M based on formulas commonly used in fisheries assessment, and quantified variation in their estimates by parametric bootstrapping. The modal value of direct estimates of M was 0.38/y, with a 95% confidence intervals at 0.09/y and 0.77/y. Estimates obtained with empirical models were close to direct estimates. Arce's model (Arce, 2006), developed for marine invertebrates, gave the closest estimate to the one obtained using the direct model. The authors suggested that for this species, the empirical estimates can be reliably used when no other estimates are available.

Based on the results of the aforementioned study, Milessi (2010) used a dynamic model to estimate total, natural, and fishing (F) mortality in six management units (MU's 5 to 10). In all cases F estimations were lower than M (Fig 15).



Figure 15: Total (Z) natural (M) and fishing (F) mortality values estimated to management units 5 to 10.

Recruitment into the benthos of new generations indicates spatial and temporal variation between years and beds (Lasta and Bremec, 1998 and 1999). Recruitment and spawning stock have been estimated for each management zone and each bed fished, showing that, as in other scallop populations, they are not clearly related. Orensanz et al. (2005) have hypothesized that larval settlement depends mainly on physical, environmental or biological parameters within the distribution area of the species, and not necessarily on the number of larvae from the spawning stock. The dynamic nature of ocean currents over the Argentine Continental Shelf, suggested they are important for the distribution and settlement of larvae (Bogazzi et al., 2005). However, there is growing evidence that invertebrate larvae do not behave as passive particles (Wood and Hargis, 1971; Baker, 2003) and that in spite of the mean current appearing unidirectional, at the local scale eddies and minor counter currents influence distribution.

The population is structured as several discrete, variable and discontinuous sized beds. Macro-scale spatial distribution of the Patagonian scallop matches the location of three major frontal systems in the Southwest Atlantic (Bogazzi et al., 2005). These fronts (areas with steep gradients of oceanographic variables such as salinity and temperature) constitute important feeding and reproductive habitats, often acting as concentration areas for pelagic larvae or as barriers to their dispersal. Beds influenced by the shelf break front and less than 90 km apart could be interconnected by larval drift (Lasta et al., 1998).

**Larval movement.** During the past years, the relevance of high chlorophyll concentrations in frontal zones as a determinant factor for the settlement and adult scallop abundance has been highlighted (Mauna *et al.* 2008). The complexity of the currents may act to concentrate and retain larvae in the front and keep them close to their preferred settlement areas. During the period 2009 - 2010, oceanographic aspects related to larval drift were addressed to investigate the relatively recent developments in hydrodynamic stochastic modeling and to improve numerical techniques usually employed in oceanography to track particles in the ocean (Franco 2010). Theories about Lagrangian stochastic modeling (proposed during the 3<sup>rd</sup> Surveillance in 2009) and stochastic numerical methods to simulate particle tracking were revised, and new approaches were proposed.

The main conclusions were included in two documents about physical-biological interactions with potential impacts on benthic communities and larval dispersal. Mauna et al. (MS submitted) studied the trophic relationships and the food web structure to understand the influences of coupling between the physical environment and primary production, using stable isotopes analysis. *Z. patagonica* shows carbon enrichment and a high decrease in nitrogen at frontal areas, suggesting differences in food supply source related to areas marginal to the front. The results of this study suggest that the Shelf Break Front promotes enriched phytoplankton sedimentation to the seabed, along with a higher scallop contribution to predator diets and a more pelagic-based trophic web, showing their important role in shaping the benthic community.

The dynamica processes controlling the interaction between the shelf and the deep-ocean as a result of the Brazil and Malvinas currents was described by Matano et al. (2010).

Schejter et al. (2010) provided the first morphological descriptions of recently settled spat of *Z. patagonica* and established planktotrophic or lecithotrophic development of the larvae on the basis of the Prodisoconch I-to-Prodisoconch II ratio measurements.

**Population structure and Genetic studies.** During the first part of the genetic studies scallops from twelve beds, from the MU1 to Ushuaia, were analysed to explore whether a molecular marker could be used to assess genetic variability. Such study showed three main barriers to genetic flow (Trucco & Lasta, 2009). Armany et al (2009) developed a suite of 14 microsatellite loci specific for *Z. patagonica* to be used in a subsequent studies of population structure. Subsequently, Dr. Ruzzante (Dalhousie University) examined polymorphism in this suite of 14 microsatellite loci among individual scallop collected from 16 locations in the SW Atlantic. Preliminary data analysis suggests there is a mosaic of genetically distinguishable scallop aggregations in the SW Atlantic that differ in the degree of population differentiation. The biological implications of these differences will be

inferred in a widest scope once samples from other (especially coastal) population have been analyzed.

#### b. Evaluation of status stock

The stock is evaluated considering each Management Unit as independent, applying a Bayesian criterion which combines both surveys and fishing effort allocation.

This annual fishery-independent assessments of each bed within each MU in order to estimate the biomass, using grid pattern dredge surveys, are carried out by INIDEP (Lasta et al., 2001b; annual INIDEP Survey Reports).

The evaluation of scallop stock has been carried out annually through two surveys (research vessels "BIP Capitán Cánepa" until 2008, and since then, commercial vessels). Each survey has a duration of 15 days and the sampling design covers all beds and an experimental reserve area within the Reclutas Bed.

Considering that the annual catch allocation for each company and management unit is based on levels of available biomass, evaluation surveys are mainly aimed at obtaining the necessary data to estimate the biomass. Other collected information is related to population dynamic, size structure, reproductive stages, and composition of benthic community.

Sampling design is a regular grid which covers locations and surrounding areas where fishing has been recorded. Distance between sampling stations is 9.3 km. The number of stations within each MU depends of its spatial extent. Between 1999 and 2008, samples were collected by a dredge of 2.5 m width. Since then, the surveys have been completed by commercial vessels and samples have been taken by commercial otter net.

Mean trawling speed was 5.6 km/h and trawling time was 10 min. A sub-sample of 10 kg is obtained from the total catch of sample, in order to collect information of total scallop and commercial scallop.



Figure 16: BIP "Capitán Cánepa" research vessel used until 2008, to surveys in each MU.



*Figure 17:* Example of a annual survey (2006). Dots represents sampling stations. Grey-shaded areas represent MU used until 2006 (UNM and USM), and non-shaded polygons new MU to be evaluated during the survey, and occasionally opent to fishing (Adapted from Bogazzi, 2008).

These direct estimates of biomass allow trends in the size of the stock to be analysed within beds. The spatial structure has been mapped in fine detail by the kriging analysis of grid pattern dredge surveys (Lasta et al., 2001b,c).

Since 1998, biomass estimation was based on a geostatistical model. In this method regionalized variables, total scallop density (individuals of all sizes) and commercial scallops (market size individuals), that are considered random variables. In the analysis the spatial correlation structure was considered the dependent variable. Point (point 'kriging') or global (block 'kriging') estimates were obtained (Lasta et al. 2001).

The index Z, defined as the proportion of individuals of commercial size (nc) for total of individuals sampled (nt) (Z = nc / nt), is used as a criterion in the selection of harvest areas. The exclusion area of 'Recruits' first sampled in 1998 so the population dynamics of scallops in the absence of fishing disturbance could be monitored. Between 1999 and 2000 the the exclusion area was sampled monthly and from 2001 to the present, it has been sampled annually (Bogazzi, 2005).

The results of surveys are analyzed in each MU in independent way as follow (Fig. 18):

• Within the monitored zone (blue polygon), areas with Z index > 0.5 are identified (red polygons) and a polygon is designed to include them (yellow).

• The fishery-dependent information is collected at a very fine scale allowing analysis of CPUE and total catch for each bed. The CPUE data provides an index of biomass allowing changes in biomass of each bed to be followed as well as providing information defining the next survey (green contour). In Figure 17 such areas are represented by gray colours (f high, f medium, f low).

The TAC is estimated as 40% of lowest limit of confidence of commercial biomass (Z>0.5), and the area opened to fishing is: i) the polygon that includes areas with Z > 0.5 (yellow in the example of Figure 17) if the previous fishing information provides an adequate definition of bed limits, or ii) the entire MU (black polygon) ) if there is not enough information or there are not enough recruits in the surveyed area.



**Figure 18:** Example of survey-based decision rule. The black poygon represents the limits of MU. Green contour represents the limits of scallop bed, defined by effort allocation. Blue polygon is the area covered by the survey and dots each sampling station. Red polygon includes sampling stations with Z > 0.5. The yellow polygon will be opened to fishery.

The appropriateness of whole stock fishing mortalities as target or limit reference points for fisheries of sedentary stocks that include rotational fishing or area closures (such as occurs in this fishery) has been seriously questioned (Hart, 2003). The TAC is established for each bed within both management units, taking into account commercial biomass and minimum legal size. Areas where juveniles exceed 50% of the total population are closed in order to protect recruitment. The fishing strategy of individual fishers leads to the development of a loose rotational fishing pattern.

Bogazzi (2008) studied the fishing process and its impact on stocks of the *Z. Patagonica*, concluding that: 1) the spatial pattern of the resource is associated with three oceanographic frontal systems; 2) trend of CPUE reflects the movement of the vessels inside a bed searching for areas with similar densities, which can be analyzed at different spatial scales using the objective information of fleet activities; 3) the large-scale fishing effort allocation shows sequential depletion: the fleet operates progressively farther from the port.

Kittlein and Lasta (2010) analysed a large database containing the complete historical development of the *Z. Patagonica* fishery (data on individual tows conducted by survey and fishery vessels from 1995 to 2009) to assess biomass dynamics and forecast the response of commercial scallop biomass under different values of annual capture. Estimates of biomass densities and commercial scallop catches were assembled for each scallop bed using a time series format, following Deriso's Model, in order to estimate population parameters using Bayesian inferential procedures. A ten-year projection of biomass dynamics was performed for the three main beds (which concentrated more than 85 % of all fishing tows) simulating annual catches at different intensities (different TAC levels). If the catches were suspended, two of the beds would respond by increasing commercial biomass. When TAC is increased, commercial biomass levels decrease steadily in the three beds. Based on this study, the authors suggest that no serious reduction in biomass values are expected if fishing intensities remain constant at their historical average value.

#### c. Historical framework of fishing and management

The existence of thescallop resource in Argentine waters has been known since 1973, when exploitable concentrations of *Z. Patagonica* were evaluated during an exploratory survey by the vessel, Fishing Research Vessel (FRV) Prof. Sieldlecki. Since then various evaluation surveys have been made by research and commercial vessels (FRV "Walter Herwing", 1978 and 1979; FRV "Shinkai Maru", 1978; and Fishing Vessel (FV) "Sea Bay Alpha", 1989), with the objective of studying the resource and estimating the viability of its commercial exploitation.

In 1991, 1993 and 1994 exploratory fishery surveys were conducted in Uruguayan waters using commercial vessels authorized by the Uruguayan Government, to study the resource within their marine jurisdiction. The surveys showed that such a small portion of the resource is located within the Uruguayan shelf and established that it was too small to promote and maintain commercial production, using factory vessels.

In the decades '70 and '80 a number of pectinid fisheries were developed elsewhere in the world making the Patagonian scallop fishery commercially impractical particularly because of the relatively small adductor muscle obtained. It wasn't until the early 1990s, with the declining catches in established scallop fisheries increasing the international demand for scallop meats in the market, that the value of other species, including the Patagonian scallop, appreciated sufficiently to become commercial (E. González Lemmi, pers. comm.).

During 1995, the FV "Erin Bruce", one of the vessels involved with the Uruguayan surveys, was authorized by the Argentine Government to develop a fishery research programme directed by the Federal Government. Throughout that year 15 surveys were made on the Continental Shelf. At the end of 1995 the Argentine Government by means of Resolution SAGPyA N°19 dated on 28 December 1995 approved both fishery projects for the exploitation of Patagonian scallop presented by Glaciar Pesquera S.A. and Wanchese Argentina S.A. for a fleet composed by four vessels ( two vessels from each company).

Glaciar Pesquera S.A. is a partnership between an Argentine businessman and the Canadian fishing company Clearwater Seafood Inc. The owner of Wanchese Argentina S.A. is a North American family, which trades as the Wanchese Fish Company Inc.

In addition, the Secretaría de Agricultura, Ganadería, Pesca y Alimentación established Resolution SAGPyA N° 150/96 dated on March 1996, that gives the legal framework that ensures the Patagonian scallop fishery to be developed in a way that follows scientific advice. This resolution also established basic principles for the Management Plan which was implemented in March 1999. This Resolution was a noticeable advance in the regulation and management for this new fishery in Argentina, preventing any vessel with "unrestricted" authorization to fish within Argentine waters from catching Patagonian scallop. In Argentina, most of the fishing authorizations given to the fishing fleet are

"unrestricted" and for this reason the CFP and SAGPyA have made changes in the regulations to avoid a higher fishing effort and catches than those tecnically recommended.

In 1999, the Uruguayan Government authorized two factory vessels to catch Patagonian scallop in the Argentine-Uruguayan Common Fishing Zone (ZCPAU) established by the Treaty of the Rio de la Plata and its Maritime Front (TRPFM). Since then until the end of 2001 six vessels operated on the ZCPAU, mainly within the Argentine sector. During 2000 a dispute between both countries over the mobility of the resource and the geographic location of the beds arose. Since 2002, in consideration that the Patagonian scallop is a sedentary resource, Argentina has applied Article 77 of CONVEMAR, by which the country where the resource is located has the power to prevent the other country from fishing over resources located exclusively on its Continental Shelf. As a consequence, since January 2003, the Uruguayan scallop fleet has been obliged to withdraw from Argentine waters within the ZCPAU.

One of the four vessels that established the Argentine fisheryleft it in 1997 and was not replaced until 2001. The precautionary approach developed by INIDEP and the CFP, in regard to the number of vessels approved, is appropriate for this new fishery. Accordingly SAGPyA, the enforcement authority for Federal Fishing Law, acting on the scientific advice of INIDEP and the decision of the CFP, has always rejected applications for new fishing permits for Patagonian scallops.

#### **3.4.Principle Two: Ecosystem Background**

a. <u>The aquatic ecosystem, its status and any particularly sensitive areas, habitats or ecosystem</u> <u>features influencing or affected by the fishery</u>.

#### The Shelf Break Front and the Patagonian Shelf Large Marine Ecosystem

The Patagonian Shelf Large Marine Ecosystem extends from Uruguay to the Strait of Magellan. It has a total area of about 2.7 million square kilometers. The continental shelf is relatively narrow in the north but widens progressively to the south, where it reaches a width of 850 kilometers. The Patagonian Shelf Large Marine Ecosystem has a distinctive bathymetry and hydrography. It is influenced by two major wind-driven currents: the northward flowing Malvinas Current and the southward flowing Brazil Current (Bakun, 1993). The two currents provide the Large Marine Ecosystem is a composite area with a unique combination of characteristics.

The Patagonian Shelf Large Marine Ecosystem is highly productive. While the southward flowing Brazil Current is warm and saline, the northward flowing Malvinas Current carries cool, less saline, nutrient-rich sub-antarctic water towards the equator. The two currents mix their waters at a Confluence Zone (CZ). The Confluence Zone is a wide area characterized by intense horizontal and vertical mixing. It is situated on average at the approximate latitude of 39 degrees south, but is displaced to the north in the winter. The exchange of water masses of different temperatures and salinity affects biological productivity. The characteristics and dynamics of the Confluence Zone, however, are still poorly understood. There are significant coastal tidal fronts in this Large Marine Ecosystem that divide the coastal domain from the outer shelf domain. Although productivity has been estimated for parts of the system, no comprehensive study has yet been made of this Large Marine Ecosystem. Frontal zones are areas of high productivity especially along the extensive shelf break front. There is high production of phytoplankton at the 220 km wide mouth of the Rio de la Plata, which discharges large quantities of freshwater and sediments into the Patagonian Shelf Large Marine Ecosystem.

The Malvinas Current is a swift, barotropic, narrow branch of the Antarctic Circumpolar Current that flows north along the continental slope of Argentina up to approximately 38° S (Matano et al., 1993). Its volume transport ranges between 40 and 70 Sv (Peterson, 1992; Spadone and Provost, 2009). This current mixes with the south-flowing Brazil Current off the mouth of Rio de la Plata where it creates a region of high mesoscale variability.

There are few studies on the exchanges between the Malvinas Current and the Patagonian shelf. Saraceno et al. (2004) noted that unlike the Brazil Current, the inshore boundary of the Malvinas Current is remarkably stable. Malvinas water, nevertheless, still penetrates the Patagonian Shelf and influences the regional ecosystems (Piola et al., 2010). The most obvious evidence of this nutrient input is the high level of biological activity that is found in the Patagonian Shelf Large Marine Ecosystem, which is considered a Class I marine ecosystem with a productivity rate larger than 300 grC/m2 yr-1 (Csirke, 1987; Brandhorst and Castelo, 1971; Lutz and Carreto, 1991; Sabatini et al., 2004).

One of the most distinct characteristics of the Patagonian region is the narrow and persistent chlorophyll maximum that closely follows the 200m isobath (Romero et al., 2006). The peaks of this maximum are unusually high. Spring blooms, for example, have surface values of 25–30 mg/m<sup>3</sup>, which are an order of magnitude larger than those observed in typical offshore locations (e.g., Acha et al., 2004; Romero et al., 2006; Garcia et al., 2008; Signorini et al., 2009). The chlorophyll blooms of the Malvinas Current are symptomatic of the up-welling of nutrient-rich waters to the surface, but the mechanisms driving such up-welling are still poorly understood. External forcing does not appear to be the cause: the winds in the Patagonia region are not up-welling-favourable. Tidal mixing is relatively small in the shelfbreak region and the Malvinas Current does not exhibit the eddy shedding and meandering that drive the up-welling of other western boundary systems (e.g., the Gulf Stream). It has been postulated recently that the shelf-break up-welling of Patagonia is associated with frictionally driven intrusions of the Malvinas Current onto the shelf (Matano and Palma, 2008). These intrusions generate an along-shelf pressure gradient with a secondary cross-shelf divergence cell that leads to shelf-break up-welling. The magnitude of the up-welling is proportional to the transport of the Malvinas Current and to the ratio of the bottom slopes at both sides of the shelf-break (Matano and Palma, 2008).

Although the Shelf Break Front has a very complex structure and exhibits multiple thermal fronts (Franco et al., 2008), its position remains very stable, and is closely locked in position by the topography that steers the Malvinas Current.

While most wind-driven events last only a few days or weeks, the up-welling of Patagonia is continuously sustained through the entire year. There are coastal regions with year-round up-welling favourable winds (e.g., the western coast of Africa) but, unlike Patagonia, they are not embedded within the nutrient rich waters of the Southern Ocean and their influence is restricted to the near-shore region. The impact of Patagonia's shelf-break up-welling on the regional ecosystems appears to extend well beyond the shelf-break region. Chlorophyll-a images, for example, indicate that the sub-polar portion of the South Atlantic is the most productive portion of the entire Southern Ocean while the subtropical open-ocean region is a relative desert ( $<0.2 \text{ mg/m}^3$ ).

The Patagonian shelf exports surface waters to the deep ocean and imports deeper waters through the Le Maire Straits and the shelf-break region. Shelf-break up-welling draws cold and denser waters to the surface whence they move onshore and downward. After reaching the middle and inner shelf these waters are uplifted towards the surface by strong tidal mixing and are diverted to the north in the surface Ekman layer. The nutrients carried by these waters add to the nutrient flux produced by resuspension and cause additional chlorophyll blooms along the inner and middle shelf of Patagonia (Matano et al., 2010) as tidal mixing develops coastal fronts.

#### **Coastal Fronts**

The Southern Patagonia Frontal System is a thermohaline front that develops between the Magellan Strait to almost reach the San Jorge Gulf. It marks the transition between tidally mixed low-salinity of the Patagonian Current waters and seasonally stratified more saline waters of the continental shelf. It is forced mainly by advection of cold and low salinity waters of the Patagonian Current and strong tidal currents over the shelf. The northern part of the frontal system between ~45.5° and 48°S, is associated with the 80-m isobath, around the contours of a prominent shoal off Cape Tres Puntas. The mean.



**Figure 19:** Southwestern Atlantic schematic ocean circulation: Malvinas Current (MC), Antarctic Circumpolar Current (ACC) and Brazil Current(BC), Confluence Zone (CZ). Arrows indicate the general circulation pattern over the continental shelf, whilst the grey arrows represent continental runoff. Shadowed area represents the Magellan Biogeographic Province (MBP), whilst white areas represent the Argentine Biogeographic Province (ABP). Adapted from Matano et al, 2010.

Position of the Southern Patagonia Frontal System varies only slightly between years. Phytoplankton productivity peaks once during spring and once in autumn (Cucchi Coleoni & Carreto, 2001). The

spring-neap tidal cycle is the cross-frontal exchange mechanism in tidal fronts resulting in the enhancement of the productivity of the system (Mann and Lazier, 1991). Although circulation in the Southern Patagonia Frontal System (specially with regard to topographically-steered flows) is not completely understood, it offers opportunities for physical and biological retention/concentration mechanisms (e.g. energetic processes like surface convergence and upwelling-down-welling). These result in the occurrence of the associated scallop beds, as well as the abundance of other commercially important species: squid, southern blue whiting, Patagonian hoki, austral cod and Patagonian toothfish (Brunetti et al., 2000).

The Northern Patagonian Frontal System is a major tidal front located near Peninsula Valdez and extending southward off the Patagonian coast from  $\sim 42^{\circ}$  to  $45^{\circ}$  S. The turbulence generated by strong tidal currents keeps the well-mixed shallow waters separated from the deeper stratified water. The front starts forming in the early spring, as the seasonal thermocline develops and persists through the autumn, when stratification declines; the steepness of the gradient is maximal during the summer. The average position of the system estimated over this period shows an overall NE–SW alignment following closely the bathymetry and isopycnal contours (75– 80m). It is located on average 50 km offshore in the south, and ~80 km offshore in the northern zone. The position of the Northern Patagonian Frontal System varies considerably between years, from 80 to 120 km off the northern coast of Peninsula Valdez and from 20 to 100 km off Isla Escondida. The system is highly productive in spring and summer, which appears to be associated with enhanced phytoplankton biomass and high chlorophyll-a concentration (Carreto et al., 1981). Growth of phytoplankton populations can possibly be explained by at least two mechanism of transport across the front, moving either cells or nutrients: the spring-neap cycle and baroclinic eddies (Pingree et al., 1975; Mann and Lazier, 1991).

#### Scallop Beds and Frontal Systems of Patagonian Shelf Large Marine Ecosystem

Stocks of the Patagonian scallop are widely distributed over the Patagonian Shelf Large Marine Ecosystem at low densities. Commercially exploitable beds however occur in discontinuous concentrations across the shelf. The geographic location of these scallop beds has been constant over the 30 year period they have been recognised. Since 1995, they have become the focus of the important Patagonian scallop fishery (Lasta & Bremec 1998). Bogazzi et al., (2005) analysed the historical survey data documenting the geographic distribution of the Patagonian scallop beds, geographic and catch and effort data from the commercial fishery, oceanographic data on the frontal systems, and remote sensing imagery. They found the geographical location of scallop beds on the Patagonian Shelf Large Marine Ecosystem mirrors the frontal systems. Bogazzi et al., (2005) found that large-scale aggregations of scallops exactly matched the location of three major and very different frontal systems of the Patagonian Shelf Large Marine Ecosystem: The Shelf-Break Frontal System, the Northern Patagonia Frontal System, and the Southern Patagonia Frontal System. The fishery for Patagonian scallop on the Northern and Southern Fronts (where scallop meat condition was often very poor) have not proved as productive as that on the Patagonian Shelf Break Front. The bentho-pelagic coupling of the very high algal production of 25-30  $\text{mg/m}^3$  in the spring bloom, the bloom which continues throughout the summer to autumn, along this front provides a consistent, stable, rich food source for the suspension feeding scallops and other benthic organisms. Bogazzi et al., (2005) considered that one of the important aspects of the bentho-pelagic coupling of the front, in maintaining the scallop beds, was their role in retaining and concentrating scallop larvae within circulation cells over the beds themselves.

The narrow extent of the Patagonian Shelf Break Front, ~40km at the surface, and the strongly developed community under it where recruitment and abundance of scallops are highest (Mauna et al., 2008, 2010), provides a unique situation to investigate the coupling of pelagic algal production on benthic community composition and species abundance. Mauna et al., (2011a) investigated these effects on the benthic communities along the Shelf Break Front. They analysed the species composition, biomass, species eveness, and species diversity in bycatch of 17 trawl samples from 5 areas along the shelf break mean position (termed frontal, F) and from 17 trawl samples from 5 areas at least 15 km inshore of these (termed marginal, M). 58 taxa were caught and species numbers per

trawl ranged from 13 to 30, Shannon Weiner Index ranged from 0.52 to 2.56, species eveness ranged from 0.20 to 0.79, and biomass ranged from 12 to 132 gm<sup>-2</sup>. The biomass and diversity of the benthic community in Marginal and Frontal areas were not significantly different. Cluster and similarity analysis showed the community composition of marginal and frontal areas differed. Frontal areas were characterised by Patagonian scallop *Z. patagonica*, sponges, brittle star *Ophiocoma vivipara*, and seastar *Diplasteria brandtii*. Marginal areas were characterised by Patagonian scallop *Z. patagonica*, the parchment worm *Chaetopterus variopedatus*, the basket star *Gorgonocephalus chilensis*, and the sea urchin *Austrocidaris canaliculata*. Analysis of trophic guilds showed that suspension feeder and grazer-omnivore biomass did not differ between areas but Frontal areas had a higher biomass of predators.

Spatial gradients in productivity, influence spatial variability in species diversity and richness in many ways and vary with specific systems and scales. Productivity does not in itself, explain diversity patterns as increased faunal density or taxon richness can be also be driven by tight benthic-pelagic coupling as well as annual resource stability that reflects timing of organic carbon flux and mode of sedimentation. Mauna et al., (2011) concluded that in the study area, benthic-pelagic coupling allowed chlorophyll-a from the surface to reach the bottom with a seasonal change from approximately 0.3mgm<sup>-3</sup> in winter and summer to 1-2 mgm<sup>-3</sup> during spring (Carreto et al., 1995; Lutz et al., 2010). This chlorophyll-a is primarily derived from diatoms which presumably sediment at high rates even during stratification (although down-welling currents are probably also important in this process of transporting algae to the benthos) and support the densest beds of *Z. patagonica* associated with the shelf break front. Thus benthic communities near the shelf-break may be supported by a large amount of phytoplankton production that reaches the bottom through benthic-pelagic coupling (Acha et al., 2004; Bogazzi et al., 2005; Lasta & Bremec 1998; Schejter et al., 2002). The similarities in diversity indices seem to be not only the result of differential contribution of food to the bottom but also of the interaction between food supply and the shifts in taxa biomass promoted by hydrodynamic conditions.

Mauna et al., (2010) investigated changes in the C stable isotope signature and C/N ratio of scallops in a transect across the Shelf Break Front. They found variations consistent with much better feeding conditions under the front itself. Mauna et al., (in press) investigated the food sources of Frontal and Marginal areas by studying the stable isotope signal of the main bycatch organisms in each area. The epibenthic assemblage in the frontal area, were ingesting fresher food resulting in  $\delta^{13}$ C enriched and  $\delta^{15}$ N depleted isotope signal compared to marginal areas. Additionally some predators such as Asteriidae sp. *Fusitriton m. magellanicus*, and *Austrocidaris canaliculata* consume more scallops in frontal areas where scallops are much more abundant; other predators, including Pterastidae *Ctenodiscus australis* and the Volutidae on the other hand showed a propensity to consume more *Gorgocephalus chilensis*. Ophuroids and sea urchins, especially *Sterechinus agassizi* which shifted trophic level from primary consumer in frontal areas. The investigation highlights the importance of spatial variation in the front in understanding shifts in trophic epibenthic web even on the scale of tens of kilometres.

#### Benthic habitat of scallop beds and effects of fishing on habitat and ecosystem

INIDEP swath-mapped parts of the scallop beds in 2004 and 2005 using multibeam imagery from a SIMRAD EM1002 echosounder. Only preliminary results have been presented but further analysis was proposed to develop bottom classification ground truthed by sediment sampling, followed by correlation analysis of sediment type, scallop abundance and biomass of accopanying fauna. The figure illustrating one swath of the shelf in the preliminary report has superimposed the positions of the fishing fleet in those years (Figure 3d) (INIDEP 2005). Scallop fishing (and the beds) occurred on the firmer more reflective habitat of fine sand. The sediments show strong linear distribution patterns

along the shelf, indicating that seafloor currents are important in sediment transport and probably are an important factor in structuring benthic habitat.

Scallops on all beds but especially those along the Shelf Break Front have always been associated with a rich associated fauna of suspension feeders, deposit feeders and predators. The study of Lasta & Bremec (1998) documents the pre-fishery conditions of the beds in 1995. The bycatch then, represented on average between 40 and 90% of the commercial trawl catch in 7 beds on the shelf break front (compare figs 3a and 3b). The baseline study of the benthic community sampled in 1995 before the fishery commenced (Bremec & Lasta, 2002), used univariate and mutivariate mehods to analyse the epibenthic assemblage associated with scallop beds along the Argentinian Shelf. They found Patagonian scallop biomass dominated all trawl catches. A characteristic assemblage of species defined by cluster analysis was associated with scallops. Echinoderms were the dominant group in the community: Ophiactis asperula, Ophiacanta vivipara, Ophiuroglypha lymani, Sterechinus agasszii, Austrocidaris canaliculata, Cosmasterias lurida, Ctenodiscus australis, Psolus patagonicus and Psudocmus dubiosus leoninus but the sponge, Tedania sp. and anemone, Actinostola crassicornis were also important with sponges alone, frequently representing up to 30% of the biomass. The biomass of scallops and bycatch as well as the relative abundance of epibionts on scallops, differed between areas. The study provides a baseline of the undisturbed condition of natural communities. It will permit the analysis of structural changes due to fishing since commercial fishing started in 1996. A fuller list of bycatch species (Bremec & Lasta 2002) is given in Table 1. Scallop shells themselves are settlement surfaces both for scallops and other epibionts. Schetiter & Bremec (2007) found 41 taxa occurred as epibionts on scallop shells and concluded that the dominant scallop population provided important ecosystem services, enhancing recruitment of many species by providing settlement surfaces, as well increasing habitat complexity and providing shelter for many mobile species.

All these studies of the benthic community have been based on bycatch samples either of commercial trawls or of the dredge used in annual biomass surveys. In 2006 the bycatch of the standard dredge used for biomass surveys and a smaller less selective Picard dredge were compared at two sites along the Shelf Break Front (Sanchez et al., 2011). The bycatch from 16 tows of the scallop dredge contained 61 species, 11 of which were only caught with this gear. The bycatch of 7 tows by the Picard dredge contained 123 species. This figure grossly underestimates real numbers of benthic species as bryozoans, hydrozoans and porifera, major groups that sum up to nearly 60 species, were recorded as a single taxon in this study (Sanchez et al. 2011). These data have revealed a significant portion of the benthic community that is important in production, as well as in its diversity, and that will probably have major impacts on ecosystem services.

Because of the predominance of bycatch in the scallop trawl fishery, procedures were instituted from inception of the fishery, to ameliorate damage to the organisms, returning them to the sea expeditiously to mitigate subsequent mortality. Invertebrate bycatch is sorted alive from the scallop catch in a slowly revolving drum in which the bycatch is cushioned in water and it is returned to the sea in that water flow within 30 minutes of landing. The survival of these bycatch organisms has not been comprehensively tested in experiments. Echinoderms form the major group returned to the sea in this fishery and although they are not exposed to the air or sunlight for any length of time, the experience of high mortalities such echinoderms returned to the sea suffer in a Nephrops fishery (Bergmann & Moore 2001), highlights the importance of carrying out such tests. Apart testing the survival of discarded bycatch directly, its survival can be assessed from the lack of change in bycatch biomass and diversity (reflecting lack of change in the benthic habitat) both in scientific sampling and in the fishery itself.

One of the managment measures adopted from the inception of the scallop fishery was the setting aside of reserve areas in every managment unit as a way to maintain reproductive aggregations (Lasta & Bremec 1998). These reserves also maintain areas free of disturbance from fishing providing control areas to monitor changes due to fishing in the same unit. Schejter et al., (2008) analysed the bycatch in 1998, 2001 and 2002 from 94 tows from the fished area of Reclutas bed compared with 23

tows from the unfished reserve area on this bed. Four invertebrate taxa, *Austrocidaris canaliculata*, *Cosmasterias Ctenodiscus australis*, and Porifera contribute more than 40% to the biomass of the SIMPER analysis of the community assemblage. Eight other taxa, *Ophiactis asperula*, *Ophiocanta vivipara*, *Liboclaea granaria*, *Actinostola crassicornis*, *Fusitriton magellanicus*, *Calyptraster* sp., *Flabellum* sp. and Volutidae contribute approximately 70% to the biomass. Benthic assemblages and species richness in both areas were similar. Comparison of taxa richness, scallop biomass, bycatch biomass, multivariate analyses, and Brey-Curtis similarity index between fished and unfished areas failed to establish any significance in differences (Schejter et al., (2008). Similar sampling on Reclutas bed in 2007 does show a significance decrease in bycatch biomass in fished areas between 1995 and 2007 as well as significant differences in species composition with higher biomasses of fragile sessile organisms, sponges tunicates and sea urchins in the unfished area compared to the fished area (Escolar et al., (2011). Sampling problems and lack of power in statistical testing have made this method of investigting the effects of fishing on benthic habitat difficult.

The other source of information on the state of the benthic habitat is gathered and recorded by the INIDEP Observers following their established protocols. On Board observers have estimated and weighed major groups of the bycatch in every tow landed by the fishery since its inception. In 2003, INIDEP developed an identification guide illustrating the most commonly caught species to help observers in this task (Bremec et al., 2003). Since the beginning of the fishery, observers have also taken a 10L sample of bycatch from one tow randomly each day and frozen it for later identification at INIDEP. All these data await comprehensive analysis and testing to reveal trends in the bycatch of the fishery. These data have the advantage of masuring change more directly and consistently but will require the development of statistical methods for their analyses.

# b. <u>The retained, bycatch and endangered, threatened or protected (ETP) species including their status</u> and relevant management history.

No bycatch is retained as the scallop fishery is pursued outside the distribution of commercially important finfish. Although the ecosystem in the area of the fishery does not support any fin fisheries, it does provide habitat for juveniles of a number of finfish which are caught in small numbers but not retained. The Argentinian National Action Plan – Sharks, identifies a number of at risk species and juveniles of one of these species (a ray, *Dipterus chilensis*) is ocassionaly captured by the fishery. The numbers and species of fish caught are recorded by On Board Observers in every tow and returned to sea immediately.

Seabirds are common inshore along the coastal fronts where there is major production of pelagic fish. Scallops are no longer fished along these fronts because of their poor meat quality. Seabirds are rare along the Shelf Break Front where diatoms dominate algal production resulting in there being no pelagic fish here. The strong bentho-pelagic coupling along the Shelf Break Front results in major benthic production of suspension feeding invertebrates alone. The Argentinian National Action Plan: - Seabirds, identifies species that are at risk. All seabirds encountered during fishing are recorded by the Observers.

c. <u>Specific constraints, e.g. details of any undesirable bycatch species, their conservation status and</u> <u>measures taken to reduce this as appropriate.</u>

There are no undesirable bycatch species. All bycatch species are considered important parts of the benthic habitat and are returned to the seafloor alive.

d. Details of any critical environments or sources of concern and actions required to address them.

There are no sensitive environments in the area of the fishery.

PORIFERA	Pagurus comptus White, 1847
Callyspongia sp.	Pagurus gaudichaudi H. Milne Edwards, 1836
Tedania sp	Europodius letreillei Guérin 1828
Ionhon sp	Libinia spiosa Milne Edwards 1934
Axinella sp	Libidoclaea granaria Milne Edwards & Lucas 1842
COFLENTERATA	Peltarion spinosulum (White 1843)
Sertularia sp	FCHINODERMATA
Hydrozoa	Psolus patagonicus (Ekman 1925)
Alevoium sp	Pseudocnus dubiosus leoninus (Semper 1868)
Sphinteractis sp	Hemiodema spectabilis (Ludwig, 1882)
Chorwactis sp.	Austrocidaris canaliculata (A Agassiz 1863)
Actinostola crassicornis (Hertwig 1882)	Arbacia dufresnei (Blainville 1825)
Pennatulacea	Pseudechinus magellanicus (Philippi 1857)
Flabellum sp	Starachinus agassizii Mortensen 1910
POI VCHAETA	Ctanodiscus australis Lüt ken 1871
Chaptonterus varionedatus (Renier, 1807)	Astropactan brasiliansis Müller & Troschel 1800
Anhrodita longicornis Kinberg 1855	Cycethra varrucosa (Philippi 1857)
Eunica argantiansis (Treadwall 1020)	Holiastor sp
Eunice urgentiensis (fileadwein, 1929)	Caluttraster vitraus Pornessoni 1071
Idanthursus armatus Kinberg, 1867	Hannicia obasa (Stade, 1880)
Saballidaa	Diplastorias brandti (Doll 1881)
Sabellidae	Cosmasterias Iruida (Dell, 1881)
Serpuid nurconensis Balld, 1805	Labidiastar radiosus Lütken 1871
PRVOZOA	Corgonogenhalus ghilensis (Dhilinni 1858)
DR I UZUA Membraninoridae	Amphiodia planisping (von Mortons, 1867)
Porella sp	Onhiwaghunha liman (Liungman, 1870)
<i>r orenu</i> sp.	Ophiacanta vivinara Liungmon 1870)
Ascopiora Druczce unid	Ophiactis aspanda (Dhilippi, 1870)
	TUNICATA
Magallania vanosa (Solondor, 1786)	Didommum cp
Tarabratalla dorsala (Gmelin 1780)	Molaula sp.
MOLLUSCA	Molgulu sp. Culeolus sp
Calliostoma consimilis (Smith 1881)	Assidiacea 1
Photinula coerulescens (King 1831)	Ascidiacea 2
Calvetraca pileolus (d'Orbigny 1841)	Ascidiacea 3
Argobuccinum magallanicum (Chempitz, 1788)	Ascidiacea A
Murar clanchi Carcelles 1953	Ascidiacea 5
Buccinidae (unidentified)	Ascidiacea 5
Chynthautria sp	
Dippineuriu sp.	
Odontocymbiola magallanica Gmolin 1701	
Volvaring patagonica (Mortens, 1881)	
Admote magallanica Strebel 1005	
Chaetonlaura isabellai (d'Orbigny, 1841)	
Zugochlamus natagonica (King & Prodorin 1822)	
Mytilus adulis platansis d'Orbiony 1846	
Aulacomya atay atay (Molipo, 1782)	
Hiatella solida Sowerby 1824	
PICNOGONIDA	
Callinallenidae	
CRUSIACEA Ornatoscalpallum sp	
Amphinode	
Ampinpoua Savalis salastai Liit Isan 1959	
Jeonode	
isopoda	

### Table 2. List of taxa collected in the Zygochlamys patagonica beds during 1995 in the Argentine Sea.

#### 3.5.Principle Three: Management System Background

#### a. <u>Area of operation of the fishery and under which jurisdiction it falls</u>

The fishery considered for certification is solely within the Argentine Continental Shelf, between the latitudes 36° 45' to 48° SL and the longitudes 54° 20' to 65° 20' WL, in waters approximately 60-120 meters deep, between the northern boundary with Uruguay and a line drawn between the Malvinas Islands and Tierra del Fuego in the south. The fishery is entirely within the Argentine Economic Exclusive Zone, mainly in a 50 Km wide area following the shelf break front.

Although the distribution of Patagonian Scallop includes the Uruguayan Continental Shelf, this is a very minor portion of no commercial importance because scallops are at a low density there. In 2002 Argentina and Uruguay agreed that the resource was a sedentary. Thus one of the clauses of the TRPFM was applicable and the vessels of one country could not operate (fish) over resources which are located exclusively on the Continental Shelf of the other. After this agreement was reached in January 2003, only the Argentinean scallop fleet operates on ZCPAU.

#### b. Particulars of the recognised groups with interests in the fishery

The assessment team identified a number of organizations and or people to contact and meet in order to properly evaluate the research and management activities associated with the Patagonian Scallop Fishery. They included:

• Glaciar Pesquera S.A. – Scallop Fishing Company

• Wanchese Argentina S.A. – Scallop Fishing Company

• Subsecreatría de Pesca y Acuacultura (SSPyA - Undersecretary of Fisheries and Aquaculture) – Fisheries National Enforcement Authority

• Consejo Federal Pesquero (CFP - Federal Fisheries Council)

• Chancellery – Foreign Affairs Agency

**Secretaría de Ambiente y desarrollo Sustentable (SAyDS -** *Secretary of Enviroment and Suitable Development*) – Environment Argentine Agency.

• **Prefectura Naval Argentina** (**PNA** - Argentine Coast Guard): Responsible for control of fishing vessels to prevent fishing within prohibited areas.

• Instituto Nacional de Investigación y Desarrollo Pesquero (INIDEP - National Institute of Fisheries Research)

• Centro Nacional Patagónico (CENPAT) – Research Institute

• Universidad Nacional del Mar del Plata (UNMdP - National University of Mar del Plata)

• Fundación Vida Silvestre Argentina (FVSA – NGO Environment Foundation)

• Centro en Defensa de la Pesca (CEDEPESCA - NGO Environment Foundation)

• Cámara de la Industria Pesquera Argentina (CAIPA – Fisheries Enterprise Chamber)

• Sindicato de Obreros Marítimos Unidos (SOMU - Maritime Workers Union).

c. <u>Details of consultations leading to the formulation of the management plan</u>

It is a new fishery (15 years old), with its technical development led by the scientific personal of INIDEP supported by the CFP, and the two fishing companies. As a result of their study a management system for the resource has been developed that has proved robust.

Several surveys between 1973 and 1989, reported the presence of *Z. patagonica* in Argentine waters. Fishing Research Vessel (FRV) *Prof. Sieldlecki (1973)*, FRV "*Walter Herwing*" (1978 and 1979), FRV "*Shinkay Maru*" (1978) and Fishing Vessel (FV) "*Sea Bay Alpha*" (1989) have described exploitable concentrations along the Continental Shelf.

Uruguayan commercial vessels explored the resource in Uruguayan waters between 1991 and 1993, but they found only small concentration of scallops.

In the early 1990s, the diminution of scallop catches in established fisheries around the world led to an increasing international demand for scallop meats so that the value of all scallops increased and the Argentinean resource was re-evaluated.

During 1995, the FV "*Erin Bruce*", was authorized by the Argentine Government to develop a fishery research program directed by the Federal Government. Throughout that year, 15 surveys were made on the Continental Shelf. The Argentine Government approved two fishery projects for the exploitation of Patagonian Scallop presented by Glaciar Pesquera S.A. and Wanchese Argentina S.A. each company operating two vessels in Resolution ex SAGPyA N°19 dated on 28 December 1995, The Secretaría de Agricultura, Ganadería, Pesca y Alimentación (SAGPyA) (*Secretary of Agriculture, Livestock, Fisheries and Food*) promulgated Resolution ex SAGPyA N° 150/96 dated on March 1996, which established legal regulations to ensure that the Patagonian scallop fishery was developed in a way that followed scientific advice. This resolution also established the basic principles of the Management Plan that was implemented in March 1999 (Direccion Nacional de Pesca Disposition N° 17/1999) structured for 4 years + 1. Two Management Units were defined: "North", between  $36^{\circ} 45^{\circ} - 39^{\circ} 30^{\circ} SL$ , and "South", between  $39^{\circ} 30^{\circ} - 43^{\circ} 30^{\circ} SL$ .

The Management Plan was revised in Resolutions CFP N° 4/2005, 9/2006 and 4/2008, that created 15 Management Units. It was proposed by INIDEP to the CFP, which has the legal and administrative authority to approve it. The SSPyA has the legal responsibility to implement the Management Plan.

d. <u>Arrangements for on-going consultations with interest groups.</u>

INIDEP (<u>www.inidep.edu.ar</u>) regularly updates the research program to obtain information and knowledge to revise the Management System. I.e, see Resolution INIDEP N° 133/2010. Law N° 24.922 recognizes that scientific data can also be provided by other research institutions.

The CFP (<u>www.cfp.gob.ar</u>) makes their minutes (Acts)Resolutions, technical reports and other documents received public. It also regularly convenes researchers or interest groups to get technical advice before making decisions reporting the details in their minutes. Similar meetings within the Undersecretary of Fisheries and Aquaculture dealing with the scallop fishery are reported in less detailed minutes.

The Management Plan for the Patagonian Scallop fishery (Resolution CFP N° 4/08, article 15) created a Commission for Analysis and Monitoring of this fishery. It consists of 2 representatives of INIDEP, 2 representatives of the Application Authority, and 1 representative for each of the companies licensed for the exploitation of Patagonian scallop. This Commission has legal force as an advisory body and must meet as minimum every 3 months, recording minutes summarizing the issues discussed during its meetings and providing its conclusions to the CFP.

Law 24922 specifically establishes restrictions, such as closed areas or seasons must be given widespread coverage and must be communicated adequately in advance to fishermen and to the proper authorities of control, surveillance and monitoring (Article 19 of Fisheries Law 24922). This law requires that regulations made under it can be clearly understood by all interested parties and are based on sound reasoning:

- a. Facts and antecedents that gave rise to the measures.
- b. Topioc Regulated.
- c. Purpose of measures and the reasons for their establishment.
- d. Objective of the measures, showing that these are proportional and adequate.
An Honorary Consultant Commission at the CFP does exist (Article 10° of the federal Fisheries Law and Resolution CFP N° 7/2004), composed of all the associations business and workers that exist in the country, and is used to advise on all matters related to fishing activities. The CFP and the Secretaría de Ambiente y Desarrollo Sustentable (Secretary of Environment and Sustainable Development) also promote stakeholders meetings on specific issues. In such cases specific stakeholders are encouraged to participate depending on their interest and expertise.

Decisions based on technical advice or consultation process are expressed throw CFP, MINAGRI or SSPyA regulations. Management of the fishery is adjusted and revised as a result of the consultation process.

Law 25831/2003 establishes the free access of the public to all information on these consultations.

e. <u>Details of non-fishery users or activities</u>, which could affect the fishery, and arrangements for liaison and co-ordination

The Assessment team didn't identify any non-fisheries users or activities affecting the fishery.

f. <u>Details of the decision-making process or processes, including the recognised participants</u>

# INSTITUTIONS DEALING WITH THE FISHERIES AND ECOSYSTEM MANAGEMENT, CONTROL AND ENFORCEMENT AT INTERNATIONAL LEVEL

# F.1.1 TECHNICAL COMMISSION OF RIO DE LA PLATA RIVER AND ITS MARITIME FRONT TREATY

The Rio de la Plata River and its Maritime Front Treaty creates, through the article 73°, an Uruguayan - Argentinean Common Fishing Zone (ZCPAU), delineated by two curve lines traced at 200 nautical miles from both parts of Rio de la Plata river mouth, and excluding 12 nautical miles from the coast in each country (Territorial Sea) (see Figure 20). The decision making authority (Administrative Authority) is the Mix Technical Commission of Maritime Front (CTMFM) created by Treaty's article 80°, while Enforcement Authorities are different national administration offices of each country, depending on the matter of concern (fishing, navigation, contamination, trade, etc.).



Figure 20: Extracted from CTMFM web page. Source: <u>http://ctmfm.org/</u> with access April 10, 2011

The CTMFM is responsible for establishing all fisheries regulation in the ZCPAU for those resourses inhabiting it. The Commission consists of 5 members and 3 advisors from each country. The members for Argentinaare drawn from the Ministry of Foreign, International Trade and Religious Affairs, and the fisheries administration. The Argentinean advisors include a representative from the fisheries private sector.

Although the distribution of the Patagonian Scallop includes the Uruguayan Continental Shelf, this is in a very minor portion of no commercial importance because scallops occur at low density here. In 2002 Argentina and Uruguay agreed (Art. 77 of CONVEMAR) that the resource was sedentary. Thus one of the clauses of the TRPFM was applicable so the vessels of one country could not operate (fish) over resources which are located exclusively on the Continental Shelf of the other. After this agreement was reached in January 2003, only the Argentinean scallop fleet operated on ZCPAU.

# F.2 INSTITUTIONS DEALING WITH THE FISHERIES AND ECOSYSTEM MANAGEMENT, CONTROL AND ENFORCEMENT AT FEDERAL LEVEL

# F.2.1 MINISTERIO DE AGRICULTURA GANADERIA Y PESCA (MINAGRI) (MINISTRY OF AGRICULTURE, LIVESTOCK AND FISHERIES)

The Ministerio de Agricultura Ganadería y Pesca (MINAGRI - Ministry of Agriculture, Livestock and Fisheries) is the Argentine Government's national fishing agency and is responsible for the implementation of the national fishing legislation and resolutions promulgated by the Consejo Federal Pesquero (CFP).

Some of its responsibilities, as specified in the Law 24.922 (Article 7° of the Law), are:

#### ARTICLE 7°:

The Ministerio de Agricultura Ganadería y Pesca (Enforcement Authority) shall:

- a) Conduct and execute the national fisheries policy, regulating the exploitation, control and research;
- b) Conduct and execute the objectives of the technical and scientific investigation of the fishing resources;
- c) Control the maximum licensed catch by species established by the CFP and issue the quotas of annual catch per vessel, per species, per fishing zone and per type of fleet, Issue the licenses for fishing, with prior authorization of the CFP;
- d) Calculate the available surplus and establish, with the prior CFP's approval, the restrictions related to closed areas or seasons;
- e) Establish, with prior authorization of the CFP, the requirements or conditions vessels and fishing companies must fulfill in order to conduct the approved fishing activity;
- f) Establish the methods and techniques of catching, and specification of prohibited equipment and nets, etc., with the advice of the National Institute of Fisheries Research and Development (INIDEP), and according to the fisheries policy established by the CFP
- g) Impose penalties following the rules of infringement and record all infractions under the present Act and, inform the CFP of the penalties applied
- h) Develop and maintain statistical systems for the fishery, recording all fishing activity;
- i) Take part in bilateral or multilateral international negotiations of fisheries within the national fisheries policy;
- j) Establish regulations for the fishing record created by this Act;
- k) Collect the catching fees established by the CFP;
- 1) Intervene in the granting of the benefitsobtained from promotion per sector, granted or to be granted to the fisheries sector;
- m) Intervene in the investment plans requiring or counting on specific international financing entities and/or having been granted or waitingto be granted to the Argentine Republic, pursuant to the criteria determined along with the CFP;
- n) Issue authorization for experimental fishing with prior approval of the CFP;
- establish and implement necessary and sufficient control systems to really determine the catch in the territorial sea and the exclusive economic zone and the catch unloaded in authorized Argentine ports, along with the fulfillment and truthfulness of the affidavits of catching;
- p) Carry out national campaigns in order to promote the consumption of marine live resources, as well as missions abroad in order to promote the commercialization of the the national fisheries industry's products;
- q) Exercise all the faculties and responsibilities that the Ministry is hereby granted.

To meet its mission MINAGRI includes the Secretaría de Agricultura, Ganadería y Pesca (SAGyP) (*Secretary of Agriculture, Livestock and Fisheries*) and the SUbsecretaría de Pesca y Acuicultura (SSPyA) (*Undersecretary of Fisheries and Aquaculture*) agencies, on which it has delegated its same functions. The SSPyA operates through the Dirección Nacional de Coordinacion Pesquera (*National Direction for Fisheries Coordination*), the Dirección de Planificación Pesquera (*National Direction of Fisheries Planning*), and the Dirección de Acuicultura (*Aquaculture Direction*), all of which are

composed byseveral Departments. MINAGRI also includes two operating decentralized agencies dealing with fisheries: the Instituto Nacional de Investigacion y Desarrollo Pesquero (INIDEP) (*National Fisheries Research and Development Institute*) and the Servicio Nacional de Sanidad Animal (SENASA) (*National Health Service and Food Quality*).

MINAGRI receives support from the Navy and Costal Guard, and has cooperative agreements with both entities to control fisheries activities. The National Fisheries Fund (FONAPE) gives financial support to the Costal Guard and Navy, which collaborate in controlling fisheries activities within the argentine EEZ (see Figure 21).



Figure 21: MINAGRI organization chart.

F.2.1.1 SECRETARÍA DE AGRICULTURA, GANADERIA Y PESCA (SAGYP) (SECRETARY OF AGRICULTURE LIVESTOCK AND FISHERIES)

Under the new federal fisheries law, SAGyP, through its Subsecretaría de Pesca y Acuicultura (SSPyA - *Undersecretary of Fisheries and Aquaculture*), is responsible for conducting and executing the national fisheries policy established by the Consejo Federal Pesquero. SAGyP is required to conduct and execute scientific and technical research objectives and needs, control total allowable catches (TAC) by species, issue quotas according to the guidelines set by the Council, collect royalties determined by the Council, establish and implement control systems to determine catches in the territorial sea, EEZ, monitor landings in authorized ports, set penalties, establish an enforcement regime, check the accuracy of fishing reports and promote the consumption of national seafood products both domestically and internationally.

The SSPyA has four main executive agencies: a) the Dirección Nacional de Coordinacion Pesquera (*National Directorate of Fisheries Coordination*), to which the División Acuicultura (*Aquaculture Division*), the Administración Pesquera (*Fisheries Administration*) and División de Control y Fiscalización (*Surveillance Division*) reports. The Fisheries Administration and Surveillance Division is in charge of fisheries management and regulation, surveillance, monitoring and enforcement; b) the Direccion Nacional de Planificación Pesquera (*National Fisheries Planning Directorate*), which deals

with statistics, sectorial analysis, fisheries strategic planning and seafood promotions; c) the Dirección de Normativa Pesquera (*Direction of Fisheries Regulations*), which is in charge of regulations sanctions and enforcement; and d) the Aquaculture Division, with a staff of five people directly involve, is responsible for promoting the sustainable development of aquaculture, designing guidelines and policies and providing legal and technical advice.

The SSPyA has a permanent staff of 155 people and a contracted staff of 102 people, not taking in account the on board inspectors and observers, who provide most of the technical expertise (see Figure 22).

Since 1997 it has implemented and maintained an on board inspectors programme charged with monitoring all fishing operations.



Figure 22: SAGPyA organization chart. Source: Administrative Decision N° 175/2010

# DECREE 571/2008: SAGyP Missions and Functions

- a) Develop and implement plans, programs and policies for the production, marketing, technology, quality and health of agriculture, fisheries, forestry and agribusiness, coordinating and reconciling the interests of the national government, provinces and various subsectors.
- b) Promote the use and conservation of natural resources for agricultural production, fruit and vegetable, livestock, forestry and fisheries in order to increase the country's productive capital and the sector's economic development.
- c) Track production, national and international markets and programs, projects and activities under their purview.
- d) Monitor the actions of the decentralized sector agencies in order to assess their performance and provide feedback processes of policy formulation and decision making.
- e) Define the policies regarding the development, promotion, product quality and health, industrial or not, food consumption of animal or vegetable.
- f) Coordinate activities with the different regions of the country to decentralize the implementation of the jurisdiction's policies and facilitate integration with different sectors of agricultural endeavour, agro-forestry, food, fisheries and aquaculture.
- g) Implementation of policies for promotion, development and financing of agricultural activities, livestock and forestry, ensuring the sustainability of natural resources.

- h) Monitoring programs, projects and activities of the Instituto Nacional de Tecnología Agraria (INTA) (*National Agricultural Technology Institute*), the Instituto Nacional de Semillas (*National Seeds Institute*), the Instituto Nacional de INvestigación y Desarrollo Pesquero (INIDEP) (*National Research Institute and Fisheries Development*), the Servicio Nacional de Sanidad Animal (SENASA) (*National Health Service and Food Quality*), the Instituto Nacional del Vino (*National Wine Institute*) and evaluate their performance.
- i) Proposing and implementing policy development and regulation of fisheries and aquaculture, as well as industrialization, commercialization and transportation of their products.
- j) Developing bilateral agreements and/or multilateral agreements that enable better management, conservation and resource management, including high seas and take part in international negotiations in which topics of interest for the activity.
- k) Study the factors affecting the development of food production, their trends, both, national and international by proposing those global or sector measures, which drive the development that allow such activity.
- 1) Propose and implement policies for development, promotion, product quality and bio safety for food consumption, animal and/or vegetable, industrialized or not.

# F.2.1.1.1 SUBSECRETARIA DE PESCA Y ACUICULTURA (SSPYA - UNDERSECRETARY OF FISHERIES AND AQUACULTURE)

Within SAGyP, the SSPyA has three main fisheries dependant offices created by Decree 373/2007: DIrección Nacinal de Coordinación Pesquera (National Direction for Fisheries Coordination), Dirección Nacional de Planificación Pesquera (National Fisheries Planning Directorate), and Dirección de Normativa Pesquera (Direction of Fisheries Regulations).



Figure 23: SSPyA organization chart. Source Resolution MINAGRI 395/2010

**DECREE 373/2007:** Subsecretaría de Pesca y Acuicultura (SSPyA - Undersecretary of Fisheries and Aquaculture) Missions and Functions

- a) Propose and implement, within the framework of Law No. 24,922, its amendments and supplementary national fisheries policy for the effective protection of national interests related to marine fisheries and the sustainability of fisheries activities in pursuit of maximum development compatible with the rational use of living marine resources.
- b) Propose and implement policies to manage inland fisheries.

- c) Promote the development of aquaculture as farming activity and the exploitation of aquatic species.
- d) Coordinate with national and provincial authorities for the management actions, protection and cultivation of living aquatic resources, aimed at their long term conservation.
- e) Assist in the provision of benefits from sectorial promotion or grant awarded to fisheries and aquaculture.
- f) Intervene in all matters relating to health policy relating to fishing.
- g) Participate in negotiations on setting the tax and customs policies and foreign trade linked to the fisheries sector, in coordination with relevant agencies.
- h) Coordinate work related to the operation of the Register of Fisheries, in accordance with the provisions of Law No. 24,922 and other records of the area.
- i) Grant fishing permits, after CFP approbal.
- j) Assist in approving the transfer of licenses between vessels fishing within the framework of established norms.
- k) Propose or provide, as appropriate, the suspension of fishing permits, the immediate arrival to port and any other action deemed necessary, where the law defines as serious violations and penalties resulting from infringement proceedings concerning current regulations.
- Propose to the Consejo Federal Pesquero the stablishment of reserved or closed areas or seasons, based on specific technical reports.
- m) Propose to the Consejo Federal Pesquero the requirements or conditions vessels and fishing companies must fulfil while carrying out the fishing activity, including the catching methods and techniques, as well as the forbidden equipment and fishing gears, under the advice of INIDEP.
- n) Colaborate on controling catches and Cuotas.
- Assit the Secretary of Agriculture, Livestock and Fisheries on international negotiations related to fisheries interest matters, working towards extending activity areas for the national fishing fleet and improving the living aquatic resources' management, including offshore.
- p) Propose measures to regulate the exploitation activities, culture, monitoring and research carried out on living aquatic resources in all subject areas under national jurisdiction and on the marine resources of migratory species in the area adjacent to the Exclusive Economic Zone or resources belonging to the same population or populations of species associated with those habitating the Exclusive Economic Zone.
- q) To be involved in review of the development of environmentally sound industrial processes that promote the maximization of value added and increased use of labour in Argentina.
- r) Propose and implement measures to regulate the transport and documentation requirements for the transit of fisheries and aquaculture products.
- s) Propose policy adjustments on fisheries and aquaculture, which are necessary to manage them.
- t) Approve and propose the dissemination of information produced in the area, through means deemed appropriate.
- u) Attend to the Ministerio de Agricultura Ganadería y Pesca (*Ministry of Agriculture, Livestock and Fisheries*) in the coordination of relations between the INIDEP and the Federal Administration.

F.2.1.1.1.1 DIRECCION NACIONAL DE COORDINACION PESQUERA (NATIONAL DIRECTION OF FISHERIES COORDINATION): PRIMARY RESPONSIBILITY

#### **DECREE 373/2007:**

Understand the control and management of fishing activities within the framework of the existing legislation and manage the Registry of Fisheries.

Actions:

- *a)* To oversee the commercial fishing activities at the national level.
- b) Drive the action of decentralised delegations (Port Districts Offices).
- c) Coordinate the actions of internal bodies and update the Fisheries Register.
- d) Raise the proposed issuance of fishing permits.
- e) Raise the proposed transfer of fishing permits and/or catch quotas by species.
- f) Aprove Assess requests to make changes in the authoriced vessels.
- g) Analyze the requests made on fishing permits, fishing vessels and fisheries related activities.
- h) Asses on the approval of requests for authorization of experimental fishing projects.
- i) Coordinate the tasks of monitoring and control of compliance with the allowable catch by species, established by the CFP, as well as for Individual Transferable Quotas Capture, and Catch Authorizations, assigned to each ship.
- j) Oversee the preparation and development of marine fisheries data systems, coordinating its sanctions with the National Fisheries Planning directorate.
- k) Monitor follow-up accreditation of fines, tariffs, duties and payment plans, and intimate in case of default.
- 1) Coordinate with the bodies of the security forces and the armed forces, which collaborate with the SSPyA on fisheries control and monitoring tasks.
- m) Evaluate the alleged violations of the rules governing fisheries activities in order to substantiate relevant summaries and propose the corresponding measures in each case.
- n) Monitor compliance with the sanctions.
- o) Propose the dissemination of information on fisheries activities in national jurisdiction.

# F.2.1.1.1.2 DIRECCION NACIONAL DE PLANIFICACIÓN PESQUERA (NATIONAL DIRECTION OF FISHERIES PLANING): PRIMARY RESPONSIBILITY

#### **DECREE 373/2007:**

Integrate scientific and technical information facilitating the decision-making for management measures, management and expansion of the sector, to be implemented, in the short, medium and long term, developing permanent fishing statistical systems.

Actions:

- a) Coordinate the analysis of financial projections and estimates in order to predict possible future scenarios, to improve the designing of policies in the area.
- b) Coordinate the preparation of periodic situation reports about fisheries and aquaculture within local and international contexts and related economic activities.
- c) Coordinate analysis of information on fishing activities developed by the Direccion Nacional de Coordinacion Pesquera and scientific and technical information provided by the INIDEP in order to project all those management measures to facilitate the receipt of fishing resources.

- d) Supervise the work of reconciling the information analyzed and the instruments proposed, based on these design models and future scenarios indicating the financial and budgetary requirements for effective compliance.
- e) Understand the development and proposed management measures aimed at strengthening the sustainable use of marine fishing resources and their habitats.
- f) Coordinate actions with related areas of provincial governments in order to promote joint actions regardinginland fisheries.
- g) Stablish relations with public or private, national or international organisms related to the sector's thematic in order to exchange technical information, and advise on the country's position during technical forums.
- h) Understand the proposed plans, programs and projects developed based on the analysis of socio-economic data in order to minimize undesirable effects and/or ensure the efficient implementation of national policies on fisheries and aquaculture.
- i) Advise on the desirability of carrying out programs and/or research projects for the development of fisheries and aquaculture.
- j) Understand, in the context of an integrated fisheries management, the development and proposed management measures for the conservation of biological diversity at different levels, as a contribution to the maintenance of essential processes in the fisheries ecosystems.
- k) Coordinate the activities carried out in the Centro Nacional de Acuacultura (CENADAC) (*National Aquaculture Development Centre*) and other centres run by the SSPyA.
- Promote relations with international institutions associated with fisheries management (Joint Technical Commission of the waterfront, Atlantic Fisheries Commission of Southern Organization of the United Nations Food and Agriculture, International Council for the Exploration of the Sea, Oceanographic Commission International Commission for the Management of Antarctic Marine Living Resources, International Commission for the Conservation of Atlantic Tuna, NGOs, etc.) for which agreements and/or arrangements exist.
- m) Participate in advisory committees on the operation of specific fisheries.
- n) Promote relations with other units of the National State-related issues of interest to the area.
- o) Process the information produced in the area and propose its dissemination through means deemed appropriate.

F.2.1.1.1.3 DIRECCION DE NORMATIVA PESQUERA (DIRECTION OF FISHERIES REGULATIONS): PRIMARY RESPONSIBILITY

#### **DECREE 373/2007:**

Assist in everything related to the harmonization, alignment and implementation of the regulations rulling fisheries and aquaculture, proposing appropriate action.

#### Actions:

- a) Advise on the regulatory body which regulates the activities of the SSPyA.
- b) Develop and propose policy instruments to facilitate the effective implementation of institutional goals of SSPyA.
- c) Organize and implement the Fisheries Regulations Digest and update it as appropriate.
- d) Organize and implement the International Fisheries Law File and serve its updating.

- e) Develop and propose policy adjustments on fishing activities which are necessary in order to improve fisheries managment and, if appropriate, suggest the intervention of the Consejo Federal Pesquero.
- f) Propose actions which are necessary in order to safeguard the National interests regarding fishing.
- g) Elaborate pertinent technical reports, trades answering proposals and administrative acts.

# F.2.2 SERVICIO NACIONAL DE SANIDAD ANIMAL (SENASA) (ANIMAL HEALTH AND FOOD SAFETY SERVICE)

SENASA is an autonomous body responsible for the supervision and control of animal's and plant products' health. Its objectives are: To understand the inspection, certification and registration of food products elaborated from animals and plants, overseeing their health, hygiene and labeling, harmonizing and verifying regulations and agreements with third countries compliacense. Consecuently, it shall adhere to the recommendations of international bodies and other official services of international prestige.

In the fisheries sector, SENASA supervises compliance with hygienic sanitation procedures for manufacturing, transportation, packaging and marketing of products for domestic consumption and exportation. It also ensures the quality of marine food products.

# F.2.3 CONSEJO FEDERAL PESQUERO (CFP)

The CFP is a Federal Entity which is not dependent on either the Federal Government or the Provincial Governments and, according with Law 24.922, is integrated as follows (Article 8° of the Law):

#### ARTICLE 8°:

The Consejo Federal Pesquero is hereby created, and shall be composed of:

- 1. One representative for each province with maritime coast;
- 2. The Secretaría de Pesca (Secretary of Fisheries) (actual MINAGRI);
- 3. One representative for the Secretaría de Ambient y Desarrollo Sustentabke (*Secretary of Environment and Sustainable Development*);
- 4. One representative for the Ministerio de Relaciones Exteriores y Culto (*Ministry of Foreign Affairs, International Trade and Cult*);
- 5. Two representatives designated by the Poder Ejecutivo Nacional (National Executive Power);

The Secretaría de Pesca shall preside it. All the members of the Council shall have only one vote. A qualified majority shall adopt the resolutions.

The primary responsibilities of the CFP are (Article 9° of the Law):

#### ARTICLE 9°:

The Consejo Federal Pesquero shall:

- a) Establish the national fisheries policy;
- b) Establish the fisheries research policy;
- c) Establish the Total Allowable Catch per species, bearing in mind the maximum sustainable production of each of them according to data provided by the INIDEP. Furthermore, establish the quotas of annual catch per vessel, per species, per fishing zones and per type of fleet;
- d) Approve the licenses for commercial and experimental fishing;
- e) Advise the SSPyA in matters of international negotiation;
- f) Plan the national fisheries development;
- g) Fix the guidelines of co-participation in the FONAPE;
- h) Pronounce on experimental fishing;
- i) Establish the catching fees and fix canons for the practice of fishing;
- Modify the distribution percentages of the FONAPE established in the sub section e) of article 45 of the present Act;
- k) Rule on the practice of the artisanal fleet establishing a reserve of the fishing quota for the different species assigned to this sector;
- 1) Establish the items to be considered by the CFP which require a qualified majority in the voting of its members;
- m) Promulgate its own functioning regulations, which shall be approved by the affirmative vote of the two thirds of its members.

In addition to the responsibilities mentioned above, the CFP shares several others with the Management Authority (MINAGRI), which are specified in most of the articles on the Law 24.922. The CFP has an Advisory Commission integrated by all fishing unions and labor forces (Federal Fishing Law, Article 10°).

The new federal fisheries law establishes the Consejo Federal Pesquero as the main body governing national fisheries policy. The ex SAGPyA holding the presidency of the Council delegated this function to the SSPyA (Federal Decree N° 748/1999 and ex SAGPyA Resolution N° 27/2003).

# F.2.3.1 CFP INTERNAL RULES: RESOLUTION CFP N°16/2009

The Consejo Federal Pesquero is authorized to issue its own rules of operation (Article 8° of Law No. 24.922).

#### F.2.3.1.1 FACULTIES OF THE CFP TO REGULATE FISHING OPERATIONS

#### **CHAPTER I:** *Duties and Incumbencies*

**SECTIONS 1** - The incumbencies of the Consejo Federal Pesquero are under Law N° 24.922

They must also be submitted to the vote of the Council:

- a) The adoption of the budget prior to the start of the annual budgetary exercise;
- b) The amendments to these rules and issues that arise regarding its interpretation;
- c) Matters raised by the President of the Council for the Enforcement Authority or by the members it comprises;
- d) The creation of technical and administrative bodies, advisory, working committees and the appointment and removal of its members, a task that may be delegated to the President;

- e) The approval of its meeting schedule;
- f) Any other matter on the Agenda; and
- g) The monitoring and control measures related to the Council's budgetary and administrative management.

# **ARTICLE 2°:** *About the Presidency*

In accordance with Article 8 of Law No. 24.922 and Decree No. 214, dated February 23, 1998, the ex SAGPyA (actual MINAGRI) holds the Presidency of the CFP.

## **ARTICLE 3°:** *The assignations and duties of the CFP's President:*

- a) Chair the meetings. Shall delegate its exercise to another member in case of absence or disability. In the absence of delegation, Council members will elect a Chair ad hoc;
- b) Call and summon the meetings, communicating the Agenda;
- c) Open, manage and close the Council's meetings in accordance with this Regulation, or move to adjourn;
- d) Cast a vote and announce the results of the vote;
- e) Propose the inclusion of topics on the agenda, by himself or at the request of Council members;
- f) To authenticate all acts, instructions and procedures of the Consejo Federal Pesquero with his signature;
- g) Decide regarding the operation and functioninf of technical and administrative organizational structure of the Council and dispose, within the budget approved by the Panel, the funds allocated;
- h) Appoint and remove, in accordance with decisions reached by the Council, the members of the technical and administrative organs of the Council;
- i) Prepare the annual budget proposal and administer the CFP; and
- j) Submit for consideration by the CFP the results of the administrative and financial management of funds at the end of each year.

#### **ARTICLE 4°:** *About the Members*

The members have the following duties and assignations:

- a) Attend meetings of the Council participating in the discussion of the agenda and casting their vote;
- b) To negotiate on behalf of the CFP and with the parties represented, and timely provision the Council with information, records, data and other required documents; and
- c) Seek the assistance of a deputy when prevented from attending meetings.

# ARTICLE 5°:

Each member of the CFP will adopt the necessary measures to ensure the normal functioning of the Council and carry out the functions assigned by Law No. 24.922.

# ARTICLE 6°:

Integration of the CFP members shall become effective from the date of submission of the relevant legal instrument of appointment issued by the competent authorities under Article 8 of Law No. 24.922.

For the purpose of enabling the continuos presence of members of the Council in all its meetings, they may have up to TWO (2) alternates appointed by the same authority.

The appointment of members will remain valid until the Council has received certified notice of revocation and/or modification.

During the session, each member may consult collaborators, who have neither voice nor vote .

#### ARTICLE 7°:

The exercise of the members' functions shall be "pro bono." However, members may receive travel expenses, per diem and/or compensation for the exercise of its functions in accordance with rules established by the current.

#### CHAPTER II: Address

#### ARTICLE 8°:

The headquarters of the CFP is at Avenida Paseo Colón N ° 922, First Floor, Room 102, Federal Capital.

#### CHAPTER III: About the Consejo Federal Pesquero meetings

#### ARTICLE 9°:

The Council shall meet valid with the presence of seven (7) members, at the time stipulated in the notice of the meeting. After an hour, it can operate validly in the presence of SIX (6) of its members. If such number is not reached a date for a new meeting will be set through its President, or at least three present members.

#### ARTICLE 10°:

The CFP express its will through resolutions or through their Minutes, when the affirmative vote of its members is mandatory for the emission of a legal act carried out by the Enforcement Authority.

#### ARTICLE 11°:

The following decisions or amendments require an affirmative vote of TWO-THIRDS (2/3) of its members:

- a) The internal CFP's regulations;
- b) The CFP's budget and balance;
- c) The matters governed by Article 27 of Law 24.922 (ITQs); and
- d) Fisheries projects aprobal.

Other decisions to be taken by the Board shall become valid by the affirmative vote of TWO-THIRDS (2/3) of the members present.

# ARTICLE 12°:

The Board will make at least twelve (12) regular or special meetings per year. Special sessions will be held when convened by its President, or at the request of at least two (2) of its members.

Council meetings may be conducted at its headquarters or at any of the provinces with coastline, should be aware of it in the respective call.

## ARTICLE 13°:

Will be communicated reliably to all members with four (4) calendar days prior to regular meetings, and five (5) days in the case of extraordinary meetings.

The call is accompanied by the agenda and copies of the necessary materials.

# F.2.4 SECRETARIA DE AMBIENTE Y DESARROLLO SUTENTABLE (SAYDS) (SECRETARY OF ENVIRONMENT AND SUSTAINABLE DEVELOPMENT)

The Secretariat mandate is to assist the Argentine President in all areas concerning the preservation and restoration of environment and conservation of renewable resources in order to achieve a healthy environment apt for human development as mandated by Article 41 of the Argentine Constitution. The Secretariat has four Sub-secretariats: Subsecretaria de Planificacion y Politica Ambiental (*Undersecretary of Planning and Environment Policies*), Subsecretaria de Coordinacion de Politicas Ambientales (*Undersecretary of and Environment Policies Coordination*), Subsecretaria de Promocion del Desarrollo Sustentable (*Undersecretary of Sustainable Development Promotion*), Subsecretaria de Control y Fiscalizacion Ambiental y Prevencion de la contaminación (*Undersecretary of Environmental Control and Fiscalization and Pollution Prevention*). Within the Subsecretaria de Promocion del Desarrollo Sustentable (*Undersecretary of Sustainable Development Promotion*) (*Undersecretary of Environmental Control and Fiscalization and Pollution Prevention*). Within the Subsecretaria de Promocion del Desarrollo Sustentable (*Undersecretary of Sustainable Development Promotion*), is primarily involved in marine fisheries issues.

The SAyDS has an important formal role in setting fisheries' policy, as it is part of the CFP. In addition to their participation in fisheries conservation management issues within the CFP, the SAyDS is involved in in-land fisheries, coastal zone, biodiversity and wetland issues. One of the areas of main interest within their biodiversity initiative is the preservation of marine fauna, in particular birds, reptiles and marine mammals. The SAyDS is working on reducing the incidental catch of marine birds by fishing gear, especially long lines.

#### F.3 FISHERIES RESEARCH INSTITUTIONS

# F.3.1 INSTITUTO NACIONAL DE INVESTIGACION Y DESARROLLO PESQUERO (INIDEP) (NATIONAL INSTITUTE FOR FISHERIES RESEARCH AND DEVELOPMENT )

INIDEP is a decentralized body under the Ministerio de Agricultura Ganadería y Pesca (MINAGRI - *Ministry of Agriculture, Livestock and Fisheries*), created by Law N°. 21.673 of October 21, 1977, whose roles and functions in the research field were set forth in the Act, defining institutional objectives and responsibilities and essential actions for each of its directorates, were set out by Decree N° 1.187, dated June 20, 1991, as amended by similar N° 2.837 of December 29, 1992, Decree N°. 1.458 of December 13, 1996 and Law No. 24.922 (Federal Fisheries Act) of January 12, 1998.

Under current legislation the INIDEP's research program generates and adapts knowledge, information, methods and technology for development, utilization and conservation of fisheries in Argentina. INIDEP is the only organization in the country that fully embraces the scientific, technological and economic indispensable for the implementation and development of national fisheries policy. INIDEP has recently adjusted its goals and activities to adapt its actions to the profound changes in the fisheries sector and its legal context and to prepare strategically to changesknown to occur in the near future. Therefore, it has carried out intense activity in several aspects related to fisheries research, such as relating with institutions and countries which are related to fact or law to renewable resources of the South Atlantic.

Due to the demand, it is necessary to count with precise information about the most important ressource's abundancy, in order to be able to exploit different fishing alternatives and ensure that every sector responsible for the fisheries' control and operation receives the necessary information timely

INIDEP provides a set of goods and services. As a result of the above, During last years there has been a significant increase on the requirements of institutional advice by following institutions: MINAGRI, CFP, SSPyA, Joint Technical Committee Maritime Front and Advisory Committees to the Rio del Plata and Uruguay River, Departamento de Malvinas y Atlantico Sud (*Department of Malvinas and South Atlantic*), the Ministrerio de Reslaciones Exteriores y Culto (Ministry of Foreign Affairs and Cult), Honorable camara de Diputados (*Honourable Chamber of Deputies*), SENASA, International Commission Conservation of Atlantic Tunas, PNA, along with business chambers and companies in the sector.

The Institute coordinates the implementation of the Programme Board Observer. It depends directly on the conduct of SAGyP and participates in CFP's meetings, although does not participate on the voting. INIDEP's staff is around 337 people, 48 of who belong to other institutions (8 from the Universidad de Mar del Plata, 29 from CONICET, and other 11 are hired through other agencies). INIDEP has 87 researchers, 49 technicians, and 88 people in administration, services and research support and 65 people, both on board and in land researchers, to operate the fishing vessels(source: http://www.inidep.edu.ar/home.htm (human resources), with access on july 24, 2011).

Institutional objectives and goals:

- a) To generate and adapt knowledge, information, methods and technology for the development, utilization and conservation of the Argentine fisheries in coastal, continental shelf, and oceanic (mile 201) and continental waters;
- b) To establish economic technical bases which permit the fisheries' conservation and sustainable management and contribute to increase the benefits obtained from the aquatic living resources; and
- c) To adapt it's functioning to the deep changes which have occurred in the fishing sector and its legal context, and to satisfy the increased demand of scientific and technical knowledge

required for the sustainable management and use of Argentine fishing resources and those shared with other countries.

The fundamental aspect by which the objectives mentioned above are met has been the oceanographic-fishing research surveys carried out with the three national research vessels belonging to INIDEP. The sustained use of these vessels (each with unique characteristics) in Argentina since 1993 has permitted adequate and timely prospecting of the Argentine Continental Shelf and Slope, including the surrounding waters of the Malvinas Islands and South Georgia Islands.

In hierarchical order, the lines of action to meet the goals are:

- 1. Re-equipment and preparation of the research vessels to guarantee they are fully operative and available, and increase its research capacities in deep oceanic and sub-Antarctic waters;
- 2. Annual status evaluation of all fishing resources (freshwater, coastal, continental shelf and adjacent oceanic resources) and their associated environments;
- 3. Prediction of the future tendencies in the evolution of the resources and interpretation of the causes for its fluctuations, based on the results of the annual evaluations;
- 4. To adequately advise and report scientific information in a timely manner with its associated uncertainty levels to management authorities, the fishing sector, other users and clients;
- 5. Encourage research to develop alternative fisheries in order to compensate for the decreases in capture from traditional resources;
- 6. Improve and developfishing methods, fishing gears and new products and technological processes;
- 7. Develop and adapt aquaculture technologies for commercially interesting marine and freshwater organisms;
- 8. Purchase information and knowledge in order to economically evaluate the fisheries, fishing resources and coastal marine biodiversity:
- 9. To increase the number of studies which permit the identification of management units;
- 10. To provide technical support in order to implement Individual Transferable Quota management systems;
- 11. To strengthen the activity of the On Board Observer Program on commercial vessels and sampling of landings, in order to fulfill the new fishing requirements; and
- 12. To establish INIDEP as a regional training center for oceanographic and fishing research, thus creating opportunity for participation and exchange of knowledge between the various scientific-technological sectors in Latin America which deal with fishing resource assessment problems, through a Seminar on Methods for the Assessment and Monitoring of Fishing Resources, with the technical cooperation of Japan and the assistance of JICA (Japan International Cooperation Agency).

INIDEP has five main research areas: demersal resources program, inland water program, pelagic and invertebrate fisheries program, marine environment program and the technology and information program. The demersal program assesses the health of many commercially important stocks (hake, croaker, stripped white fish, hoki, southern blue whiting and kingclip, among others) and provides scientific advice for their conservation and management. The inland waters program studies the impact of damming activities, primarily in the Río de la Plata basin. The pelagic and invertebrate fisheries program assesses the state of squid, shrimp, king and soft shell crab and anchovy stocks to provide timely management information and advice. The marine environment program focuses on red tides and the understanding of coupling between environmental fluctuations and population changes.

Lastly, the technology and information program conducts research on acoustic technology, gear selectivity and snapper aquaculture and conducts dockside and open-sea sampling (i.e., size and age structure). INIDEP has also a small economic unit, which works closely with the National University of Mar del Plata, among other institutions.

# F.3.2 CENTRO DE INVESTIGACION DE TECNOLOGIA PESQUERA Y ALIMENTOS REGIONALES (CITEP) (RESEARCH CENTRE FOR FISHING TECHNOLOGY AND REGIONAL FOODS)

CITEP was created in 1975 by an agreement between the Instituto Nacional de Tecnologia Industrial (INTI) (*National Institute of Industrial Technology*), the Comisión de Investigaciones Cientificas (CIC) (*Scientific Research Commission of Buenos Aires Province*) and the Consejo de Investigaciones Cientificas y Técnicas (CONICET) (*National Council for Scientific and Technical Research*). CITEP is mainly devoted to the post-harvest aspects of fish utilization. The goal of CITEP is to improve the quality of foodstuffs and the efficiency and competitiveness of the production processes. CITEP's research is funded by several provincial, national and international organizations, including CIC, CONICET, FAO and the European Union.

# F.4 FOREIGN AFFAIRS AND FISHERIES

# F.4.1 MINISTERIO DE RELACIONES EXTERIORES (MINISTRY OF FOREIGN, INTERNATIONAL TRADE AND RELIGIOUS AFFAIRS)

The Ministry of Foreign Affairs fulfils two major roles in the fisheries sector. It is responsible for developing foreign policy in Argentina's EEZ and adjoining regions, and for fostering the fisheries sector through international economic relationships. In the foreign policy arena, the Undersecretary for Foreign Policy, the Malvinas Bureau and the Legal Advisory Office play an instrumental role in developing policies that promote the interests of the fisheries sector. For instance, under the sovereignty "umbrella," Argentina and the United Kingdom advanced the protection of South Atlantic marine living resources by establishing the South Atlantic Fisheries Commission in 1990. The Ministry also participates in many international discussions and negotiations. Recently it has participated in the United Nations Conference of Straddling Fish Stocks and Highly Migratory Fish Stocks and the Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas. The Ministry also acts in the Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR).

Argentina takes part in two international commissions related to the conservation and wise use of fisheries resources: the Joint Technical Commission for Maritime Front (CTMFM) and the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR).

The CTMFM is a Argentine-Uruguayan commission, with powers related to the conservation of fishing resources in the waters of the Common Fishing Zone between Argentina and Uruguay (AUCFZ), established by the Treaty of Rio de la Plata and its Maritime Front including, inter alia, establish the limits of catches by species, promote the conduct of joint studies and research, establish standards and measures for the rational exploitation of species in the area of common interest, etc.

Argentina, as party to the CCAMLR, implements the decisions taken by the Commission through the mechanisms established by Law No. 25.263, which sets the Collection System Marine Living Resources in the Area of Implementation of the Convention. The scheme provides a penalty

system for violation of the law. In this context, Argentina has adopted since 2000 the Catch Documentation Scheme to monitor landings and trade of tooth fish.

In addition to participation in the committees aforementioned, Argentina takes part in various intergovernmental treaties:

• Convention on International Trade in Endangered Species of Fauna and Flora (CITES). Approved by Law 22.344 (1982).

• Convention on Migratory Species, also known as CMS or Bonn Convention. Approved by Law 23.918 (1991)

• Convention on Wetlands of International Importance. Approved by Law 23.919 (1991).

• International Convention for the Prevention of Pollution from Ships. Approved by Law 24.089 (1992).

• Convention on Biological Diversity. Approved by Law 24.375 (1994).

• United Nations Convention on the Law of the Sea (UNCLOS). Approved by Law 24.543 (1995).

• Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas (Compliance Agreement). Approved by Law 24.608 (1996).

• Agreement on the Implementation of the Provisions of the United Nations Convention on the Development of the Sea –10 December 1982-, relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks. Approved by Law 25.290 (2000)

• Conservation of Albatrosses and Petrels. Approved by Law 26.107 (2006).

Regarding non-binding international instruments, Argentina endorsed the Code of Conduct for Responsible Fisheries and adopted a National Action Plan to Prevent, Deter and Eliminate the Illegal, Unreported and Unregulated Fishing (IUU PAN), the National Action Plan for the Conservation and Management of Chondrichthyes (Res CFP N 6/2009) and the National Action Plan for the Conservation and Management of the Bird in Argentina (RES CFP N 15/2010).

#### g. Objectives for the fishery

The Federal Fishing Law 24922 (Article 1°) establishes that Argentina will foment the practice of maritime fishing in order to accophlish a maximum development compatible with the rational exploitation of living marine resources, will promote the effective protection of national interests related to fishing and the fishing activity's sustainability, the long-term conservation of the resources, the development of industrial processes environmentally appropriate to reach the maximum *added* value and the maximum argentine employment. These minimal premises must be complied by all fisheries in Argentine waters.

The concept of Maximum Sustainable Yield (MSY) included in Law 24922 is expressed in the Article 8° of its Regulatory Decree N° 748/1999: " It must be understood as Maximum Sustainable Yield (MSY) of an species, the maximum biomass that can be captured annually without affecting its conservation".

Additionally, other sections of the Federal Fisheries Law 24922 are led to preventing excesses on exploitation and favor the sustainable utilization of fishery resources:

- a. Article 17°, by prescribing that fishing in the whole Argentine maritime jurisdiction will be subjected to restrictions established with the objective of avoiding exploitation excesses.
- b. Article 21°, by banning every method, technique, equipment and fishing gear that may cause damage on the live aquatic resources.

c. Article 22°, by referring to the organization and maintenance of a fishing regulation within the Economic Exclusive Zone, establishing measures for organization and conservation directed to the rationalization of the exploitation and insurance of the conservation of resources.

Article 37°, related to the access to the fishing activity in the maritime areas under Argentine jurisdiction to fishing vessels with foreign flags. This articles indicates that determination of the capture fishing capacity by the Argentine fleet in order to estimate the available biomass for foreign fleets, could only be done considering biologic features of the exploited resource, and not considering normal cyclic reductions on fishing activity due to specific situations or extraordinary events that could have affected the operation of a particular fleet.

Incorporating an adaptive criterion, both operational and long-term measures were implemented on Patagonian Scallop Fishery. The first ones are in connection with annual survey results, like openclosed areas and establishment of a Total Allowable Catch (TAC) by each Managemment Unit. The long-term measures are:

- (i) minimum legal size was set at 55 mm of .total height (3-4 years).
- (ii) no fishing season imposed.
- (iii) fishing effort fixed at four vessels (two per company).
- (iv) TAC: harvest rate was fixed at no more than 0.4 of lowest or mid biomass, determination from those particular areas inside a given management unit in which biomass density is equal or superior of 10 tons per square kilometer.
- (v) obligatory discard of free living juveniles at the place of capture.
- (vi) establishment of no taken zones for research and reproductive proposes, which are around 5.4 % of total areaalready defined as management units (Resolution CFP N° 5/2009).
- (vii) creation of a government private Technical Fisheries Advisor Commission.

Long-term political objective on rational exploitation, stocks productivity protection, social and inter generation equinity and species conservation, are explicitly referenced in all relevant legislation and same precautionary approach is included in technical recommendations.

Additionally, management measures such as minimum catch length, authorized gear, on board inspectors and/or observers, landings control, electronic daily logbook, VMS, on board video cameras, etc., are already taken and some of them have been in practice since several years ago.

Incentives to rational exploitation have been introduced by means of the Catch Authorization system.

The precautionary approach is established by the Argentine fisheries legislation by means of the prescriptions present in Article  $17^{\circ}$  of the Federal Fisheries Law 24922, which establishes that "Fishing activity throughout all maritime areas under Argentine jurisdiction, will be subjected to restrictions set by the Consejo Federal Pesquero for the conservation of resources, in order to avoid excesses of exploitation and prevent damages over the environment and the ecological system unit. Issues related to the conservation of fisheries resources can be also found in Articles  $1^{\circ}$ ,  $21^{\circ}$  and  $27^{\circ}$  of the Federal Fisheries Law 24922 and in Articles  $1^{\circ}$  and  $12^{\circ}$  of its Regulatory Decree 748/1999. As well, the precautionary approach is explicitly contemplated in Article  $5^{\circ}$  of Resolution CFP N° 14/2008, through the establishment of an Administration Reserve when providing the Authorization of Captures (see also Act CFP N° 48/2007).

The precautionary approach is also present in the stock assessment models and in the technical recommendations for a biologically acceptable capture, as a result of the uncertainty surrounding recruitment of new individuals. TAC for each management unit are established at 0.4 of lowest or mid biomass determination from those particular areas inside a given management unit in which biomass density is equal or superior of 10 tons per square kilometer (see INIDEP Technical Report N° 10 and 11/2010 and 4/2011, among others).

Provision on ecosystem related aspects are also considered by the Management Plan, establishing low impact gears habilitated (article 3° of Resolution CFP N° 4/2008) and the obligatory discard of by catch species immediately and with the less damage as possible.

Data collection of environmental aspects of the fishery during fishing operations is carried out by an on board observers program (see data collection onboard observer's protocol on Anex 2 of present report). As well, the data analysis and conclusions are carried out by the INIDEP scallops research program (see Resolution INIDEP N° 133/2010 - INIDEP: Program Bentic Molusc, page 182), which estates the objectives of Scallop and associated species research objectives

Objectives for marine bird's protection are established in the National Action Plan for Birds (Consejo Federal Pesquero Resolution 15/2010).

Objectives for Chondrichthyes protection are established in the National Action Plan for Chondrichthyes (Consejo Federal Pesquero Resolution 6/2009).

The federal Law 25577/2002 protects Cetaceans from any kind of intentional catch. Federal Law 25052/1998 and its complementary Decree N° 598/2003 prohibit catch and commercialization of Killer Whale (*Orcinus orca*).

The Consejo Federal Pesquero also regulates, by means of its Resolution N° 3/2001, the data collection and analysis of birds, reptiles and mammals bycatch during fishing activities.

No more clear objectives for mammal's protection still exist but there is in the stakeholders consulting process the National Action Plan for Marine Mammals Protection.

#### h. Outline the fleet types or fishing categories participating in the fishery.

The fishery is operated by four factory vessels (two from each company), working 24 hours per day, throughout the year. Glaciar Pesquera S.A. has the bigger vessels with higher horse power and higher fishing capacity. Each of Wanchese Argentina S.A.'s vessels have about 2.000 horse power in the main engine, while Glaciar Pesquera S.A.'s vessels have 3.000 and 5.400. The vessels (45-59 m long) perform between 6 and 13 trips/year. The duration of fishing trips ranges between 20 and 55 days. Each vessel operates with two otter trawl nets with booms and makes 40-60 tows/day/net. The nets used by Wanchese Argentina S.A. are 16 mts. long whilst Glaciar Pesquera S.A.'s are 22 mts. long. The average towing time is 15 minutes. The catch is processed mechanically on board. The fishing gear is claimed to be non-selective. Its efficiency was estimated to range between 21 – 31 % (Lasta and Iribarne, 1997). A limited experiment by Lasta and Bremec (1997) offers direct evidence of the lack of size selectivity, even though the gear mesh sizes have been increased from 80 mm to the current 120 mm.

The catch, composed by scallops, other benthic invertebrates and shell hash, is mechanically processed on board as described in section 3.2 b (Overview of the fishery – Fishing Practices).

# i. Details of those individuals or groups granted rights of access to the fishery, and particulars of the nature of those rights.

The Argentine Government by means of Resolution ex-SAGPyA N° 150/96 in 1996 authorized fishing of Patagonian Scallop to 4 factory vessels belonging to 2 Argentine registered companies. In essence, the Argentine Government established a legal regulation in order to ensure that the fishery is developed in a way that follows scientific advice. This resolution also established basic principles for the Management Plan which was signed on March 1999 (Disposition SSPyA N° 17/1999) and reedited by Resolutions CFP N° 4/2005, 9/2006 and 4/2008. Up to the last one, (Resolution CFP N°

4/2008) which was sanctioned without any programmed revision, as is frecuent in argentine legal framework, all Management Plans developed have been set for a duration of 5 years, to be developed and sanctioned again for other 5 years, including recommended improvements by the Research system and or by the Follow up Commission.

Accordingly, the SAGPyA, as the Enforcement Authority of Federal Fishery Law, acting on the scientific advice of INIDEP, has always rejected the application of new entrants and the Consejo Federal Pesquero (CFP) has declared itself in support of these decisions.

There are no other interest groups with fishing or customary rights on the fishery

j. Description of the measures agreed upon for the regulation of fishing in order to meet the objectives within a specified period. These may include general and specific measures, precautionary measures, contingency plans, mechanisms for emergency decisions, etc.

#### J.1 LEGAL FRAMEWORK

#### J.1.1 CONSTITUTION AND ENVIRONMENTAL NORMS

Argentina is a Federal Republic. The National Constitution (of 1853 with various reforms, the latest in 1994), delineates a federal structure of government, with three branches of power: Executive, Legislative, and Judiciary. These three branches are interrelated through a complex system of checks and balances.

The country has 23 provinces and an autonomous city (City of Buenos Aires, capital of the Republic). Although the National Constitution delineates a federal model and a division of power, real political practice has been one of very marked centralism and a very strong Executive power, to the detriment of other branches. It should be said that has not been the same in the case of fishing activities, due to the existence of a Federal Organism: the Consejo Federal Pesquero.

The federal structure of Argentina divides powers and responsibilities between the Federal Government and the provinces. Traditionally, under Article 121 of the National Constitution, all powers not specifically delegated to the Federal Government are reserved to the provinces.

Argentina has, in the 1990s, carried out numerous normative changes in order to bring its legislation up-to-date, as well as to accompany structural economic reforms. The main comprehensive change has been the Constitutional Reform of 1994. This reformation imbeds at the constitutional level the "right to a healthy environment . . .". Also, a new specific division of legislative responsibilities between the Federal Government and the provinces has beenfurther created. The Constitution states that:

"All the inhabitants have the right to a healthy environment.... productive activities should satisfy the current necessities without compromising those of future generations ... "

"Authorities should provide protection of this right, the rational utilization of natural resources, the preservation ... of biological diversity...."

Nevertheless, although the normative changes introduce principles of sustainable development to the National Constitution, several different jurisdictions and rights over natural resources compete. For example, navigation activities and international trade as well as inter-provincial trade fall under federal jurisdiction (Article 67 inc. 13). On the other hand, the 1994 Constitutional Reform incorporated a new definition over resource dominion, where it is stated that provinces have "original dominion of its natural resources" (Article 124) existing in their jurisdiction (12 nautical miles from the sea coast).

Adhesion is a legislative and juridical practice whereby a province voluntarily takes on a national law ratified by the Legislative Power for their own jurisdiction. Environmental issues *per se*, not being a delegated jurisdiction, mean that provinces must legislate over these specific matters within their borders. Many provinces have environmental issues enshrined in provincial constitutions (particularly those constitutions that have been recently reformed); most of them have enacted environmental laws or laws which contain partial environmental aspects, and/or have environmental dependencies within their executive branches.

Argentina also has a general comprehensive Federal Environment Law and in the case of fisheries, there are particular norms which, however, do not adequately converge all the important frameworks related to the environment. The Federal Environment Council does not deal with fisheries environmental matters, except when fisheries interact with mammals, birds or marine reptiles.

# J.1.2 BACKGROUND TO THE FEDERAL FISHERIES LAW

In 1966, through Federal Law 17094, Argentina declared its sovereignty over the maritime 200 nautical miles offshore. Federal Law 17500/1967 establishes measures to promote the fisheries activities. Federal Law 18502/1969 establishes the provincial jurisdiction to be within 3 nautical miles offshore while federal waters remain to be the 200 nautical miles offshore, excluding provincial jurisdiction.

In 1971 it was promulgated Federal Law 19000 to promote patagonian port activities. It established exemptions, reductions and differential taxes to production concreted and exported from Colorado River to the south. Federal Law 20136/1973 restricted fishing practices within the Argentinean Economic Exclusive Zone exclusively to Argentinean vessels.

In 1973 the Rio de la Plata River and its Maritime Front Treaty was signed by Uruguay and Argentine Republics, establishing a Common Fishing Zone (ZCPAU) of 200 nautical miles from each point of the Rio de la Plata river's mouth. The Treaty was ratified by Law 20.645/1974.

In 1979 it was established that fishing licences should be given previous approval of a project presented to the Federal Undersecretary of Fisheries and Aquaculture. Later in 1982, in absence of a Federal Fisheries Law, Federal Decree 1533/82 established norms for obtaining fishing licences. This was later modified by the Federal Decree 945/86, creating a restricting licence type which allowed only certain species to be fished.

Federal Decree 2236/91 substituted Decree 945/86 and regulated federal fisheries until 1997; it was complemented, inter alia, with Resolution of the ex-Secretaria de Aagricultura, Ganadería, Pesca y Alimentos (*ex-Secretariat of Agriculture, Livestock, Fisheries and Food*) (ex-SAGPyA) N° 245/91.

The decree determined the way to obtain a fishing licence and established that the fishing licences could be unrestricted, excluding some species, for all areas or limited to a specific area. Those licences could be transferred under the conditions established by that decree. It also established the obligatory landing of catch in Argentinean port, with some exceptions, as well as the obligation to inform the catches. The complete legal system also requires a compressive project approval in order to obtain fishing licenses and anticipates how to regulate conservation measures like closed areas, fishing gears, TAC for each species, among others.

In 1995 the Convention for the SEA Rights (CONVEMAR) was ratified. This established a juridical regime including the definition of the territorial Sea, Adjacent Zone and the Exclusive Economic Zone (EEZ). Privileges and responsibilities for the coastal countries were established, related to the exploitation and conservation of the fishing resources under their jurisdiction. Being an international treaty, it has a superior juridical status than regular Laws: constitutional status (Reform Convention 1994).

The fishing Industry had claimed for a Fisheries Law, which regulated fisheries activities, for 30 years. The Federal Fisheries Law 24.922 accomplishes that hope.

The Federal Fisheries Law has been the first legislative attempt to include in a comprehensive legal act different elements referred to the exploitation of fishing resources. The Law, its Complementary Decree N° 748/99 and several resolutions and norms dictated by the CFP, the SAGyP and the SSPyA, regulates marine fishing activities in Argentinean jurisdictional waters explicitly referring to very important issues as the creation of a Consejo Federal Pesquero and his private Honorary Advisor Commission; the conservation of the fishing resources; research programmes; coordination of control and enforcement; stating a new administration system based on individual transferable quotas (ITQs); regulation of the foreign fishing vessel activities; fishing fees; infringement's regime; creation of a fisheries register and controlling on board workers; among others. The Federal Fisheries Law specifies all the requirements controlling fishing activities, a regimen of sanctions and the responsibilities of the agencies in charge of its implementation (CFP and MINAGRI).

In its article 1°, the Law states the political framework for fisheries in order to develop a sustainable fishing industry, social and environmentally responsible, fostering the long-term preservation of the resources, favouring the development of environmentally appropriate industrial processes which promote the maximum added value and the employment of Argentine labour.

The articles 3° y 4° consider two jurisdictional and dominion scope over the fishing maritime areas, which correspond to the Nation and to the Provinces with maritime littoral. The live resources inhabiting the domestic waters and the Argentine territorial sea adjacent to their coasts, up to twelve (12) nautical miles measured from the baselines, belong to province dominion, which will exercise this jurisdiction aiming to their exploration, exploitation, conservation and administration. On the other hand, the existing marine living resources in the waters of the argentine EEZ, excluding Continental Sea, belong exclusively to the Nation's dominion and jurisdiction.

Therefore the Argentine Republic, as a coastal state, could adopt conservation measures in its EEZ as in the adjacent area, in the case of the transboundary and highly migrating species or others associated with those present in the EEZ (Article 4°). Law Article 5° determines the application scope of the state's responsibility and includes the fisheries regulation in maritime spaces subject to the national jurisdiction; the coordination of the protection and administration of maritime live resources located both in the national and provincial jurisdiction; the faculty of the National Government authority to limit the access to the fisheries in the marine space under provincial jurisdiction in case of national interest committed to the conservation of one species or a certain resource being declared, based on scientific evidence guaranteeing the imposition of such measure; the regulation of fishing in the adjacent zone to the EEZ related to the migratory resources or those which belong to a same population or to populations associated with the Argentine EEZ; and the regulation of the next fishing activities: processing and transformation, storing, transport and commercialization of fishing products.

Articles 7°, 8°, 9° and 10° clearly define Argentinean Fisheries Authorities, constituted by a Federal Organism, a National Authority (Administrative/Enforcement Authority) and a private advisor commission. Additionally each maritime province has its own fisheries authority and administrative structure.

The CFP's Adviser Commission is integrated by representatives from the different Enterprises Chambers and unions of workers. Even though this commission was formally constituted (Resolutions CFP N° 7/1998 and 7/2004) it is not functioning as expected due to conflict existing between same interest groups.

The main functions of the national fisheries authority (MINAGRI) according to article 7° are: to execute the national fisheries policy, regulating the exploitation, controlling and assuring the adequate enforcement of fisheries regulations. It is also in charge of the fisheries registers and any other operative activity dealing with administration of fisheries, control of catch limits, control of fishing gears, perceiving catching fees and processing and commercialization of marine products. Related to conservation, protection and administration of the fishing resources, the Enforcement Authority could establish different zones and time closed areas; reserve zones and fishing areas delimitation (Law 24.922 article 19°).

The Federal Fisheries Law (24.922) has assigned to INIDEP a high responsibility as technical advisor to CFP and MINAGRI. This confers great importance to their reports in the TAC determinations of the different species and the scientific and assessment research of fishing resources, in order to protect them and obtain the maximum sustainable yield. It also cooperates with province organism in the research duties and experimental fisheries (Articles 11°, 12° and 13°). In addition, Articles 14°, 15° and 16° state that experimental fishing (scientific or exploratory) must be supervised by INIDEP.

Chapter VII, in its Articles 17°, 18°, 19°, 20° and 21°, regulates the faculties of CFP and the national fisheries authority to establish restrictions on fishing, based on the conservation of fishery resources, avoid over-exploitation and prevent harmful effects on environment and ecological system. Such restrictions can be management measures such as establishment of TACs by species and fishing area, closing areas, prohibited gear and fishing methods, control and supervision measures, etc...

The article 22° refers to the preference rights corresponding to the Nation as a Coastal State, related to organizing and sustaining a fishing regulation system in the adjacent zone to the argentine EEZ, referring to the migratory resources or those belonging to a same population or populations of species associated to the ones inhabitating the argentine EEZ.

The fisheries regime established by articles 23°, 24°, 25°, 26°, 27° and 27° bis, is based on fishing licenses allocated for a 10 to 30 years-period and Catch Authorizations or Individual Transferible

Quotas. Transference of catch authorizations is regulated by article 30°, while approval of new projects and fishing licenses is regulated by article 34°.

Fishing licenses authorize vessels to conduct the fishing activity, while Catch Authorizations or Individual Transferible Quotas award the right to capture a percentage of the maximum sustainable catch of a particular species, within a certain zone or stock. Quotas are determined as a percentage of the TAC and are totally or partially transferible, provisory or definitively.

Article 26° establishes the obligation to landing the catch in Argentine ports, article 32° establishes the obligation to declaring catches and article 29° enforces a fishing fee by ton, species and fishing gear.

Other articles regulate issues such as: the Fleet Satellite Monitoring Sytem (art. 33°), exceptions to the reservation of the National Flag vessels (arts. 35° to 38°), crew (art. 39° and 40°), fishing activity registry (41° and 42°), National Fishery Fund (Arts. 43° to 45°), infringement and penalty regime (arts. 46° to 65°) and finally complementary and provisional dispositions (arts. 66° to 75°).

## J.2 SPECIFIC REGULATIONS OF PATAGONIAN SCALLOPS FISHERIES

The only fisheries authorities (Administrative Authority) in the Argentine EEZ are the CFP and the MINAGRI, within the framework of the Federal Fisheries Law 24.922, its Regulatory Federal Decree  $N^{\circ}$  748/1999 and Federal Decrees  $N^{\circ}$  571/2008 and  $N^{\circ}$  373/2007.

In Argentine EEZ the CFP establishes TACs based on INIDEP Technical Report. Last TACs established for all management units are:

Table 3: Patagonian Scallops TACs established: Tons, regulatory act and INIDEP advice. Until 2005, TACs
were established yearly, starting from Jan 1 <sup>st</sup> . Since 2006, they were established annually from May on those
MUs of Northern sector and from July on those MUs of Southern sector.

Veen	TA	AC	CED Desolutions Nº	Informe INIDED	
rear	South Sector	North Sector	CFF Resolutions N <sup>+</sup>	Informe INIDER	
2000	37.800	17.535	01/00	12 and 38/00	
2001	15.000	17.520	9 and 15/01	14/01	
2002	20.534	13.700	8 and 13/02	20, 26 and 77/02	
2003	16.000		18/03	89/03	
2004	20.312		14/04	74/04	
2005	9.459	14045	16/04 and 2/05	38 and 98/05	
2006/07*	5.284	33.897	10, 13 and 14/06	10, 29 and 42/06	
2007/08	22.984	33.934	1 and 3/07 and Minute 14/07	14, 33, 36 and 69/07	
2008/09	6.190	41.878	2, 3 and 18/08	07 and 49/08	
2009/10	43.286	23.754	1, 3 and 11/09	26, 62 and 63/09	
2010/12	55.725	32.142	1, 6and 16/10 and 2/11	27, 11 and 10/10	
2011	45.825	4.270**	6 and 7/11	4, 30 and 31/11	

The CFP establish the national fishery policy and some management operational matters (Federal Fishing Law 24.922, Articles 7°, 9°, 10°, 11°, 14°, 17°, 18°, 21°, 26°, 27°, 28°, 29°, 36°, 40°, 44° y 45°). The Management Plan is proposed by INIDEP to the CFP, who includes the legal and administrative aspects and determines its approval. The Subsecretaría de Pesca y Acuicultura (SSPyA,

MINAGRI) has the responsibility to implement the Management Plan. The first management measures were outlined in 1996 (ex-SAGPyA Resolution N° 150/96), after an experimental research phase. Subsequently, the management plans were maintained with some modifications, up to the current versión:

<u>Resolution CFP N° 04/2008</u>: Establishes a Management Plan with a main objective, which is to maintain the sustainability of the fishery, acording to the following criteria and regulations (http://www.cfp.gov.ar/resoluciones/res04-2008.pdf):

- 1. 14 Management Units are set. (See Figure 24 below).
- 2. An anual TAC for each Management Unit is established in tons of entire commercial-sized scallop.
- 3. If scientific information is not available, a provisional TAC can be established following a precautionary approach.
- 4. Any Management Unit without a setted TAC will not be opened to fishing activity.
- 5. When the TAC is reached, the Management Unit is closed to the fishing activity.
- 6. Catches are estimated over the muscle produced, using a conversion factor of 7,14.
- 7. Catches obtained outside Management Units are not computed on any TAC.
- 8. Authorized vessels must inform daily and electronically to the DNCP the muscle production for each Management Unit in which fishing was conducted. (See Figure 24 below).
- 9. The DNCP will follow up the total catches and inform companies and INIDEP when 90 % of the TAC is reached.
- 10. The CFP may establish fix or mobile closures, seasonaly or spatially, based on scientific reports, for research purposes or conservation of juvenile or reproductive part of the population.
- 11. Capture using nets as fishing gear are allowed.
- 12. According to Federal Fisheries Law 24922 (article 7°), fihsing activity with dregdges can be done exclusively if it is conserved that it cause a minimal impact to the fishing bottoms.
- 13. If any new fibsing area is discovered, the company which made the discovery must communicate it to the DNCP and INIDEP within FIVE (5) days.
- 14. If a new fishing area is found, the CFP stipulate that it mustbe studied, in order to estimate the scallop abundance and to establish the exploitation rules. Vessels will not operate in any new are for more tan 60 consecutive days or until management measures are established for it.
- 15. Minimum size: 55 mm of valve heigh (corresponding to age 3 to 5 years old).
- 16. Compulsary and immediate return to sea of under-sized individuals.
- 17. Compulsary and imediate return to sea of bycatch.
- 18. Closure to fishing activity in areas with more than 50 % of under-sized scallops to the minimum size.
- 19. The fishing effort is fixed to 4 vessels.
- 20. Creation of the Follow-up Commission of the Patagonian Scallop (Zygochlamys patagonica) fishery, composed by 2 representatives of INIDEP, 2 representatives of SSPyA and 1 representative of each of the fishing companies holding a catch authorization for the species, to advise the CFP.
- 21. Each authorized vessel must allow 20 days per year for resarch purposes to INIDEP use and assume thecosts.
- 22. Vessels must take an On board Observer and inspector in every fishing trip.
- 23. Sanctions/Penalty Regime.

Sector	Unidad de Manejo	Vértice	Latitud (S)	Longitud (W)
NORTE	1.1	1	36° 43' 88	54° 41 '86
		2	37° 00' 00	54° 25' 18
		3	38° 00' 00	55° 10' 00
		6	38° 00' 00	56° 00' 00
	4.0	0	30 00 00	50 00 00
	1.2	3	38 00 00	55 10 00
		6	38° 00' 00	56° 00' 00
		4	38° 54' 12	55° 21 '50
		5	38° 54' 12	56° 15' 53
	2	4	38° 54' 12	55° 21 '50
		5	38° 54' 12	56° 15' 53
		7	39° 30' 00	55° 30' 00
		8	39° 30' 00	56° 30' 00
	-	V	00 00 00	50 50 00
Sector	Unidad de Manejo	Vértice.	Latitud	Longitud
		7	39* 30' 00	55° 30' 00
	3	8	39" 30' 00	56° 30' 00
		10	39° 48' 08	55* 48' 36
		9	39° 48' 08	56° 48' 32
	4	10	39° 48' 08 41° 30' 29	55" 48" 36
		12	41° 30' 29	58° 30' 18
	5	11	41° 30' 29	57° 30' 71
	5	13	41 30 23	59" 05* 84
		14	42" 05' 83	58" 06' 12
		15	41° 55' 00	58° 00' 00 59° 05' 84
		14	42" 05' 83	58* 06* 12
	6	16	42* 23 89	58" 24' 32
		16	42" 23' 89	58" 24" 32
	7	17	42" 23' 89	59" 23' 91
		18	42* 53' 86	59° 54' 20
		18	42" 53' 86	59" 54" 20
0.110	8	19	42* 53' 86	58° 54' 49
SUR		20	43* 30' 00	60° 30' 00
		20	43* 30' 00	59° 30' 00
	9	21	43" 30' 00	60" 30' 00
		23	44* 00' 00	59° 30° 00
		22	44* 00' 00	60° 30' 00
	10	23	44* 00' 00	59" 30" 00
	105	25	45° 14' 80	60° 35' 00
		26	45° 30' 00	60° 40' 00
		27	45" 30' 00	61" 00' 00
	11	29	48* 30' 00	61° 00' 00
		30	48° 30' 00	62° 00' 00
		32	47 30 00	62" 00' 00
		33	48* 00' 00	65° 23' 00
	12	34	47* 15' 00	65° 23' 00
		36	45" 30' 00	65" 14" 19
		37	45* 30' 00	64° 00' 00
	1.7	38	42* 30* 00	63° 00' 00
	13	40	44* 30' 00	63° 00' 00
		41	44" 30' 00	64" 30' 00



Figure 24: Management Units in Argentinean EEZ

B/P Atla	antic Surf	111	INFOR	ME DIA	RIO DE C	CAPTUR	<u>RA</u>		Marea	2011-02
Salida Hora	13-Abr-11 21:50			E7A 00-Ene-00	]	Llegada Hora	00-Ene-00 00:00			
Producto	IQF Callos de Zvoochlamve	Vieira Clasifi Patagonica	icados / IQF S	callop Meat G	raded				Semana Total	Marea Total
Lapoore		. augonou	1						TOLA	1014
		DOM	LUN	MAR	MIE	JUE	VIE	SAB	SEM 6	TOTAL
Fecha (dd-mr	m-aa)/Date	15-May-11	16-May-11	17-May-11	18-May-11					
Dias de Nave	avoiatecode	1	0-13011	1	1				1	25.00
Dias de pesci	a /Fishing days	0.90	0.88	0.92	0.75				3.45	26.63
Totai/dia Nav	. Total/Seaday	0,00	0,00	0,00	0,00	0,00	0,00	0,00	7072.50	6671.33
Total/dia Pes	ca - Total/Fishir	9717	7142	6897	9220	0	0	0	8200	11690
40/60		15	16	20	1 156		_		1 216	0
80/100		19	10		1.155				1.215	0143
80/120			15	120	2.325				2.460	50220
120/150		1.620	930	1.410	2.580				6.540	138600
120+									0	0
150+		7.110	5.325	4.785	855				18.075	114330
Total Ko Call	io/Ka Scallons	8 745	6 285	6 345	6.915	0			26 200	311 205
Gantura Brus	a Kos/Green V	62.439	44.875	45.303	49 373	0	0	0	201.991	2 277 646
Banco/Bank		9	9 Y 10	10	10	-			2011001	2.022.040
Lat		43952	44° 03	44°03	44ª45					
Long		60402	60° 02	60*01	60*06					
Lances simple	es/Single Net to	2	1	1	0				4	8
Lances dobles	S/LIQUOIS NOT K	5/	10	79	38				2/4	2091
Velocidad/Pro	medio/AVG St	4.4	4.4	4.5	4.5					
Hempo Pro. o	de Arrastre/AVC	4,4	5,5	8,2	18,2					
Promedio de	llenado de red/	7 1/2	6 1/2	7 2/9	5 2/7					
Minutos de Ar	rrastre/Towing I	767	823	1.223	1.383	0	0	n	4.197	34.044
Kg de Callo/m	nin Kg/min	11,40	7,64	5,19	5,00	0,00	0,00	0,00	6,74	9,14
Horas de Pro	duccion/Produc	21,30	21,00	22,00	00,81	0.00		0.00	82,3	635,1
Kgs callo-non Kgs callo nov	a proa -kgamr lance-Kos/Tow	410,50	41.62	42.58	364,17	0.00	0,00	0,00	393,74	489,42
Dirrection de V	viento/Wind dire	N	N	N	N			0,00	101,10	1-10,0
Velocidad de	Viento/Wind for	1	10	6	4					
Tiempo/Weat	her	Bueno	Bueno	Bueno	Bueno					
Estado del mo	ar -metros/Sea	0	,5	0,5	0					
Demora en Cubia	erts - horaa/Tech i mag (boran)/Tech	0.00000	0:00:00	0.00.00	0:00:00				0:00:00	4:15:00
Horaa en bus	oueda/Searchir	0:30:00	0:00.00	0:00.00	0.00.00				0.00.00	900,00
Perede por ne	avegacion/Stop	0:00:00	1:00:00	0:00.00	4.00.00				5:00:00	101:45:00
Parada por m	al Tiempu/Stop	0:00:00	0:00:00	0:00:00	0:00:00				0:00:00	23:00:00
Parada en Pu	erto/Stop - Sho	0:00:00	0:00:00	0:00:00	0:00:00				0:00:00	0:00:00
Total		0:30:00	1:00:00	0:00:00	4:00:00	0:00:00	0:00:00	0:00:00	5:30:00	147:05:00
Distribucion	de Tamanos/S	ize Distributio	'n							
40/60		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
60/80		0,2%	0,2%	0,5%	16,7%	0.0%	0.0%	0,0%	4,3%	2,6%
80/100		0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
80/120		0,0%	0,2%	1,9%	33,6%	0,0%	0,0%	0.0%	8,7%	16,1%
120/150		18.5%	14,8%	22,2%	37,3%	0,0%	0,0%	0.0%	23,1%	44,5%
150+		81.3%	84.7%	75,4%	12.4%	0.0%	0.0%	0.0%	63.9%	36.7%
150+brown		0,0%	0,0%	U,D%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
		100,0%	100,0%	100,0%	100,0%	0,0%	0,0%	0,0%		
Unidades por libra/Count Per Pound										
40/60					1					
60/80					76,0					
80/100										
80/120			126,0	115,0	104,0					
120/150		139,0	141,0	128,0	138,0					
1501		208.0	221.0	204.0	209.0					
150+brown				2.54,0	200,0					
Total/Overall		193,2	208,4	184,5	125,0	0,0	0,0	0,0		

Figure 25: Example of Digital Daily Patagonian Scallop Production Logbook

Resolution CFP N° 2/2009, created the Management Unit 14 in the southern sector, which is outside the EEZ and is contiguous to the existing fishing grounds within the EEZ. The location of the new management unit is Eastern of the 200 nauticmile line from the base line up to the external limit of the argentine continental shelf., between parallels 45° and 47° S latitude.

The management plan includes not only the measures established in ResolutionCFP 4/2008, but also all regulations in the Federal Fisheries Law 24922 and statuory and complementary regulations. Also, the non taken zones in each Management Unit were established by the CFP in order to research and protect the reproductive capacity of the population and associated communities. .Resolution CFP N° 5/2009, establishes the follwing exclusion areas:

UM	Latitud	Longitud	Area Polígon (km2)	Area Banco (km2)	Area RR (km2)	% Area RR en Banco	
	37°28'00	55°04'00					
11	37°31'00	55°04'00	7 524		25		
1.1	37°31'00	55°01'00	7.534		25	000070	
	37°28'00	55°01'00	1				
	38°27'00 55°37'00						
	38°31'00	55°37'00	1000	2.458		0.000	
1.2	38°31'00	55°41'00	7.661		43	1,75	
	38°27'00	55°41'00	1		1		
	39°20'00	56°00'00	-		-		
	39°20'00	55°52'00	1				
2	39°30'00	55°52'00	5.670	1.893	216	11,41	
	39°30'00	56°00'00	-		1		
	39°44'00	56°13'00	+		+	1	
	39°48'00	56°13'00	-			6,94	
3	39º48'00	56°17'00	2.855	605	42		
	20%44/00	5691700	-		1	1000	
	40%43'00	57900'00	-	-	+		
40%	40°47'00	5700'00					
4	40°47'00	5705'00	15.960		52		
	40°43'00	5705'00	-				
	40 40 00	57 05 00			4		
UM	Latitud	Longitud	Area Polígono (km2)	Area Banco (km2)	Area RR (km2)	% Area RR en Banco	
	41°47'00	58°06'00	5.666	1.856			
- e - [	41°53'00	58°06'00			62	3,32	
° [	41°53'00	58°10'00					
[	41°47'00	58°10'00					
	42°12'00	58°31'00		622	23	3,7	
6	42°15'00	58°31'00	2.877				
× [	42°15'00	58°34'00					
	42°12'00	58°34'00					
ł	42-29'00	59-15.00				2,89	
7	42*33'00	59"15'00	4.525	1,417	41		
ŀ	42*33'00	39-19:00					
	42 29 00	59 19 00		-			
ŀ	43925'00	59'47'00		1.627	40	2,46	
8	42925'00	59 47 00	5.368				
H	43921'00	59943 00					
	43946'00	60904'00					
9	43°52'00	60904'00		2.481	60	2,42	
	43°52'00	60%00'00	4.516				
	43°46'00	60°00'00					
	44940'00	60°13'00		-			
	44-49101			10000			
	44°53'00	60°13'00	100000	10000	1000		
10	44°53'00 44°53'00	60°13'00 60°17'00	13.080	786	39	4,96	
10	44°53'00 44°53'00 44°49'00	60°13'00 60°17'00 60°17'00	13.080	786	39	4,96	
10	44°53'00 44°53'00 44°53'00 44°49'00 48°06'00	60°13'00 60°17'00 60°17'00 61°26'00	13.080	786	39	4,96	
10	44°53'00 44°53'00 44°53'00 44°49'00 48°06'00 48°10'00	60°13'00 60°17'00 60°17'00 60°17'00 61°26'00 61°26'00	13.080	786	39	4,96	

Ubicación de las Areas de Exclusión de la Actividad Pesquera como Reservas Reproductivas (o culos en negro) en las Unidades de Manejo (UM) de vieira patagónica (Zygochlamys patagónica)

13

29.410 27.490

39

\_



Figura 26: No Taken Zones of each Patagonian Scallop Management Unit.

The CFP's policy related to Catch Authorizations is detailed in Acts CFP N° 48/2007 (<u>http://www.cfp.gov.ar/resoluciones/res04-2008.pd</u>) and 27/2008, while the allocation of catches to Patagonian scallop have been made following these criteria and regulations:

Resolution CFP N° 14/2008 (<u>http://www.cfp.gob.ar/resoluciones/res14-2008.pdf</u>): Allocation of Catch Authorizations (CAs) for Patagonian scallop is done in the following manner:

- CAs are conceptually and legally similar to ITQs.
- CAs are established as a percentage of the specie's TAC.
- CAs are allocated for a period of 5 years, from January 1st, 2009.
- Allocation of CAs corresponds to only the 85 % of the TAC.The remaining 15% is an Administration's Reserve.
- CAs are allocated to fishing license holders registered in the appropriate Register of Fishing Activities with catches higher to 2.5 % of the total landings between 2000 and 2007.
- CAs are allocated taking into consideration the historical captures of each vessel and the lack of sanctions.
- A máximum concentration percentage is set for each company or company group, at 40 % of the TAC.

CAs were established as follow:

<u>Fishig Ship</u>	<u>Enterpice</u>	<u>CA</u>
ATLANTIC SURF I	GLACIAR PESQUERA SA	23,26 %
ATLANTIC SURF III	GLACIAR PESQUERA S.A.	<u>17,78 %</u>
MISTER BIG	WANCHESE ARGENTINA S.A.	<u>20,77 %</u>
ERIN BRUCE	WANCHESE ARGENTINA S.A.	<u>18,08 %</u>

By the Act CFP N° 34/2010, dated September 9th, 2010, it was distributed the 15 % of Administrative's Reserve.

Other general regulations applicable to Patagonian Scallop Fishery include:

- Fishing permit requirements (article 23°, 24° and 26° of Law 24922),
- Requirement to hold annual catch entitlement to cover target and bycatch species caught (article 27°, 27° bis and 28° of Law 24922, article 21° of Federal Decree 748/1999 and CFP Resolution N° 04/2008),
- Fishing permit and fishing vessel registers (article 41°, 42° and 71° of Law 24922 and article 14° of Federal Decree 748/1999),
- Vessel Monitoring System (VMS) requirements (article 33° of Law 24922 and Disposition SSPyA N° 2/2003 and 206/2010),
- Vessel and gear marking requirements,
- Fishing gear and method restrictions (article 17° and 21° of Law 24922 and article 3° of Resolution CFP N° 04/2008),
- On board observer or inspectors in all fishing travels (article  $17^{\circ}$  of Resolution CFP N° 04/2008),
- Reporting (including catch and effort reporting) requirements (article 19°, 25° and 32° of Law 24922, article 30° of Federal Decree 748/1999, Resolution ex-SAGPyA 167/2009 and Disposition SSPyA N° 8/2009),
- Electronic log book by haul (SAGyP Resolution N° 167/2009),
- Vessel inspections,

- Control of landings (*e.g.* requirement to land only to licensed fish receivers) (SAGyP Resolution N° 167/2009),
- Record keeping requirements (article 19° of Law 24922),
- Control of transshipment (article 15° and 16°° of Federal Decree 748/1999),
- Information management and intelligence analysis,
- Analysis of catch and effort reporting and comparison with VMS, observer, landing and trade data in order to confirm accuracy (SAGyP Resolution N° 167/2009),
- Boarding and inspection by fisheries officers at sea,
- Aerial and surface surveillance,
- Fishing and gear surveillance by on board video camera recording and transmitting (SSPyA Disposition N° 206/2010 and 1/2011), And
- Legal Catch Certification System (SSPyA Disposition N° 8/2009)

# J.3 Synthesis of Management Legal Framework for the Argentinean Patagonian Scallop Fishery

**TABLE:** Table: Summary of management measures related to current and historical management of the Patagonian Scallop fishery in the Argentine Sea.

#### Federal Decree Nº 4268 / 1968 (July 19, 1968)

• Animal products and by products sanitary regulation.

#### Law 18398 (October 10, 1969) and Law 20325 (May 10, 1973):

Costal Guard Law

#### Law 19.549 (April 03, 1972) and Federal Decrees 1759/72, 101/85 and 1883/91:

• Administrative Procedure of argentine national public administration.

#### Law 22584 (May 12, 1982):

• Approved the Convention on the Conservation of Antarctic Marine Living Resources CCAMLR (CCAMLR in English)

#### Resolution ex-SAGPyA 150 / 1996 (March 19, 1996):

• First Patagonian Scallop Management Plan.

#### Disposition SSPyA 311 / 1997 (September 19, 1997):

• Obligatory Daily On Board Production Logbook.

#### Law 24922 (January 12, 1998):

• Federal Fisheries Law

#### Law 25052 (January 12, 1998):

• Prohibit catch or fishing of killer whale.

#### CFP Resolution 7 / 1998 (July 22, 1998):

• Creates CFP advisory commission.

#### Resolution ex-SAGPyA 17 / 1999 (March 17, 1999):

• Res. 150/96 Management Plan Modification

#### Federal Decree 748 / 1999 (July 14, 1999):

• Regulatory decree of Federal Fisheries Law 24.922

#### CFP Resolution 1 / 2000 (June 14, 2000)

Patagonian Scallop North and South TAC.

#### **CFP Resolution 04 / 2000 (September 30, 2000)**

• Provides that owners of vessels fishing permit in force shall submit an affidavit with the information by a ship or group of vessels if they belonged to the same company or business group, for the purposes of compliance with the provisions of the Act No. 24,922 on the allocation of a catch quota.

#### CFP Resolution 09 / 2001 (May 9, 2001)

• Patagonian Scallop North and South TAC.

#### CFP Resolution 3 / 2001 (April 5, 2001):

• Order INIDEP incidental birds, mammals and marine reptiles catch registering.

#### Law 24470 October 12, 2001

• Adequate Fisheries Law 24.922 on how to punish violations of the Law 24992.

#### Law 25577 (April 11, 2002):

• Prohibit catch or fishing of cetaceans.

#### CFP Resolution 4 / 2002 (June 3, 2002):

• Publicise information submitted by the owners of fishing vessels with permits in place, in compliance with Annex II and III of Resolution N  $^{\circ}$  4 /2000.

• Consider the item in actual investment in the country, Annex IV.1 and IV.2 of the Resolution CFP  $N^{\circ}$  4/2000, the following items: 1 - properties and freezing, 2 – vessels.

#### CFP Resolution 8 / 2002 (June 20, 2002)

• Patagonian Scallop South TAC.

#### CFP Resolution 13 / 2002 (September 26, 2002)

• Patagonian Scallop North MUs TAC.

#### Executive Order 25 / 2003 (May 27, 2003)

• Approval of the Organisation of Implementation of the Centralized Management of the Ministry of Economy and Production, which is included SAGPyA.

#### CFP Resolution 4 / 2003 (June 19, 2003):

•Obligatory discard of sharks more than 160 cm. long.

#### Resolution ex -SAGPyA 27 / 2003 (June 24, 2003):

• Fisheries functions delegation on SSPyA

#### Disposition SSPyA 2 / 2003 (July 31, 2003):

• Vessel Monitoring System (VMS).

#### Federal Decree 598 / 2003 (August 13, 2003):

• Regulatory decree of killer whale Law 25.052.

**CFP Resolution 18 / 2003 (September 17, 2003)** • Patagonian Scallop North MUs TAC.

## Law 25831 (November 26, 2003):

•Free access to ambient public information regimen.

#### CFP Resolution 7 / 2004 (April 29, 2004):

• Modify CFP advisory commission.

#### CFP Resolution 14 / 2004 (August 26, 2004)

• Patagonian Scallop South TAC.

#### Disposition SSPyA 424 / 2004 (September 29, 2004):

• On board inspectors functions.

## Disposition SSPyA 554 / 2004 (Octover 28, 2004):

• Obligatory shredder waste in factory ships.

#### CFP Resolution 16 / 2004 (December 22, 2004)

• Patagonian Scallop North MUs TAC.

## CFP Resolution 02 / 2005 (June 16, 2005)

• Patagonian Scallop South MUs TAC.

#### CFP Resolution 05 / 2005 (August 4, 2005)

• Patagonian Scallop new Management Plan.

#### CFP Resolution 05 / 2005 (August 4, 2005)

• Catch Authorizations.

#### SENASA Resolution 122 / 2006 (March 7, 2006):

• Fishing ships sanitary registration.

#### CFP Resolution 09 / 2006 (July 20, 2006)

• Patagonian Scallop 4 years Management Plan Actualization.

#### **CFP Resolution 13 / 2006 (September 7, 2006)**

• Patagonian Scallop North MUs TAC.

#### CFP Resolution 14 / 2006 (September 7, 2006)

• Patagonian Scallop South MUs TAC.

#### Federal Decree 373 / 2007 (April 17, 2007)

• Establishes the structure, objectives, missions and functions of the SSPyA.

#### CFP Act 14/07 (May 3, 2007)

• Patagonian Scallop North MUs TAC.

# CFP Resolution 01 / 2007 (July 11, 2007)

• Patagonian Scallop South MUs TAC.

# CFP Resolution 02 / 2007 (July 18, 2007)

• Patagonian Scallop TAC – Catches obtained outside MUs.

# CFP Resolution 03 / 2007 (August 8, 2007)

• Patagonian Scallop South MUs TAC.

## CFP Act 48/07 (December 6, 2007)

• Catch Authorizations Allocation: Methodology.

#### CFP Resolution 1 / 2008 (February 27, 2008):

• National Action Plan to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Catch (IUU).

## CFP Resolution 02 / 2008 (March 5, 2008)

• Patagonian Scallop North MUs TAC.

## CFP Resolution 03 / 2008 (March 27, 2008)

• Patagonian Scallop South MUs TAC.

#### Federal Decree 571 / 2008 (April 4, 2008)

• Structure ex-SAGPyA

• Annex I is hereby replaced by Article 1 of Decree No. 357 dated February 21, 2002, as amended and supplemented, in relevant part, the SAGPyA and their respective Secretariats.

#### CFP Resolution 04 / 2008 (May 22, 2008)

• Patagonian Scallop 4 years New Management Plan.

#### CFP Act 27/07 (August 14, 2008)

• Catch Authorizations Management Policy.

#### CFP Resolution 10 / 2008 (August 14, 2008)

• Establishes the causes for the extinction of Capture Authorizations assigned by the Consejo Federal Pesquero under Act No. 48 of December 6, 2007.

#### CFP Resolution 14 / 2008 (October 2, 2008)

• Five (5) years Catch Autorizations (%) allocation for the species Patagonian Scallop (*Z. patagónica*), from 1 January 2009.

#### CFP Resolution 18 / 2008 (November 6, 2008)

• Patagonian Scallop North MUs TAC.

#### CFP Act 48 / 2008 (December 11, 2008)

- Catch Permissions
- Policies for transfer of permits
- Commercial Inactivity

#### CFP Resolution 01 / 2009 (February 5, 2009)

• Patagonian Scallop South MUs TAC.

#### CFP Resolution 02 / 2009 (February 12, 2008)

• New South Management Unit (Number 14).

## Resolution ex-SAGPyA 167 / 2009 (March 5, 2009)

• Approval of the form "Final Fishing Log Book" and their respective instructions, which must be provided by fishing vessels owner/captains operating in marine waters under national jurisdiction.

#### CFP Resolution 05 / 2009 (March 12, 2009)

• Reproductive Preservation no taken zones delimitation.

#### CFP Resolution 6 / 2009 (March 12, 2009)

• Shark PAN, National Action Plan for the Conservation and Management of Chondrichthyes (sharks, rays and chimaeras) in Argentina.

#### CFP Resolution 6 / 2009 (March 12, 2009)

Annexes

• Annex I - Argentine maritime spaces.

• Annex II - institutions that participated in drafting the national plan for the conservation of sharks.

- Annex III Systematic list of fish Chondrichthyans Argentine maritime spaces.
- Annex IV List of priority species.

• Annex V - Chondrichthyes abundance estimates made by the INIDEP from research cruises in the maritime areas in Argentina:

a - Estimation of the abundance of smoothhound (Mustelus schmitti).

b - Estimating the abundance of different species of cartilaginous fish in the spring in the coastal region of Buenos Aires. Reprinted with modifications of Massa et al. (2001b).

c - Estimating the abundance of different species of cartilaginous fishes in Patagonia during the summer. Reprinted with modifications Marí (2005). Except when specifically indicated, the estimates correspond to the designated area between 45 ° and 54 ° S.

d - Estimating the abundance of species of Bathyraja.

• Annex VI - Estimates of relative abundance (stratified mean catch per set) and absolute (t biomass) from research surveys conducted by the IBMPAS in the San Matías Gulf.

Annex VII BIBLIOGRAPHY

#### CFP Resolution 11 / 2009 (July 4, 2009)

• Patagonian Scallop North MUs TAC.

#### Provision of the National Direction of Fisheries Coordination 101 / 2009 (July 8, 2009)

• Catch Authorizations determination (in tons) for Patagonian Scallop species July -December 2009.

#### CFP Resolution 13 / 2009 (July 8, 2009):

- Damage mitigation during catch and release of Chondrichthyes (sharks, rays and chimaeras)
- Obligatory discard of sharks more than 160 cm. long.

#### CFP Resolution 7 / 2009 (September 24, 2009):

• CFP Internal Rules of Functioning.

#### Disposition SSPyA 8 / 2009 (December 29, 2009):

National Legal Catch Certification System

#### CFP Resolution 01 / 2010 (April 7, 2010)

• Patagonian Scallop South MUs TAC.

#### CFP Resolution 3 / 2010 (April 21, 2010)

• Bird PAN: Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries (IPOA-Seabirds)

#### CFP Resolution 3 / 2010 (April 21, 2010)

Annexes

- Annex I. Main species of seabirds in the Argentine Sea
  - 1. Critically Endangered Species
  - 2. Endangered Species
  - 3. Vulnerable species
  - 4. Near threatened species
  - 5. Species of least concern
- Annex II. Mitigation Measures
  - 1. Mitigation measures in longline fisheries
    - 1.1. Technology solutions for the draft
      - 1.1.1.Scaring lines (Tori-lines)
      - 1.1.2. Water cannon water jet
      - 1.1.3.Repelling magnetic
      - 1.1.4. Acoustic deterrents
      - 1.1.5.Hook size
      - 1.1.6.Depth of hooks
      - 1.1.7.Combination of setting speed, distance weighting and weights
      - 1.1.8. Thawed bait or puncture the swim bladder in fish
      - 1.1.9.Calado lateral line
      - 1.1.10. Machine timing
      - 1.1.11. Underwater Depth
      - 1.1.12. Depth in water (reference)
      - 1.1.13. Night setting
      - 1.1.14. Dyed bait
      - 1.1.15. Artificial bait
    - 1.2. Technological solutions for hauling
      - 1.2.1.Strategic dumping of garbage
      - 1.2.2. Water curtain
- 2. Mitigation measures trawling
  - 2.1. Bird interactions with trawlers
  - 2.2. Reduced contact with cables and ship
    - 2.2.1.Elimination of the probe cable
    - 2.2.2.Cones
    - 2.2.3.Streamer lines
    - 2.2.4. Terrified of dragline
    - 2.2.5.Brady Repeller
    - 2.2.6.Float rod and line
    - 2.2.7.Pulley and deterrents in the probe cable
  - 2.3. Mitigation in the Network
    - 2.3.1.Strap network
    - 2.3.2. Weighting network
    - 2.3.3.Cleaning Network
  - 2.4. Other mitigation measures
    - 2.4.3. Night setting
    - 2.4.4. Fish Oil

• Annex III. Institutions that participated in drafting the National Plan for reducing bird interactions with fisheries

#### CFP Resolution 06 / 2010 (May 6, 2010)

• Patagonian Scallop South MUs TAC.

#### Resolution INIDEP 118 / 2010 (August 3, 2010):

• INIDEP new flow chart.

#### **Resolution INIDEP 133 / 2010 (August 20, 2010):**

• 2010 INIDEP Scientific Activities Planning.

#### Disposition SSPyA 206 / 2010 (September 7, 2010):

• Video Camera Control System.

#### CFP Act 10/10 (September 9, 2010)

• Period 2010-2011 Allocation of Administration Reserve established by Resolution CFP N° 14/09.

#### **CFP Resolution 16 / 2010 (September 9, 2010)**

• Patagonian Scallop North MUs TAC.

#### Disposition SSPyA 1 / 2011 (January 11, 2011):

• Video Camera Control System implementation delay.

#### CFP Resolution 02 / 2011 (May 3, 2011)

• Patagonian Scallop South MU 4 and 5 TAC Modification.

#### CFP Resolution 06 / 2011 (June 30, 2011)

• Patagonian Scallop South MUs TAC.

#### CFP Resolution 07 / 2011 (August 4, 2011)

• Patagonian Scallop South MUs TAC.

k. <u>Particulars of arrangements and responsibilities for monitoring, control and surveillance and enforcement.</u>

# K.1 INSTITUTIONS DEALING WITH FISHERIES MONITORING AND ENFORCEMENT

# K.1.1 MINISTERIO DE AGRICULTURA, GANADERIA Y PESCA (MINISTRY OF AGRICULTURE, LIVESTOCK AND FISHERIES) (MINAGRI)

Within the SSPyA, the Fisheries Administration and Surveillance Division is responsible for monitoring and enforcement. There are approximately 85 active inspectors, although 419 people have been trained to be inspectors. Under agreements with the Coast Guard and the Navy, SSPyA trains their personnel to be inspectors and then hires them as required. The trained personnel, however, remain part of their original institution. The Federal Fishing Found also provides funds to the Coast Guard and Navy in order to conduct aerial and marine monitoring and surveillance, including boarding at sea.

Since 1997 there has been an onboard inspector program that controls the accuracy of fishing reports, monitors the compliance of closed areas and minimum fish size and mesh size regulations, along with monitoring discards and other resolutions. Since the program's inception , 57.1% of the inspectors came from the Coast Guard, 34.4% were contracted, 6.6% came from National Direction of Fisheries Coordination and the rest came from the Navy. Most of the inspector onboard program efforts (measured in days of effective monitoring) have been devoted to the hake, costal and red shrimp fisheries. In addition to performing onboard inspections, the Fisheries Administration and Surveillance Division conducts port inspections where they monitor landings, holds and transhipments; measure fish; and monitor fishing gears.

Fishing vessles are obliged to take an on board Inspector (Disposition SSPyA N° 424/04 and its modificatory Disposiction SSPyA N° 57/09), although when excepted by the management authority. Roles of on board Inspectors are prescribed in article 4 l of Disposition SSPyA N° 424/04. These are:

- a) Gather technical details of the vessel.
- b) Verify fishing gear used.
- c) Control the valitidy and correct use of the fishing license,
- d) Take samples to establish the presence of juveniles in the catch.
- e) Order the vessels' Captain the change of fishing zones.
- f) Verify that the vessel do not operate in closure areas.
- g) Verify that fishes are not returned to sea.

h) Register data from each fishin towl, indicating: day, time and exact position, providing all information required in forms regarding the fishery, including additional information considered relevant.

i) Produce the infringement Acts when required. These must be notified to the vessel's Captain. j) Any other additional task required in order to controll the accomplishment of the regulations of fishing activities.

SSPyA satellite-based vessel monitoring system (VMS) has been working since 2004 (SSPyA Resolution N°2/2003). It uses vessel mounted transponders and global positioning system to track and monitor the activity of the fishing fleet. In addition to SSPyA, the provincial administrations, the

Navy, Coast Guard and INIDEP receive "on time" information generated by the system. Currently, the system is used in almost all the Argentinean fishing vessels, which report with hour frequency data as position, speed, direction, and same vessels also report oceanographic condition.

The VMS is being updated with optical devices and fishing gear openness and oceanographic sensors. During March 2011 the incorporation of the fishing activity control by cameras on board started (SSPyA N°206/2010 and 1/2011).

#### k.1.2 PREFECTURA NAVAL ARGENTINA (COAST GUARD) (PNA)

The PNA is housed in the Ministry of Interior having a staff of approximately 13,000 people. It is responsible for ensuring fishing vessels to meet navigation safety requirements; certifying crews; monitoring and enforcing fisheries regulations (e.g. closed areas, fishing gear regulations); monitoring and controlling the departure of boats; controlling and apprehending domestic and foreign vessels; and conducting oil response and search and rescue operations. Coast guard officials also act as Inspectors and onboard observers and provide policing support to SSPyA officials in port. The Coast Guard has collaborative agreements with coastal provinces, which provide financial support to expand the Coast Guard's policing activities.

In regard to the powers that Laws 18.398/69 and 20325/73 confer to the Argentine Naval Prefecture on navigation security, this organism has enacted the following Naval Regulations which are relevant to the operating maritime fisheries. These are available in the website <u>www.prefecturanaval.gov.ar</u>:

• Nº 40/66 – Security bearing for sea fishing vessels.

• Nº 8/77 – Rules for professional diving for fishing purposes.

 $\cdot$  N° 2/81 – Maximum distance and time absence for deep-sea fishing vessels, coastal vessels and smaller vessels.

• Nº 2/86 – Rules from title 2, chapter 4 of REGINAVE, inspections regime of Vessel Security and Naval Devices and awarding of National Certificate for Naval Security.

- Nº 3/86 Norms and forms used for Registration of National Vessels.
- Nº 2/87 Nautical equipment, publications, pointing and fireworks material on vessels.
- Nº 3/87 –On board required elements and naval devices,
- N° 5/87 Flag size to be used in vessels with national register.
- Nº 6/87 Rules on longitudinal bottom settlement of vessels.

• N° 8/87 – Pollution prevention. Norms related to scraping or aplication of anti-fouling paints on vessels, naval devices, exploitation platforms, offshore or other fixed or floating construsctions in waters within national jurisdiction.

- Nº 10/87 Aptitude in the operation of survivorship boats.
- Nº 11/87 Sailing of vessels during renewal/updating of certificates..
- Nº 13/87 Payment and procedure of application of security inspections.

• N° 2/88 – Security for navigation in waters within national jurisdiction where offshore facilities may exist.

- Nº 4/88 Signs related to vessel rescue devices (Rule III 9.2 SOLAS 1974).
- Nº 3/89 Provison and exposure in vessels' visible places of information related to the maneuver.
- Nº 4/89 Means for pilot transfer.
- Nº 5/89 Crew's Security.

•  $N^{\circ} 1/91$  – Instructions for survivorship in live rafts and index for elaboration of instructions or suvirvorship manuals.

• Nº 1/94 – Mandatory use of lifejacket in pilots' embarking and disembarking.

- Nº 1/97 Norms for painting and identification signings of fishing vessels.
- Nº 7/99 System of inspections payment.
- Nº 8/99 Norms for compartmentalizing, system and devices against flooding.

• Nº 2/00 – Information system for geopgraphic position in argentine fishing vessels, authorized to operate in the protected area of the Convention on the Conservation of Antarctic Marine Living Resources (CAMELAR).

- Nº 3/00 Regime for protection of the environment.
- Nº 2/02 Norms for passive protection against fires on board of fishing vessels and naval devices.
- Nº 3/02 Norms for building of ships and naval device.
- Nº 4/02 Security norms for instalation of naval machine.
- Nº 5/02 Security measures for cargo transportation.
- N° 9/02 Norms and forms to be used in registration procedures.
- Nº 3/05 Security measures against fires and general system for extinguishing fire.
- Nº 4/05 Evacuation procedures in merchant ships.
- $\cdot$  N° 5/05 Norms on fixed systems for fire extinguishing, fire detection, and alarm against fires in merchant ships.
- Nº 6/05 Implementation of embarkation book with new security measures.
- N° 1/08 Security measures for navigation,
- $\bullet$  N° 2/08 Prohibition of new on board instalations contening asbestos.

# K.1.3 ARMADA ARGENTINA (ARGENTINE NAVY) (AA)

The AA is under the Ministerio de Defensa (Ministry of Security). The Navy's responsibilities in the fisheries sector include aerial surveillance, sea patrolling, surveillance and apprehension of foreign vessels. The Navy has about 29,000 people under its command. An important part of the naval air force and fleet are involved to some extent in the fisheries sector.

One of the most important challenges for the Navy and the PNA alike is monitoring and enforcing regulations against foreign vessels that illegally operate in or near the Argentina's EEZ. Although the precise extent of this activity is unknown, a navy's plane reported that during the squid season it had sighted 161 foreign jiggers fishing vessels operating illegally in Argentina's EEZ. In addition, many intruder ships are painted red to look like Argentine fishing vessels; Some are believed to be "twins" of other licensed Argentine vessels.

# K.2 MONITORING, CONTROL AND SURVEILLANCE OF FISHING AND MARKETING OF FISHERIES PRODUCTS

Regarding the operative control of the fleet, SSPyA has implemented the Sistema Integrado de Control de Actividades Pesqueras (SICAP - *Integrated Control of Fishing Activities*) comprising: a) Satellite Positioning System of the National Fishing Fleet, b) all satellite data from the area where foreign fishing vessels operate outside the ZEEA provided by the National Commission on Space Activities, and c) the control and surveillance activity conducted by the PNA, Armada Argentina (*Navy*) and Fuerza Aerea (*Air Force*), which count with water units (Coast Guard and corvettes) and air units (aircraft and helicopters) in order to control illegal fishing. This information is complemented with that from the control of landingsand documentary information on board. In the 2009 was incorporated the electronic log book by haul (SAGPyA Resolution N° 167/2009) and in 2011 is being

incorporated the fishing activity control through on board cameras (SSPyA Dispositions N° 206/2010 and 1/2011).



Figure 27: SICAP - Integrated Control of Fishing Activities

The responsible organizations for controlling and monitoring international trade of food products in Argentina are SENASA and the Customer General Direction (DGA).

As already mentioned, SENASA (National Service of Sanitary and Food Quality) is the agency responsible for health inspection and certification of products and by-products proceeding from animals and plants. It is also responsible for habilitating the processing vessels and processing plants on land and packaging, transport and marketing of fishing and aquaculture products, in addition to controlling federal traffic, as well as imports and exports of products, and products derived from the fishing or farming.

The DGA (Customer General Direction) is a national organism under the Federal Administration of Public Revenue (AFIP) and is responsible for implementing the legislation on the import and export of goods, as well as controlling the traffic of goods entering or leaving the customs territory. Its main function is to assess, classify, monitor and control the entry and exit of goods, as well as means of transport, ensuring compliance with existing provisions.

This institutional framework and tools generated can make the following points realated to controlling the extraction and marketing of fishing products:

#### a) Prior to setting sail

- 1. Release fishing: control by the PNA set sail through the output document entitled Statement showing the date and time of departure of the vessel, all features, certificate validity, the crew's role, the ship does not have any impediment to sail, including permission for fishing target species, the VMS equipment working and that the fisheries inspector is empowered to fulfil his role.
- 2. Additionally, SSPyA port officers control randomly documents and gears on departure ships.

#### b) During the tide

- 3. Satellite monitoring during the trip. As set out in SSPyA Provision No. 02/2003, all fishing vessels must have satellite monitoring equipment on board, in perfect working order. The system should inform the vessel's position every hour. If the ship stops emitting its signal for more than two hours, immediate return to port is ordered. Regardless, the SSPyA's control officers may query (polling) at any time the positioning of the vessel. At present the entire commercial fleet of over 13 m length, operating within national waters, has satellite monitoring system. This makes a total of 554 fishing vessels with equipment on board, with a daily average operation between 225 and approximately 300 vessels navigating simultaneously. Twice a day MINAGRI updates the system information in its website (www.minagri.gob.ar) for public consultation.
- 4. On board inspections: the inspector prepares a Tide Monitoring Report. Fishing Log Books: affidavit of catches by species and fishing area signed by the ship's captain. The master prepares a statement with the information of each fishing haul (haul by haul fishing report) and a statement with the entire trip's information. Both documents are delivered to fisheries control authorities when the ship arrives to port.
- c) At the end of the tide
  - 5. Entry declaration: control port entrance documented by the PNA (Argentine Cost Guard).
  - 6. Control and Verification Landing Act: fisheries control authorities verify landings (species, weight, fishing gears and fishing documents), confectioning a document delivered to National Direction of Fisheries Coordination to be processed.
  - 8. Movement control of catches (Mar del Plata): In order to verify the destination of the goods circulating in Mar del Plata Port there is an unified Integrated Control Centre for fishing activities (CINCOPE), composed by members of the national enforcement authorities, of the Buenos Aires Province sanitary authority, PNA (*Argentine Cost Guard*), the Municipality of Mar del Plata, SENASA (*National Service of Sanitary and Food Quality*) and the AFIP (*Federal Administration of Public Revenue*). The CINCOPE controls and validates the company refer prepared and presented by the truck driver who transports the goods to the factory. The validation is performed by the agent of the municipality or SENASA, as appropriate.
  - 9. Factory audit of books: income and expenditure of goods to be processed are reordered in foliated books audited by a veterinarian of the Municipality or SENASA, as appropriate.
  - 10. Control of plant exit: a Transit Guide is required to deliver fishing product or by products from the processing plants.
  - 11. Export controls: the goods to be exported must be accompanied by Export Health Certificate issued by SENASA and Export Manifest (Shipping Permit) issued by the AFIP.
- 1. Date of next review and audit of the management plan.

Even Patagonian Scallops Management Plans used to be sanctioned in a 5 years period basis, the new one (Resolution CFP N° 4/2008) was sanctioned without any programmed revision, as is common in argentine legal framework. So there is not a review date programmed. Nevertheless, the CFP is open to making a revision any time the research system and/or the Follow up Commission have consisting arguments supporting it.

The Research system is reviewed every year and, if necessary, the INIDEP Research Plan is changed as needed.

# 4. Evaluation Procedure

# 4.1 Harmonised Fishery Assessment

Several meetings were proposed and undertaken by CB OIA in order to achieve agreement between Glaciar Pesquera S.A. and Wanchese Argentina S.A. on sharing the Certificate for Full-Assessment period and since the Re-Assessment process from 2011 to 2015.

OIA is pleased to inform that such agreement was achieved and both companies are sharing costs and responsibilities for the Re-Assessment process, avoiding potential overlapping of pre-certified Patagonian Scallop fishery.

# 4.2 **Previous assessments**

a. The Patagonian Scallop Fishery in Argentinean Sea was certified in 2006 and successfully underwent four surveillance audits in 2007, 2008, 2009 and 2010. Three Assessment Team's members have participated in the Full Assessment process, several annual surveillances and the present Re-Assessment.

Full Assessment in 2006 was carried out following Fisheries Certification Methodology v5 April 2004.

Conditions and recommendations set in the Full Assessment 2006 were:

# Condition 1

Performance Indicator 1.1.1.3 The population dynamics of the species (including age at maturity, natural mortality, growth, and fecundity) are understood.

**Required Action:** Within a maximum of 4 years, starting from the certification of the fishery it will be necessary to study the variability of the natural mortality rate for each bed, within each management unit.

The estimation of natural mortality is the most difficult task in marine resources studies, and any approach is imbued with uncertainty. But this parameter defines population dynamics and the harvesting strategy. An estimate of mortality has been made of the Patagonian scallop derived from an integrated model for the Reclutas bed (Valero, 2002), in addition to a study done by Lasta *et al.* (2001). The Assessment Team recommends estimating mortality from size structure and age structure of populations within the protected areas of each bed so that by the end of the certification period there is a good understanding of the spatial variation of mortality. Improved estimates of these population parameters will provide more comprehensive data for simulation modeling of the fishery and its management. Given the time span and the possibility of not having new cohorts to follow, it is important to realize that this comparison may not be fully possible or fully comparable within 4 years. Improved estimates of these population parameters will provide more comprehensive data for simulation modeling of the spatial variation parameters will provide the realize that this comparison may not be fully possible or fully comparable within 4 years.

#### **Condition 2**

Performance Indicator 1.1.3 Appropriate reference levels have been developed for biomass and fishing mortality rate.

Performance Indicator 1.1.6.1 The overall population is at appropriate reference levels.

**Required Action:** In a maximum period of 1 year from the fishery certification, biological reference limits must be established based on the resource biology, regarding biomass and fishing mortality rate. Limit reference levels for each bed in each management unit (to be considered in management decisions) will need to be initiated within the current certification period.

The use of a rotational management strategy overcomes many of the difficulties associated with a traditional fishery. Rotational fishing strategies in scallop fisheries have been modeled (Breen and Kendrick, 1997; Hart, 2003).

#### **Condition 3**

Performance Indicator 1.1.5.3 The assessment, including any assumptions, has been appropriately tested by simulation or other methods and considers uncertainties which are reflected in management advice.

Performance Indicator 1.1.5.4 The assessment evaluates the consequences of harvest strategies and evaluates the status of the fishery relevant to reference levels.

Performance Indicator 1.1.6.1 The overall population is at appropriate reference levels.

**Required Action:** Within a maximum period of 4 years from the fishery certification, the precision of the estimates in the stock evaluation must be improved, taking into account the uncertainty of the initial data and testing of the sensitivity of the results.

Development of the possible changes in exploitable biomass, relative to the catch strategy currently applied, under different fishing scenarios will need to be initiated within the current certification period. For example; simulation modelling of rotational fishing with existing growth mortality and recruitment parameters (Breen and Kendrick, 1997) and the long term sustainability of the fishery evaluated.

Although biomass estimates are precise, the estimate of catch from landed meat weight by a single estimate of meat weight-whole weight conversion coefficient is very imprecise and has no estimate of variability. Precision of catch estimation should be investigated and improved methodology developed. The consequence of the present harvest strategy can be evaluated from only 6 years catch data, so simulation studies must be initiated to evaluate their effects over long periods with different scenarios to test sensitivity to assumptions made and imprecision of parameter estimates.

#### **Condition 4**

Performance Indicator 1.3.1 There is adequate information on the population structure and reproductive capacity of the resource.

#### Performance Indicator 1.3.2

The age/sex/genetic structure of the resource is monitored to detect significant impairment of reproductive capacity.

**Required Action:** Within a maximum period of 1 year from the fishery certification, the relative fecundity per size or weight must be established for each bed, and within a maximum period of 2 years from the fishery certification, a study on the oceanographic variables involved in relation to recruitment must commence.

Additionally, within a maximum period of 3 years after the certification of the fishery correlation over time with the changes in size, age and sex structures of each bed must commence in order to evaluate the impact of the fishery on the reproductive capacity of the stock.

No relationship has yet been established between local stocks and recruitment in populations of *Z. patagonica*, and little relationship has been found between parental stock and recruitment in scallops in general. Hence "conventional wisdom" tends to dismiss the importance of a stock-recruitment relationship in scallops with most variation in recruitment being attributed to effects of environmental variation on larval mortality and settlement. Nevertheless, McGarvey *et al.* (1993) found that egg production was correlated with recruitment in two Georges Bank populations of *Placopecten magellanicus* and this correlation was stronger and held more widely among other populations when egg production of older (larger) scallops alone was considered. They concluded that the two scallop populations may be reproductively self sustaining stocks. Furthermore, recent modelling of larval dispersal in the Caribbean concluded that marine populations must rely on mechanisms enhancing self-recruitment rather than depend on distant 'source' populations (Cowen *et al.* 2002). There is sufficient doubt about the relationship between stock and recruitment in scallops to make investigation of fecundity of *Z. patagonica* a sensible precautionary approach to management of this new fishery. Nevertheless, fecundity data will provide input to simulation models of the fishery and its management.

#### **Recommendation 1**

Performance Indicator 1.1.1.2 The life history of the species is understood.

Performance Indicator 1.1.1.6 Information on the relationship of recruitment to parental stock is understood.

#### **Recommended** action

To continue with studies on the requirements for settlement and commence studies on morphology and larval development. To study the rate of settlement, for example by means of measurement of the prodisoconchas and the environmental factors that govern the recruitment of the species. These studies will contribute to knowledge on the factors affecting larval settlement and, therefore recruitment intensity, which is important for prediction of production from the different beds. It is difficult to firmly establish the stock-recruitment relationship for this species. There are a number of factors involved, but it is necessary to identify these. The uncertainty of reproductive success mediated by environmental variability may also make the relationship between fecundity and recruitment more difficult to unravel but other scientific investigations suggest it is likely to prove important. These data will provide input in simulation modelling of the fishery and its management.

#### **Recommendation 2**

Performance Indicator 1.1.2.1 Fishery removals are recorded/estimated (including landings, discards and incidental mortality).

#### **Recommended** action

Carry out estimations and keep registers of incidental mortality during the different fishing activities as a consequence of recapture and discard of juveniles or the process of cooking juveniles fixed on the shells of commercial size scallops that are processed. This will permit understanding of the fishing activities which cause significant mortality of juveniles that currently are not taken into account for evaluation of the impact of fishing on the stock at population level, nor for the estimation of allowable catches. These data will provide input in simulation modelling of the fishery and its management.

#### **Recommendation 3**

Performance Indicator 1.1.2.6 Selectivity is known for the fishery (including incidental catches).

#### Performance Indicator 3.2.2.1

The fishing gears, methods and practices suitable for harvest of the target species have been examined with regard to their adverse impacts on habitat (especially in critical or sensitive zones), their rates of capture of non-target animals and incidental impacts on target animals. The gears with least impacts and non-target catches are used and/or prevented by other management measures.

#### Performance Indicator 3.2.7.2

The operations of the fishery are conducted so as to minimize (to the degree practical) the mortality of discarded non-target catch. Fishermen and others in the industry take reasonable measures, beyond the formal management requirements, to minimize such mortality.

#### **Recommended** action

The selectivity of the fishing gear (otter net) could possibly be improved using large square mesh to evaluate whether the by-catch of other invertebrates, juvenile scallops and non living material could be reduced.

#### **Recommendation 4**

#### Performance Indicator 1.1.5.1

There is a scientifically-rigorous stock assessment methodology that is relevant to the biology of the target species and the nature of the fishery. The assessment uses all available relevant data.

#### **Recommended action**

Initiate studies on the application of analytical models and elaborate conceptual and quantitative models that permit demonstration that the management methods applied to the fishery are appropriate (without substantial changes in the biomass and capture), integrating survey evaluations with the commercial fleet data on an appropriate map. Periodically evaluate the F value stipulated.

This recommendation aims to predict yields in different fishing scenarios in order to apply management actions which contribute to the sustainability of the fishery. The use of a rotational management strategy overcomes many of the difficulties associated with a traditional fishery. Rotational fishing strategies in scallop fisheries have been modelled. Similarly, the use of predictive models for rotational fishing as it was applied to the *P. magellanicus* fishery should be investigated.

#### **Recommendation 5**

Performance Indicator 1.3.2

The age/sex/genetic structure of the resource is monitored to detect significant impairment of reproductive capacity.

#### **Recommended action**

Study the genetic structure for each bed with the objective to determine the source-sink relationship and its correlation with the fishing activity. This will allow application of protection measures or creation of no-take zones, with the aim to maintain the genetic diversity of the stock and improve the settlement of larvae in the different beds.

#### **Recommendation 6**

Performance Indicator 2.1.1.2

The habitat requirements of the target species, in particular the settlement habitat of juveniles, are known.

#### **Recommended** action

Initiate studies to establish if the primary settlement occurs on the shells of the adults or if the presence of juveniles is the result of secondary settlement from another substrate.

Although bushy bryozoa and hydroids have not been recorded in fishery-trawl or survey-dredge bycatch, many of the echinoid groups present in the bycatch feed on bryozoa in other areas hence bryozoa and hydroids may be more important in the benthos than their representation in the bycatch suggests. Fishing is likely to destroy emergent bushy bryozoa or hydroids more rapidly than other benthos. If primary settlement of scallops is on such filamentous substrates in Argentina as it is elsewhere, then fishing by reducing this substrate will have an effect on recruitment. If primary settlement is on the shells of adult scallops alone, the removal of adult scallops by fishing will likewise affect recruitment and fishing mortality will operate equally on cohorts of small juveniles as well as adults.

If primary settlement is on filamentous substrates, fishing gear could be modified to reduce its impact on the seafloor and damage to filamentous benthos and help sustain recruitment. If primary settlement is on adult scallops recruitment will probably be best sustained by rotational fishing that maintains high adult populations locally.

#### **Recommendation** 7

Performance Indicator 2.1.1.3 Information is available on the position and importance of the target species within the food web.

#### **Recommended** action

Quantitatively study the ecological relations in the benthic community.

Scallops dominate biomass and production in the benthos. Gut contents show they ingest mainly diatoms and some dinoflagellates. Investigation of gut contents of other suspension feeders could identify whether they are competing for the same resource and investigation of the isotope signal of

carbon in scallops (adults and juveniles) and the other suspension feeders could show the proportion of benthic and plankton algal production and plankton.

These data can be modelled to develop an understanding of how present fishing is likely to indirectly alter benthic energy flow and dynamics and how management can minimise the effects on the food web and productivity.

#### **Recommendation 8**

Performance Indicator 2.1.1.5 There is information available on the recovery rate of the ecosystem from fishery related impacts.

#### **Recommended action**

Annually tabulate the quantitative data from the by-catch collected for each bed, by the On Board Observer Programme and the research surveys, comparing these with the 1995 data base. Compare the quantitative by-catch data obtained from the trawls in fished areas with those obtained from trawls in non-fished zones within the same bed, which are collected in the annual research surveys.

The testing of these data will show whether benthic habitat regenerates in the absence of disturbance by fishing. Regeneration of benthic habitat on fishing-disturbed-seafloor is linked to increasing productivity of fisheries on this habitat. Such habitat regeneration is likely to follow a succession that is partly determined by distance from sources of propagules and partly by period without disturbance hence habitat recovery can be facilitated by rotational fishing. If benthic habitat does recover here, analysis of the data will be useful in determining length of rotation cycle and sizes of areas and usefulness of MPA's in a rotational fishery management plan.

#### **Recommendation 9**

Performance Indicator 2.1.3.1

Information is available on the nature and extent of the non target species caught, or otherwise killed, by the fishery. This includes all non target species – invertebrates, fish, mammals, reptiles, birds etc.

Performance Indicator 2.1.3.2 Information is available on the extent and survivability of the discarded by-catch.

Performance Indicator 3.2.1.3 Catch levels are set to prevent significant capture of non-target species.

#### Performance Indicator 3.2.7.2

The operations of the fishery are conducted so as to minimize (to the degree practical) the mortality of discarded non-target catch. Fishermen and others in the industry take reasonable measures, beyond the formal management requirements, to minimize such mortality.

#### **Recommended** action

Estimate the biomass of the non-target species for each systematic group and for each bed, each year, and evaluate the annual changes. Experimentally estimate the discard mortality for the principle species in the by-catch and consider it in the management system.

One aim of the fishery should be to reduce mortality and bycatch of non-target species so benthic habitat is less modified, trophic webs preserved and the productivity of the fishery maintained.

Discarded bycatch is a major problem in fisheries world-wide but this figure could be reduced by 25 to 64% by modifying fishing gear (Hall and Mainprize 2005; Harrington et al., 2005).

The components of bycatch, mechanisms of their capture and their subsequent mortality need to be measured so improvements can be measured in investigations of methods of reducing bycatch and bycatch mortality.

#### Recommendation 10

#### Performance Indicator 2.1.4

Strategies have been developed and implemented within the fisheries management system to address and restrain any significant negative impacts of the fishery on the ecosystem.

#### **Recommended action**

In addition to tabulation of the biomasses of by-catch for each group, each year (Performance Indicator 2.1.1.5, and 2.1.3.1), it is necessary to evaluate the usefulness of the fragile, long-lived species, which could suffer damage from the fishing gear and classification methods, as indicators of the impact of the fishery on the marine habitat. The echinoids are long-lived species (Bremec and Echeverria 2005) and are frequently found in the by-catch of the fishery (Bremec *et al.*, 2003). Because of their fragility they are very sensitive to all fishing activity around the world.

By focusing study of the effects of fishing on especially fragile benthic species, deleterious changes in the benthic habitat can be more rapidly identified and improvements can be more rapidly identified and enumerated in investigations of methods of mitigating these effects.

#### **Recommendation 11**

#### Performance Indicator 2.1.5.2

The impacts on ecosystem structure and function from removal of target stock(s) are known.

#### **Recommended action**

Study the consequence of removal of target species on ecosystem structure by modelling the energy flow. This recommendation is linked to recommendation 7.

#### Recommendation 12

# Performance Indicator 2.1.5.3

The impacts on ecosystem structure and function from removal of non-target stocks are known.

#### **Recommended action**

Compare the benthic by-catch from reserve areas within each bed with those from fished areas and analyze systematic changes; and in particular, study how the recruitment of the species dependent on scallop shells for settlement have been affected. Modeling energy flow through the benthic ecosystem will indicate the relative importance of each species and how the trophic web is likely to be affected by fishery removals of different species. These studies should be used in mitigation studies of the effects of gear modification and use of rotational fishing to let benthic habitat recover and maintain productivity of the fishery.

#### **Recommendation 13**

Performance Indicator 2.1.5.4 Fishery impacts on habitat structure are known.

#### **Recommended action**

Consider a more extensive use of video cameras to investigate the role of the scallops within the structure of the benthic habitat. Remote underwater video allows direct observations of the effect of fishing on the benthic habitat in addition to the indirect studies analyzing changes in by-catch. Observations of trawls in operation have shown that visibility on the seafloor allows capture of good images and use of a high resolution camera should enable specific identification of benthos. More extensive use of this system could allow direct comparison of fished seafloor, seafloor in reserve areas that has been fished and unfished reserve areas so giving direct evidence of fishery impacts on habitat structure. These observations can be applied in modifying fishing gear to reduce its impact on the seafloor as well as directly testing the effect of rotational fishing on seafloor habitat.

#### **Recommendation 14**

Performance Indicator 3.1.7.1 Adequate funding is provided for management.

Performance Indicator 3.1.7.2 Adequate funding is provided for research.

#### **Recommended** action

Study the need for increased budgets for management, control (authorities) and scientific research for regular presentation to the relevant authorities. Communication of results in this fishery is good but one of the issues identified by the team was the lack of opportunity and lack of budget for scientists to brief management, control authorities and fishers in plain language the results and implications of their research. Facilitation of this communication will result in more cohesive management and greater understanding of its importance.

#### **Recommendation 15**

#### Performance Indicator 3.2.5 The management system has considered no-take zones as a means to control exploitation.

#### **Recommended action**

Analyze the usefulness of the current reproductive and experimental reserve areas, the necessity for relocation and/or establishment of new ones. No-take zones already exist in this fishery. Their effectiveness in excluding fishing, providing unmodified areas of seafloor for benthic comparisons with fished areas, and effectiveness in providing local sources of scallop larvae and propagules of other benthos, and the optimum size should be evaluated. These data can then be utilized in establishing new closed areas within the rotational fishing management regime to optimize production of the fishery.

#### **Recommendation 16**

Performance Indicator 3.2.7.1

The operations of the fishery are conducted so as to minimize (to the degree practical) the capture of non-target animals, particularly those which cannot be released alive.

#### **Recommended** action

The fishery undertake systematic trials measuring the effects of fishing operations on catch of scallops, size range of scallops and quantities and composition of by-catch and use this information to agree on long term gear modifications.

#### Recommendation 17

Performance Indicator 3.4.2.4 The management system is subject to periodic external reviews.

Performance Indicator 3.4.2.5 The management system responds to the results of assessments and reviews.

#### **Recommended action**

Study the feasibility for and adoption of better external reviews of the management system and the incorporation of the results obtained in decision making.

External reviews of the management system are important because they provide for regular objective overviews of how the system is performing and can more readily identify areas in which performance can be improved. In one sense the MSC certification process has provided a major external review and the next review 4 years out will do the same again.

#### **b.** Conclusions reached.

Main conclusions from the Public Certification Report 2006 were:

1. The Full Assessment for certification of the Patagonian scallop (*Zygochlamys patagonica*) fishery, within the Economic Exclusion Zone of Argentina, has been prepared for Glaciar Pesquera S.A., one of the two companies fishing the resource, both of which operate two factory vessels.

2. Fishery management was the responsibility of the Federal Fishery Council, a Council of Federal and Provincial government nominees, chaired by the Secretary of Agriculture, Livestock, Fisheries and Food or his nominee acting as President.

3. The overall fishery management involves the CFP, SSPyA, SAGPyA and its research institute, INIDEP, the fishing companies and various Federal Government Agencies including the Coastguard. Non Governmental Organizations are not a structural component of the decision making process, although a legal framework for their appeals to be taken in account does exist.

4. A legal framework for appeals exists.

5. The OIA's Assessment Team has recommended the fishery to be certified, although conditions should be applied. The Team awarded a pass mark for each of the 3 Principles:

Principle 1	82.7
Principle 2	92.0
Principle 3	92.3

The fishery achieved the minimum pass mark of 60 in all performance indicators. Although aligned with MSC requirements, when the awarded score for each indicator did not reach 80,

conditions have been applied which require achievement within specified time periods. As well, the Assessment Team has recommended that the client considers the possibilities of improvement in several areas where, even though a score of 80 was achieved, the conditions allow further upgrades.

The Client developed an Action Plan following the Conditions and Recommendation approved by the Assessment Team and the Certification Body, OIA prior to the issuance of the Certificate. Milestones for each Condition were assessed during the Annual Surveillances and Action Plan was revised when required.

c. Past conformity with specified conditions and recommedations following the Action Plan:

#### Condition 1

**Required Action:** Within a maximum of 4 years, starting from the certification of the fishery it will be necessary to study the variability of the natural mortality rate for each bed, within each management unit.

Year 1 (milestone 1)	Identify: a) areas within each bed associated with the Continental Shelf Break Front, in which fishing effort is negligible and define the position of each for the particular year, <b>Status: Completed.</b>
	b) beds, which have good records of Total Mortality (Z), Fishing mortality (F) in each of the above beds. Status: Completed for three management units.
Year 2 – 3 (milestone 2)	a) Z, F and M will be estimated for each of the statistical sampling boxes (each approximately 67 km <sup>2</sup> ) located in each bed $(1.2 - $ previously known as MdQ bed, 2 - previously known as Reclutas, 3 - previously known as San Blas). These results will permit estimation of variability of these parameters within the spatial distribution of the resources in the three beds located at the northern sector of the fishery.
	Status: Completed for all management units. There are 9 important fishing areas within the shelf break front, management units 1.2, 2 and 3 and 5, 6, 7, 8, 9 and 10 (management unit 4 has no fishing significance). The first group constitutes a Northern continuous concentration, and the second group a Southern concentration, which have the same biological characteristics, suggesting that these two ecological zones are relevant to the calculation of Z, F and M rather the calculation of these for the administrative management units. Z, F and M for Management units in the Southern ecological zone: 5, 6, 7, 8, 9 and 10, were completed during the last year of certification (see Fig 14 in this Report).
	<ul> <li>b) Sex ratio in relation to intensity of fishing activity, will be estimated, which will also allow: <ul> <li>i) Growth studies to establish age-size relationship in each of the remaining beds along the shelf break front.</li> <li>ii) Studies of relative fecundity per size or weight (samples have already been taken) within the shelf break ecological zones.</li> </ul> </li> <li>Status: b i) Both have been completed</li> </ul>

	<ul> <li>c) Documentation of all information obtained into a scientifically acceptable standard.</li> <li>Status: Considerable scientific publication has been achieved for this fishery.</li> </ul>	
Year 4-5 (milestone 3)	Prepare a paper on the variability of natural mortality rate for each bed located in the vicinity of the Continental Shelf Break Front and summarize all other relevant results. Status: completed	

#### CONDITION 2

**Required Action:** In a maximum period of 1 year from the fishery certification, biological reference limits must be established based on the resource biology, regarding biomass and fishing mortality rate. Limit reference levels for each bed in each management unit (to be considered in management decisions) will need to be initiated within the current certification period.

Year 1 and 2 (milestone 1)	<ul><li>Calculate variation in the parameters for the following key biological reference points.</li><li>a. size/age at first maturity</li><li>Status: Completed for three management units.</li></ul>	
	b. age on each of the major Shelf Break Front Beds. Status: Completed for three management units.	
Year 2 – 3 (milestone 2)	A preliminary model for the Rotational Fishing Strategy (RFS) will be further developed.	
	Status: Developed for two management units and currently being extended. This is ongoing as the model is upgraded year to year as new information is available. The progress has exceeded the expectation.	
Year 4 - $\infty$ (milestone 3)	Refinement of the Rotational Fishing Strategy model year by year. This is an "exceptional circumstance" as models by their nature need to be upgraded as new quantitative data became available. It is an ongoing process. Status: Completed and in progress.	

# CONDITION 3

**Required Action:** Within a maximum period of 4 years from the fishery certification, the precision of the estimates in the stock evaluation must be improved, taking into account the uncertainty of the initial data and testing of the sensitivity of the results.

Development of the possible changes in exploitable biomass, relative to the catch strategy currently applied, under different fishing scenarios will need to be initiated within the current certification period.

Year 2-3 (milestone 1)	Within two years a Stock Evaluation Model will be developed using geostatistical techniques. Status: Completed.
Year 4 (milestone 2)	Analysis of changes that may occur in exploitable biomass under different fishing scenarios will be completed, but it will be an on- going revisable project.

# Status: Already under development and well advanced exceeding expectations.

# CONDITION 4

**Required Action:** Within a maximum period of 1 year from the fishery certification, the relative fecundity per size or weight must be established for each bed, and within a maximum period of 2 years from the fishery certification, a study on the oceanographic variables involved in relation to recruitment must commence.

Additionally, within a maximum period of 3 years after the certification of the fishery correlation over time with the changes in size, age and sex structures of each bed must commence in order to evaluate the impact of the fishery on the reproductive capacity of the stock.

Year 1 (milestone 1)	<ul> <li>Development of methodology without production of definitive results in order to prepare an Oceanographic Model which will estimate</li> <li>a) larval drift.</li> <li>Status: Partially completed and ind progress. This is a no simple task and the obteined results coulb be considered enough.</li> </ul>	
	b) the potential of genetic mixing / isolation between management units.	
	Status: In progress. Two ecological zones are relevant to this analysis rather the calculation of these for all of the 14 administrative management units.	
Year 2-5 (milestone 2)	Annual sampling following the techniques developed in milestone 1 above, culminating in a definitive model in year 5 from the certification of the fishery. Sample data tabulated ready for analysis and inclusion in the definitive model each year. <b>Status: Completed</b>	
Year 4- $\infty$ (milestone 3)	Within a four year period an International – Argentine group will commence development of markers which will allow establishment of between beds variation in scallop genetics.	

Status: In progress. There was a significative effort in this issue (Trucco & Lasta, 2009; Armany et al, 2009, Ruzzante, 2009), and cound be condered comkpleted.

c. Past conformity with specified conditions and recommedations following the Action Plan:

The Assessment Team considered that the status of Conditions on Principle 1 set under the Fisheries Certification Methodology for the Full Assessment in 2006 are in conformity with specified in the Action Plan above, even if some Milestones could not be met in total because the Condition level expected to be achieved exceedes the SG80 in the methodology in force during the Re-Assessment, the Fisheries Assessment Methodology v2.1 (2009) and Certification Requirements v1.1 (2011). Progress achieved by Client's support to the Research Group for Principle 1 satisfies the requirements expressed in Performance Indicators corresponding to Principle 1 in the current Default Assessment Tree.

No significant issues which could affect the sustainability and conduct of the fishery trequiring further investigation were identified during the four Surveillance Audits undertaken, thus procedures to embody such events were not judged necessary.

A recommendation was raised in the Secord Surveillance (2008) related to notifying the problem with timely surveys, in order to establish the biomass estimates and TACs, requesting the Client to fully inform the Certifier of any change affecting the sustainability of the fishery immediately after such event occurs. The recommendation was followed during the next surveillance audits.

As mentioned above, 17 Recommendations were established for Principle 2 during Full Assessment. There are areas were significant progress has been carried out during the five year period. However, many relevant aspects will require more effort and Conditions will be set at this stage of the Re-Certification of the Fishery. Some issues where relevant actions are still required are:

• The absence of massive recruitment since 2002 is the main concern for the sustainability of the fishery. The policy of protecting juveniles and the reproductive capacity of the populations through different management tools and measures has been strictly applied (survey-based annual TAC per bed, minimum size, non-take zone). However, the necessity of understanding the main factors for scallop's primary settlement is still a major issue for the fishery itself and for the maintenance of the benthic community it is part of, as being considered a key structuring species. It was recommended that analysis of the On Board Observer data should be extended to include all of the early years of the fishery, and extend the analysis of the biomass survey data in the same way so that long term systematic changes in by-catch biomass and the composition can be analyzed. Thesis of Dr. Escolar was addressed to this issue, although it was focused primarly in echinoderms rather than other groups. Some phyla, like hydroids or bryozoans (which use the scallop surface to settlement, Lopez Gappa & Landoni 2009) require more attention.

• Information's reduction on bycatch and other ecological fishery data derived from the reduction of OBOs coverage and from the absence of available analysis from benthic community monitoring program from fishery samples increased uncertainty. Estimation of the biomass of the non-target species for each systematic group and for each bed, each year, and evaluate the annual changes and estimation of the discard mortality for the principle species in the by-catch and consideration of this in the management system has been only partially met.

• INIDEP underwent a study on the trophic position of Patagonian scallop within the food web. Such study needs to be continued in order to understand the trophic relations inside the benthic community within the Patagonian scallop beds and their connection with frontal variability. Mauna et al. (2008, 2009) found changes up the food web as expected, as well as changes in scallop isotopic signature across the SW Atlantic Shelf Break Front (SBF).

• Studies focusing on the effects of fishing on long-lived species such as echinoids, frequent bycatch of the fishery and very fragile benthic species, have been partially reached. However, fishing improvement methods have not been addressed for mitigating these effects.

#### 4.3 Assessment Methodologies

The Re-Assessment of the Patagonian Scallop fishery was conducted following the MSC Certification Requirements, CR version 1.0, August 15 2011, Fisheries Certification Methodology version 6.1.

This report was produced using the MSC Full Assessment Reporting Template version 1.0.

The Re-Assessment process used the Fisheries Assessment Methodology version 2.1 utilizing the Default Assessment tree without adjustments.

Risk Based Framework methodology was undertaken for the Performance Indicators 2.2.1. By-catch Outcome and 2.4.1 Habitats Outcome. Both Performance Indicators were scored using Scale Intensity Consequence Analysis (SICA).

# 4.4 Evaluation Processes and Techniques

# 4.4.1 Site Visits

Two site visits have been undertaken for the purpose of obtaining information from all stakeholders in Buenos Aires city and Mar del Plata.

• First On-Site Visit: Mar del Plata from 19<sup>th</sup> to 24<sup>th</sup> June, 2011.

Main activities were 1) interview meetings with stakeholders, 2) introducing the Fisheries Assessment Methodology to the Clients, 3) Gathering new information since Annual Surveillance 2010, 4) explanation of Risk Based Framework Methodology.

 Second On-Site Visit: Mar del Plata from 5<sup>th</sup> to 9<sup>th</sup> September, 2011. Buenos Aires, 2<sup>nd</sup> and 12<sup>th</sup> September, 2011.

Main activities were 1) interview meetings with stakeholders, 2) conducting SICA workshop.

Stakeholders interviewed and present at the SICA workshop are listed in section 4.4.2. below.

Name	Organization	Date	Main Issues
Tomás Hudececk – Dany	Glaciar Pesquera S.A.	21 <sup>st</sup> June 2011	<ul> <li>Daily electronic logbook</li> </ul>
Jabbour			<ul> <li>Company gear improvement</li> </ul>
			<ul> <li>Research on bottom surface</li> </ul>
Pedro Bonsdalen, Pedro	Wanchese Argentina	21 <sup>st</sup> June 2011	<ul> <li>Company gear improvement</li> </ul>
Bonsdalen Jr., Malcom	S.A.		<ul> <li>Compliance with controls</li> </ul>
Daniels.			<ul> <li>Video cameras</li> </ul>
			<ul> <li>Companies supporting</li> </ul>
			research
Oscar Iribarne	Universidad de Mar	21 <sup>st</sup> June 2011	•Companies gear improvement
	del Plata.		• Bottom surface
			characterization for
			Patagonian scallop beds.
Otto Wöhler, Daniel	INIDEP Directorate	$21^{\text{st}}$ June 2011,	<ul> <li>Actual management of</li> </ul>
Bertuche		5 <sup>th</sup> September 2011	Mollusc Fisheries. Current
			and future plans.
			<ul> <li>Fisheries Assessment</li> </ul>
			Methodology and Risk Based
		e i st e e e e e e	Framework.
Claudia Bremec and	INIDEP - Fisheries	21 <sup>st</sup> June 2011	• Key benthic community
Laura Schetjer	Ecology	22 <sup>st</sup> June 2011	species
			• Monitoring Programme on
			status of benthic
			communities.
Eduardo Gonzalez	Glaciar Pesquera S.A.	2 <sup>and</sup> September 2011	• Upgrade of general features

# 4.4.2 Consultations

Lemmi			of the fishery (fishing effor for the next years, market condition and operation of the fleet)
Mario Lasta	INIDEP - Benthic Mollusk Fisheries	21 <sup>st</sup> June 2011, 5 <sup>th</sup> and 7 <sup>th</sup> September 2011	<ul> <li>Research plan for Patagonian scallop fishery including reproductive capacity and bottom impact issues.</li> <li>50% juvenile triggering point Fisheries Assessment.</li> <li>Methodology and Risk Based Framework.</li> <li>SICA workshop</li> </ul>
Juan Carlos Pita – Chief of Port	Under-secretariat of Fisheries and Aquaculture - Fisheries Federal Directorate Mar del Plata Local district.	21 <sup>st</sup> June 2011	<ul> <li>Inspectors and OBOs roles, allocation system on fishing trips, responsibilities.</li> <li>Monitoring specific to this fishery.</li> <li>Details of video camera system to be implemented.</li> </ul>
Gabriel Blanco	On Board Observer Programme - INIDEP	22 <sup>nd</sup> June 2011 7 <sup>th</sup> September 2011	<ul> <li>OBOs reports</li> <li>PAN Sharks and Birds implementation in OBOs protocols.</li> <li>50% juvenile triggering point.</li> <li>SICA workshop</li> </ul>
Alejandra Cornejo	CeDePesca - NGO	21 <sup>st</sup> June 2011 7 <sup>th</sup> September 2011	<ul> <li>General features of the fishery.</li> <li>Lack of statistical estimations of catch by management unit.</li> <li>OBOs coverage.</li> <li>Fishing gear efficiency (written comment)</li> <li>SICA workshop</li> </ul>
Guillermo Cañete	Fundación Vida Silvestre Argentina – NGO	22 <sup>nd</sup> June 2011	<ul> <li>OBOs relevance. OBOs and Inspectors coverage</li> <li>Management policy for protecting reproductive capacity.</li> </ul>
Silvana Campodónico, Susana Herrera, Cecilia Mauna	INIDEP - Benthic Mollusk Fisheries	7 <sup>th</sup> September 2011	•SICA workshop
Rodrigo Polanco	MSC	7 <sup>th</sup> September 2011	•SICA workshop - Observer
Patricia Bianchi	MSC	7 <sup>th</sup> September 2011	• SICA workshop – Observer
Mónica Pérez-Ramírez	CIBNOR México	7 <sup>th</sup> September 2011	• SICA workshop – Observer
Marcelo Santos	Federal Fishing Council	12 <sup>th</sup> September 2011	<ul><li>Management system objectives</li><li>OBOs coverage</li></ul>
Ramiro Sánchez	Under-secretariat of Fisheries and Aquaculture	12 <sup>th</sup> September 2011	• Ecosystem management approach. Relevance on environmental research.

• The main issues raised by stakeholders during the two site visits through written comments sent to the Assessment Team are summarised:

- Companies requested use of 22% of the administrative reserve in 2010 due to the increased peoduct's market price.
- There is a need to test for improvement on fishing gear in order to reduce by-catch and habitat impacts, within a formal research objective and framework.
- The fishery is correctly monitored.
- Juvenile 50% occurrence in catches triggers the necessity for the fishing vessel to move to another area in order to protect undersized scallops. However, regulation does not clearly establish how the fishing vessels will avoid the areas. Practically, after 10 sets with more than 50% presence of juveniles generally the vessels move to another area. There is not a welldefined formal triggering measure.
- There is a study of the benthic communities showing trends of differences in species density in fished and unfished areas. Chetopterus sp are large polychaetes forming U tubes which use scallops as their substrate. This species is important in order to monitor the impacts of the fishery.
- There is a need to develop a more community-oriented management strategy with formalized procedures considering the above. For this purpose, more studies on community function are needed.
- The fishery is exploiting the resource at its maximum sustainable yield. The only way to increase productivity/production is to increase the efficiency of the extraction of muscle in onboard processing plant, since the resource is not increasing its biomass in then near future. Several practical experiments are in progress, e.g. introducing a shock of cold water to strengthen the muscle and modify the distance between cylinders.
- TAC is set by estimating the biomass on a high density of commercial sized scallops mapped during the prospecting surveys. This is directing the vessels towards the most relevant areas, avoiding fishing in less abundant areas or in areas with significant presence of juveniles.
- Management measures are needed to monitor associated fauna. Information from samples taken on board by Observers should be analyzed and made publicly available. Furthermore, sampling of benthos from the fishery needs to be continued in order to monitor the impacts of fishing. Analysis of these samples needs to be compared with OBOs reports. A well-designed monitoring sample system is considered a key factor in understanding the differences in benthic community thorughtout the shelf break front and discriminating this natural difference with potential effects from the fishery activity.
- It is suggested to make publicly available the catches for each Management unit opened to the fishery.
- Relating impact on habitats, there are no tridimensional structures that can be affected (i.e. reefs), but the sediment biogeochemical structure may be affected, which may have repercussions on benthic species. A large area has been surveyed using a Side Scan Sonar, which provide a good description of the sedimentary structures. The results have not been published yet.
- A proposed research plan was presented with two lines of research: a) biological, ecological and oceanographic aspects of the scallop's population and the community, and b) fishing aspects with special emphasis on reevaluation of fleet fishing parameters (fishing efficiency, fishing selectivity) and survival of discarded organisms. As well, experiments are being planned to asess reproduction capacity (i.e.: quality of gametes related to age), to test which are key factors on reproductive capacity.
- Relevance in Principle 2 issues was generally addressed in all meetings. The Management Authority established a 193.000 km2 closure in central Patagonian continental shelf and another closure in the southern region of the Patagonian continental shelf (Borword Bank) to

protect endogenous cold water coral reefs. Therefore 13% of the total Patagonian continental shelf is closed to trawl fishing.

- INIDEP OBOs coverage depends on priority between fleets and resources. 100% OBO coverage is considered a critical issue in order to achieve sustainability of the fishery for most of the stakeholders, based on the specific management, features and conduction of this fishery.
- A Peer Review project with FAO will take place to assess the Argentine fishery management system in general, the main objective being to reinforce the research capacity.
- Many MSC Performance Indicators may have different effects depending on the nature of the fishery being assessed. For example, new areas exposed to fisheries may have a very different community baseline from regions that have been fished for centuries.

# 4.4.3 Evaluation Techniques

a. Announcements for the different steps for Re-Assessment of the Patagonian Scallop fishery were made as follows:

• Date	Purpose	Media	<b>Rationale for Media</b>
			chosen
19th April 2011	<ul> <li>Announcement of Re- assessment</li> <li>Notification of Assessment Team Members proposed</li> </ul>	<ul> <li>Notification on MSC website</li> <li>Notification on OIA website</li> <li>Direct E-mail/letter</li> </ul>	Notifications have been done as previous Full Assessment process, with English and Spanish versions.
13 <sup>th</sup> May 2011	<ul> <li>Notification of Use of Default Assessment Tree with the Risk Based Framework (RBF)</li> <li>Notification of assessment visit and call for meeting requests.</li> </ul>	<ul> <li>Notification on MSC website</li> <li>Notification on OIA website</li> <li>Direct E-mail/letter</li> </ul>	Notifications have been done as previous Full Assessment process, with English and Spanish versions.
16 <sup>th</sup> June 2011	Further notification of site visit	Direct E-mail	Personal communication to indicate place and time of meeting.
21 <sup>st</sup> , 22 <sup>nd</sup> and 24 <sup>th</sup> June 2011	On Site visit Mar del Plata	Meetings	Individual meetings with Assessment Team to collect new data and stakeholders opinions.
26th July 2011	Notification of Additional site visit and SICA workshop	<ul> <li>Notification on MSC website</li> <li>Notification on OIA website</li> <li>Direct E-mail</li> </ul>	Along with online announcements, e-mail with MSC comment form was sent for all stakeholders participating in Spanish version.
26th July 2011	Rational for the Risk Based Framework	• Notification on MSC website	Requested by MSC, included in invitations for on site visit too.
4 <sup>th</sup> August 2011	Revised timeline announcement	Notification on MSC     website	
25th August 2011	Further notification of site visit	Direct E-mail	Personal communication to indicate the meeting's

			place and time.
	Second On Site visit Mar del	Meetings and SICA	Individual meetings to
September 5 <sup>th</sup> to	Plata and Buenos Aires	workshop	review information and
$12^{th}$ .		_	SICA workshop for PI
			2.2.1. and 2.4.1.

- b. As it was a Full Re-Assessment, stakeholders were contacted from previous Full Assessment stakeholder data base. All these stakeholders were contacted again at the begining of the process.
- c. The scoring process was conducted by the Assessment Team, working together for each Performance Indicator scored under conventional scoring guideposts. For Performance Indicators 2.2.1 By-catch Outcome and 2.4.1. Habitats Outcome, a SICA workshop was conducted.

On INIDEP research main Authority request, a general presentation for Introduction of FAM and RBF Methodologies was conducted at INIDEP as an open meeting previous to the SICA workshop. Main stakeholders and two MSC Observers were convened for the SICA workshop to conduct the scoring as a Joint Scoring Team. It was conducted as a group consensus process and final recommendation decision rule was by majority.

# List of species scored under Principle 2

- Retained species: No commercial species are retained in this fishery.
- ETP species: There are no ETP species caught in this fishery, nor mammals, birds, sharks, finfish nor invertebrates.
- By-catch species:

Taxones	-
Porifera	t
Actinostola crassicomis	
Antholoba achates	I
Isothealia antarctica	
Alcyonium digitatum	
Actiniaria	Ι
Hydrozoa	
Flabellum sp.	
Convexella magelhaenica	Taxones
Trypalea clavaria	
Epizoanthus paguricola	Ophiacantha vivipara
Chaetopterus sp.	Ophiactis asperula
Phyllochaetopterus sp.	Ophiura lymanii
Zygochlamys patagonica	Ophiomvxa vivipara
Adelomelon ancilla	Gorgogocephalus chilensis
Odontocymbiola magellanica	Ophiuroidea
Volutidae juvenil	Actomiidao
Fusitriton magellanicum	Ctanadiagua quatralia
Boreoescala magellanica	Ctenodiscus australis
Naticidae	Pterastenidae
Calyptraea sp.	Acodontaster e. granuliferus
Calliostoma sp.	Odontaster penicillatus
Marginella warreni	Labidiaster radiosus
Fuegotrophon pallidus	Porania sp.
Admete sp.	Henricia obesa
Lamellaria patagonica	Perissasterias sp.
Gastropoda	Ceramaster sp.
Hiatella solida	Solaster en
Limopsis hirtella	Bathudiastor on
Limatula pigmaea	Astoroidas
Nudibranchia	Asteroidea
Magellania venosa	Psoius patagonicus
Terebratella dorsata	Pseudocnus dubiosus
Lyothyrella uva	Holothuroidea
Libidoclaea granaria	Austrocidaris canaliculata
Eurypodius latreillei	Sterechinus agassizii
Peltarion spinosulum	Pseudechinus magellanicus
Decapoda Reptantia	Tryphilaster philippi
Pagurus comptus	Arbacia dufresnii
Sympagurus dimorphus	Crinoidea Comatulida
Propagurus gaudichaudi	Paramoloula gregaria
Isopoda	Assidiance
Serolia achytei	Ascidiacea
Munida sp.	Sycozoa sp.
Picnogonida	Didemnium sp.

Fish, seabirds and mammals were not included in the list since both interaction and capture of these organisms have been negligible since the opening of the fishery.

Even though most of these species are not 5% of total biomass caught during the fishing trip, all were considered by SICA in order to select the most vulnerable one.

#### **Risk Based Framework implementation**

a. The rationale for using the RBF and stakeholder comments on its use:

The Assessment Team considered the necessity to apply the RBF for two Performance Indicators, 2.2.1 By-catch Outcome and 2.4.1 . Habitats Outcome, according with the FAM.

The initial certification of the Patagonian scallop fishery was assessed by an Assessment Tree elaborated by the Assessment Team, integrated by 3 members in common, from where the conditions and recommendations arising from the certification process were established. At present, the recertification process is being undertaken through the current MSC's methodology, considering that the available in progress information does not respond satisfactorily to uncertainty of aspects related to by-catch species and habitats outcome, to the level required by the PISGs within the FAM.

Performance Indicators 2.2.1 and 2.4.1 were considered to be more adequately assessed within a sphere of consensus with main stakeholders.

The Decision Tree in Figure 3 (of FAM v2.1) was used to assess whether PI 2.2.1 By-catch Outcome should be scored using the RBF approach. Insufficient information was available to use the default PISGs within the FAM for most of the species. No technical reports are available from fishery ecology research group analyzing data collected by On board observers. Thus it is not possible to estimate the stock status of by-catch species. No limit and target references points have been established for any by-catch species.

Insufficient information is available in PI 2.4.1., Habitats Outcome, on the effects of the fishery on the structure and role of the habitats.. The ecological role of the habitat and the ecosystem services that it provides, which is the intent of assessment of the PI 2.4.1, is not well understood. Scallop beds constitute habitats in which scallops themselvest structure the benthic community. The effects of the fishery on the structure of the community by fishing the keystone species of the community, have not been addressed.

Some stakeholders gave priority to scoring Performance Indicator 2.5.1.Ecosystem Outcome, by RBF. After all stakeholder meetings and receiving all the information and written comments, the Assessment Team agreed that this PI could be assessed under the default PISGs within the FAM.

- b. The RBF consultation process.
  - 1) A presentation introducing the MSC Certification Programme, the Default Assessment Tree and Risk Based Framework was undertaken at the beginning of the meeting.
  - 2) The Assessment Team explained the reasons for using Risk Based Framework for PI 2.2.1 and PI 2.4.1.
  - 3) The SICA workshop was conducted using the Reference Tables available in the FAM through a powerpoint presentation in order to clarify any doubt from attendees.
  - 4) Each stakeholder received a form with SICA Scoring Templates and Reference Tables.
  - 5) The RBF process began by requesting each stakeholder to deliberate by themselves about the elements, activities and subcomponent with higher risk level for Habitat Outcome, taking into account the temporal and spatial scales and intensity level.
  - 6) General discussion was undertaken to establish the Worst Plausible Case and to scale temporal, spatial and intensity risk level. Each decision was made by consensus. The final decision was written in the scoring table on the presentation screen for confirmation.
  - After presentation of the list of bycatch species found in INIDEP technical reports and after demonstrating the spatial scale of fishing activity, the same process was conducted for PI 2.2.1.
  - It was explained that for PIs assessed by RBF, Conditions would be established if Certification was achieved, and that comments on which Conditions may be required were welcomed.
- c. Summary of information obtained:
  - a. All 4 vessels fish up to 810 days-year.
  - b. 13,5% of total scallop beds area is trawled by year with 4 vessels through the 14 established management units. This is achieved by two management measures: rotational system and limited fishing effort to 4 vessels.
  - c. An area trawled may require 1 to 3 years to be recovered.

- d. Hydroids are not considered the main settlement organisms for scallops and, due to its life cycle, are not considered the most vulnerable species group. Echinoids were identified as the most vulnerable group by all stakeholders, mainly due to its important biomass as bycatch and its fragility. The most abundant echinoids (sea urchins) species in the bycatch are: *Steredinus agassizii, Pseudoechinus magellanicus, Austrocidaris canaliculata, Arbacia dufresnii* and *Tryphilaster philippi*.
- e. Asteroids were considered alternative species at risk, e.g. the species; *Ctenodiscus australis* and *Comasterias lurida*.
- d. Components that have been discussed or evaluated in the assessment are mentioned in item (a) above.

The activities and subcomponents that have been discussed or evaluated in the assessment are:

For PI 2.2.1 two elements were considered and discussed: Echinoderms and Echinoids. It was redily agreed that the most risky activity was trawling for epibenthic fauna in general.

For PI 2.4.1 It was easily agreed that the most risky activity was trawling for epibenthic fauna in general. The element to identify was a benthic habitat type. Scoping involved identifying the habitat units (types) during previous meetings with stakeholders. Using the FAM *Benthic habitat identification* guidance, it was possible to establish benthic habitat units based on three attributes - substratum (sediment type) geomorphology (seafloor topography) and fauna (dominant faunal group). SICA workshop attendees considered the mixed sand-mud sediment homogenous throughout the continental platform where scallops beds are found. The most affected geomorphology were the high density commercial Patagonian scallops beds, with live scallops and shells, in the region of the shelf front. The faunal attribute or dominant faunal group selected, was the scallop;, being considered the major species constructing the community and dominating the biomass. As the Patagonian scallop is the target species of the fishery under assessment, it was considered the most vulnerable element.

e. The process of choosing the most vulnerable scoring element: consensus by open discussion, see item b) above.

# 5. Traceability

# 5.1.Eligibility Date

- a. The target eligibility date set is, following the updated timeline.
- b. Both companies fishing the resource are already Chain of Custody certificate holders, commercializing product caught from their own fishing operations including a total of 4 factory vessels. The fishery was issued an MSC Certificate for Sustainable Fisheries in 2006.

# **5.2.Traceability within the Fishery**

- a. Tracking, tracing and segregation systems within the fishery.
  - Federal regulations supporting tracking and tracing systems:

The Subsecretaría de Pesca y Acuicultura (Sub-Secretariat of Fishing and Aquaculture - SSPyA) has implemented an Integrated Control of Fishing Activities (SICAP, see Figure 27) which includes:

- Satellite Position Monitoring System over the Argentine Economic Exclusive Zone.
- Control and surveillance of fishing activities conducted by the PNA (Coast Guard), Armada Argentina (Navy) and Fuerza Aerea (Air Force) with corvettes, aircraft and helicopters in order to prevent illegal fishing.

This information is complemented with discharge control and on board reports. A daily electronic log book is already incorporated (SAGPyA Resolution N° 167/2009) for the Patagonian scallop fishery, indicating the daily production of Patagonian scallop muscle (for more details see Section J2 – Principle 3 Background and Figure 25).

The Servicio Nacional de Sanidad Animal (SENASA - National Service of Sanitary and Food Quality) is the agency responsible for sanitary inspection and certification of food products and by-products; including control of processing vessels and plants, packaging, transportation, marketing and federal traffic as well as imports and exports of products.

The Dirección General de Aduana (DGA - Customer General Directorate), a subdivision from the Administración Federal de Ingresos Públicos (AFIP - Federal Administration of Public Revenue), is responsible for implementing the legislation on goods import and export, as well as on control over goods entering or leaving Argentinean territory. Its main activities involve assessing, classifying, monitoring and control of goods' entry and exit, as well as transportation media, ensuring compliance with existing provisions. This institutional framework and tools applied involve the following issues, including control of resource extraction and processing and fishing products:

# • Satellite Monitoring during the trip

As set out in the SSPyA Provision No. 02/2003, all fishing vessels must carry a satellite monitoring equipment on board, in perfect operating condition. This system must inform vessel's position and other navigation data every hour. If a vessel stops emitting signal for a period of two hours, its captain is commanded to return with the vessel immediately to port. Additionally, the SSPyA has the authority to query (polling) vessel position at any time. At present, the entire commercial fishing fleet greater than 13 m, operating in national waters, are satellite-monitored. A total of 554 fishing vessels with a daily operation of about 225 to 300 vessels approximately are now involved. Vessel positions are updated twice a day in the MINAGRI website (www.minagri.gob.ar) which is open for public consultation.

# • On board inspections

The on board inspector prepares a Trip Monitoring Report to allow control authorities to evaluate his performance and to establish if any non-compliance with fisheries regulations has occurred.

• Fishing Report

An affidavit of catches by species and fishing area is prepared and signed by the captain for each trip. The master prepares a statement with the information for each fishing day and a statement with the information of the whole trip (end of trip). The daily report is sent electronically from the vessels to the management authority, the fishing trip report is delivered on arrival in port once the trip is concluded.

# • On board inspections

The on board inspector prepares a Trip Monitoring Report to allow control authorities to evaluate his performance and to merit any non-compliance with fisheries regulations, if any.

# • Fishing Report

An affidavit of catches by species and fishing area is prepared and signed by the captain for each trip. The master prepares a statement with the information for each fishing day and a statement with the information of the complete trip (end of trip). The daily report is sent electronically from the vessels to the management authority. The fishing trip report is delivered once concluded the trip, when arriving in port.

# • Entry declaration

The return to port is documented by the PNA (Argentine Coast Guard). Additionally, a Control and Landing Verification Act is issued by the SSPyA inspectors in port. This regulation is applied to all Argentinean flagged vessels, the only ones authorized to fish in the Argentinean EEZ.

• Transport, processing and delivering

An Centro Integrado de Control de Actividades Pesqueras (CINCOPE - Integrated Control Centre for Fishing Activities) is made up by members from the SSPyA Control Service, National Enforcement Authorities from the Province of Buenos Aires, the PNA, Mar del Plata Sanitary Authorities, SENASA and the AFIP. Its main function is to control and validate fishing companies remit-vouchers prepared and presented by truck drivers who transport goods to and from plants. Validation is performed either by a municipality agent or SENASA.

SENASA also audits and endorse the plant processing books, where all incoming goods to be processed and sold are recorded.

Export controls: exporting goods must be accompanied by an Export Sanitary Certificate issued by SENASA and an Export Manifest (Shipping Permit) issued by the AFIP.

• Certificate of Legal Capture

A Legal Capture Certification Federal System is established by the SSPA Disposition 8/2009. The certificate is issued by the National Direction of Fisheries Coordination against presentation of the Export Declaration and Sanitary Certification (issued by the National Food Sanitary Service-SENASA) and after verificating that the product to be exported comes from a legally obtained capture.

# 5.3.Eligibility to Enter Further Chains of Custody

a. Both companies licensed to exploit the Patagonian scallop resource, Glaciar Pesquera S.A. and Wanchese Argentina S.A., are CoC certified by Organización Internacional Agropecuaria S.A.

Wanchese Argentina S.A. has recently entered the Certificate for Sustainable Fisheries. It is one of the two companies fishing the Patagonian scallop on the Argentine Continental Shelf, each of which operate two factory vessels. Both vessels from Wanchese Argentina S.A., namely Erin Bruce and Miss Tide, operate from Mar del Plata port. Patagonian scallop muscles are unloaded in cartons of 19.5 Kg and 17.5 kg. They are either directly stored in sealed containers and shipped to USA or sent to a processing plant in Mar del Plata where they are graded by size, packaged in cartons of 15 kg and then stored in sealed containers to be shipped to France. In both cases each container has at least 2 seals. The containers are not shipped to the customers until SENASA gives permission for export.

Wanchese Argentina S.A. has a traceable system for managing products, with documented records for each trip and processing step, which allow traceability from their final products to on board catch loading.

- b. Both companies export their products. Small boxes may be sold from Glaciar Pesquera S.A. to Argentine customers. This is recorded in an Unloading Report.
- c. Landing points are Mar del Plata (3 vessels) port and Ushuaia port (1 vessel), both in Argentina.
- d. The ownership's point of change, from which Chain of Custody (CoC) certification is required, is at arrival to the international port were scallops shipped arrive.

# 5.4. Eligibility of Inseparable or Practically Inseparable (IPI) stock(s) to Enter Further Chains of Custody

No IPI stock(s) is involved in the certification.

# 6. Evaluation Results

# **6.1.Principle Level Scores**

# Table 6.1: Final Principle Scores

Final Principle Scores			
Principle Score			
Principle 1 – Target Species	86.9		
Principle 2 - Ecosystem	86		
Principle 3 – Management System	92.4		

# 6.2.Summary of Scores

Prin- ciple	Wt (L1)	Component	Wt (L2)	PI No.	Performance Indicator (PI)	Wt (L3)	Weight in Principle	Score	Contributio n to Principle Score
						Either			Either
One	1	Outcome	0.5	1.1.1	Stock status	0.5	0.25	85	21.25
				1.1.2	Reference points	0.5	0.25	90	22.50
				1.1.3	Stock rebuilding			NA	
		Management	0.5	1.2.1	Harvest strategy	0.25	0.125	90	11.25
				1.2.2	Harvest control rules & tools	0.25	0.125	90	11.25
				1.2.3	Information & monitoring	0.25	0.125	90	11.25
				1.2.4	Assessment of stock status	0.25	0.125	75	9.38
Two	1	Retained	0.2	2.1.1	Outcome	0.333	0.0667	100	6.67
		species		2.1.2	Management	0.333	0.0667	100	6.67
				2.1.3	Information	0.333	0.0667	100	6.67
		Bycatch	0.2	2.2.1	Outcome	0.333	0.0667	80	5.33
		species		2.2.2	Management	0.333	0.0667	70	4.67
				2.2.3	Information	0.333	0.0667	70	4.67
		ETP species	0.2	2.3.1	Outcome	0.333	0.0667	100	6.67
				2.3.2	Management	0.333	0.0667	100	6.67
				2.3.3	Information	0.333	0.0667	100	6.67
		Habitats	0.2	2.4.1	Outcome	0.333	0.0667	70	4.67
				2.4.2	Management	0.333	0.0667	90	5.33
				2.4.3	Information	0.333	0.0667	75	5.00
		Ecosystem	0.2	2.5.1	Outcome	0.333	0.0667	85	5.67
				2.5.2	Management	0.333	0.0667	85	5.33
				2.5.3	Information	0.333	0.0667	90	5.33
Three	1	Governance	0.5	3.1.1	Legal & customary framework	0.25	0.125	100	12.50
		and policy			Consultation, roles &	0.25			
				3.1.2	responsibilities	0.25	0.125	100	12.50
				3.1.3		0.25	0.125	100	11.25
		<b>F</b> ishers and sifts	0.5	3.1.4	Fisher and site shineting	0.25	0.125	90	10.63
		risnery specific	0.5	3.2.1	Fishery specific objectives	0.2	0.1	90	9.00
		system		3.2.2	Decision making processes	0.2	0.1	95	9.00
				3.2.3	Compliance & enforcement	0.2	0.1	100	10.00
				3.2.4	Research plan	0.2	0.1	85	8.50

3.2.5	Management performance evaluation	0.2	0.1	90	9.00
	_				
	Overall weighted Principle-level so	cores			Either
	Principle 1 - Target species	Stock reb scored	uilding PI ı	not	86.9
		Stock reb	uilding PI	scored	
	Principle 2 - Ecosystem				87.7
	Principle 3 - Management				94.8

# **6.3.Summary of Conditions**

#### Table 6.3: Summary of Conditions

Condition number	Condition	Performance Indicator
1	Technical reports, containing the evaluation of the stock and harvest control rules must be audited by external peer reviewers. It can be done at request of INIDEP National Director of Research or CFP.	PI 1.2.4. There is an adequate assessment of the stock status.
2	Record the components of bycatch, describe how they, and the undersized scallops, are sorted from the scallop catch. Describe damage, attribute causes of damage in the sorting process, and quantify damage to main bycatch species in the sorting process. Measure subsequent mortality of main bycatch species in experiments on the sea floor. These studies will give a baseline to measure reductions in bycatch mortality brought about by gear improvements. This Condition requires INIDEP to: 1) describe clearly the sorting mechanisms for bycatch and define sources of damage, and damage that could subsequently result in mortality, 2) to measure the survival of the main bycatch species after sorting of the catch in experiments on the seafloor.	PI 2.2.1. The fishery does not pose a risk of serious or irreversible harm to the bycatch species or species groups and does not hinder recovery of depleted bycatch species or species groups
3	This Condition requires the fishing companies to test experimentally and document development of trawl gear that reduces bycatch. The fishing companies should convene workshop(s) of the four skippers of the commercial vessels, along with gear technologists, to discuss how different gear and different rigging of the nets could be utilized and developed to reduce impact of the gear on the seafloor, reduce bycatch landed by inducing scallops to swim off the seafloor, and to reduce crushing injury of seafloor organisms by not needing to fish the gear hard down. The results of the workshop(s) must be documented.	PI 2.2.2. There is a strategy in place for managing bycatch that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to bycatch populations
4	Document the Observer data that has recorded tow by tow information of main species bycatch, commercial scallop weight, juvenile scallop weight, scallop shell weight. Develop statistical tests to explore trends in the long-term data set. Document all the quantitative data from the 10L by-catch samples collected for each bed, by the On Board Observer Programme, compare these with the 1995 data base, develop statistical tests to compare changes over the years of the fishery. Using tests of sufficient power to establish significance, analyze the quantitative by-catch data obtained during the	PI 2.2.3. Information on the nature and the amount of bycatch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch

	annual research biomass surveys from the trawls or dredges in fished areas with those obtained from trawls or dredges in non- fished zones within the same beds. Develop statistical tests to explore trends in the long-term data set.	
-	Use a Picard dredge or similarly non-size selective benthic sampling device, to systematically sample each Management Unit, with an equal number of stations in fished areas and un- fished reserve areas. Identify all organisms to lowest possible taxon and count and weigh each taxon. Describe the benthic habitat from these samples. Compare benthos between fished and un-fished areas and between Management Units.	PI 2.4.1. The fishery does not cause serious or irreversible harm to habitat structure, considered on a regional or bioregional basis and function
5		PI 2.4.3. Information is adequate to determine the risk posed to habitat types by the fishery and the effectiveness of the strategy to manage impacts on habitat types

# 6.3.1. Recommendations

There are no recommendations.

# 6.4. Determination, Formal Conclusion and Agreement

The draft determination is that the fishery should be certified with Conditions.

This section will be completed in the Final and Public Certification report.

# 6.5. Changes in the fishery prior to and since Pre-Assessment

Research improvement supported by the Client (and the different management agencies) during the Full Assessment Certification perior have been detailed in the Surveillance Reports and in previous Principles 1,2 and 3 Background sections of this report.

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# Appendices

# **Appendix 1 Scoring and Rationales**

## Appendix 1.1 Performance Indicator Scores and Rationale

# Evaluation Table PI 1.1.1

PI	1.1.1	Th	e stock is at a level which maintains high productivity and has a low probability of recruitment overfishing
SG	Issue	Met? (Y/N)	Justification/Rationale
60	а	Y	It is <b>likely</b> that the stock is above the point where recruitment would be impaired.
80	а	Y	It is <b>highly likely</b> that the stock is above the point where recruitment would be impaired.
			The spatial distribution of Patagonian scallop beds is concentratied along the continental slope. The zone of scallop beds iswas divided into 14 management units using historical information from surveys and the distribution of fishing during the early fshery from 1995 to 2001. Annual fishery-independent assessments of beds of each management unit has been carried out to estimate the biomass, by INIDEP (Lasta et al., 2001b; annual INIDEP Survey Reports). These direct estimates of biomass track the actual state of the population and how it is responding to fishing. The lack of change in total biomass over the history of the fishery shows that recruitment has not been impaired.
			are monitored in each management unit in the annual biomass surveys. The TAC is set annually at 40% of lowest confidence interval of the estimated commercial biomass.
			Within any management unit there are several smaller areas (grounds) that have high densities of scallops. Within these grounds, there are small areas that have commercial densities. These areas are named fishing beds. Thus, the area actually fished is only small a small proportion of the total ground. The database shows fishing covers 13.5 % of the total area of beds with commercial density, and 1.4 % of the total area of the Management Units.
			Since the beginning of the fishery (1996) fishing effort, size structure, CPUE, density have been recorded. The large database showing historical development of the fishery demonstrate fishing follows a rotational strategy.
	b	Y	The stock is at or fluctuating around its target reference point.
			The scallop stock is spatially structured as a metapopulation. In this spatially structured population each component (bed) can fluctuate in abundance, but the whole stock can remain stable. When biomass decreases in a particular bed, TAC in that bed is set low. The fleet fishes until the TAC is reached. Then it moves to another bed. This scheme has been followed for the 15 years of the fishery. The TAC, $0.4 B_{commercial}$ , acts like a reference point.

PI	1.1.1	Th	e stock is at a level proba	which maintains high pro bility of recruitment overf	ductivity and has a low fishing
			A simulation mod appropriate referen strategies; evaluated (including testing considered uncertain Unlike other fishe reliance on a re- sustainability is aca	el has tested the Assess ice levels. It evaluated th d the status of the fishery the assumptions) (Kittleir nties. eries, actual biomass is ference point, derived f demic and probably inappro	nent that the fishery is at e consequences of harvest relevant to reference levels, n 2008, 2009). The model monitored annually, hence from a model, to ensure opriate.
100	а	N	There is a <b>high deg</b> where recruitment v	<b>gree of certainty</b> that the st yould be impaired.	ock is above the point
			The Patagonian scal from the size of the several factors inclu the benthos (adequa complexity of the re- trawling does not a of scallop biomas recruitment not hav	llop fishery is strongly deperer e reproductive stock of scal uding oceanographic condi- te hydroids for settlement), ecruitment processes makes affect recruitment in some s throughout the history ing been effected so far.	endent on recruitment. Apart lops recruitment depends of tions, faunal composition of and adequate substrata. The it impossible to be sure that beds. However, the stability of the fishery, ponts to
	b	Р	There is a <b>high deg</b> around its target ref point, <b>over recent</b> y	<pre>gree of certainty that the st erence point, or has been a /ears.</pre>	ock has been fluctuating bove its target reference
			The surrogate refer- been met since the b depended only of th Unlike other fishe reliance on a re- sustainability is aca	ence points applied in this beginning of the fishery (15 he reproductive stock. eries, actual biomass is ference point, derived f demic and probably inappro	fishery (detailed below) has years). Recruitment has not monitored annually, hence rom a model, to ensure opriate.
F	Reference	es			
			Stock Status re	lative to Reference Points	
			Type of reference point	Value of reference point	Current stock status relative to reference

	reference point	point	relative to reference point
Target reference point	Direct biomass estimation	It depends on the result of direct biomass estimation	Recruitment remains unaffected, as biomass has remained stable.
	$Z = n_{commercial} / n_{total}$ must to be over 0.5 to open the fish in an área within a bed.		
Limit reference point	B lim TAC is defined as 40% of the minimum confidence limit	It depends of the results of direct biomass estimation (should there be no annual estimation, the bed will remain	The biomass of the fishery has remained stable, i.e. the fishery is sustainable, under this regime.

PI 1.1.1	The stock is at a leve prol	el which maintains high pro pability of recruitment over	ductivity and has a fishing	low
	for the commercial scallop stock biomass estimation.	closed)		
OVERALL PER	FORMANCE INDICATOR	SCORE:		85
CONDITION NUMBER (if relevant):				

Ы	PI 1.1.2		Limit and target reference points are appropriate for the stock		
SG	Issue	Met? (Y/N)	Justification/Rationale		
60	а	Y	Generic limit and target reference points are based on justifiable and reasonable practice appropriate for the species category.		
80	а	Y	Reference points are appropriate for the stock and can be estimated		
	<b>u</b>		Total allowable catch is established from the commercial fraction of the population (more than 55 mm shell height). The Management Unit is opened if the commercial scallops exceeds 50 % of the scallop stock in that unit. Regionalized index $Z = n$ commercial / n total) (Resolution CFP N° 4/2005). Scallop biomass is tracked in annual surveys and the harvest regime sets TAC at 0.4 B <sub>commercial</sub> so total biomass remains above 60%		
	b	Y	The limit reference point is set above the level at which there is an		
			With 60% of the commercial sized scallops remaining, the reproductive capacity of the population is not impaired. Tracking the total biomass in annual surveys shows no decline in the population pointing to the success of this management regime.		
	С	Y	The target reference point is such that the stock is maintained at a level consistent with BMSY or some measure or surrogate with similar intent or outcome.		
			The appropriateness of whole stock fishing mortalities as target or limit reference points for fisheries of sedentary stocks including rotational fishing or area closures (such as occurs in this fishery) has been seriously questioned (Hart, 2003). The TAC is established annually for each bed within both management units, taking into account commercial biomass and minimum legal size. The TAC is 40% of the lower confidence limit of commercial biomass (Resolution CFP N° 4/2005). Areas where juveniles exceed 50% of the population are closed to fishing in order to protect recruitment. The fishing strategy of individual fishers leads to the development of a loose rotational fishing pattern.		
			The direct tracking of biomass in the annual surveys, shows the population is maintained at a stable sustainable level equivalent to BMSY.		
	d	У	Key low trophic level species, the target reference point takes into account the ecological role of the stock.		
			Not applicable.		
100	а	Y	The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity following consideration of <b>precautionary issues</b> .		
			Because recruitment is only partially dependent on the size of the reproductive stock and the precautionary fishing strategy followed leaves large portions of the scallop population unfished, we believe reproductive capacity is not impaired. This is confirmed in the stability of scallop biomass throughout the history of the fishery.		

#### Evaluation Table: PI 1.1.2

PI	1.1.2		Limit and target reference points are appropriate for the stock	
SG	Issue	Met? (Y/N)	Justification/Rationale	
	b	Ρ	The target reference point is such that the stock is maintained at a le consistent with $B_{MSY}$ or some measure or surrogate with similar inter- outcome, or a <b>higher level</b> , and takes into account relevant precaut issues such as the ecological role of the stock with a <b>high degree of</b> <b>certainty</b> . The reference points for harvest, requirement of each bed to har 50% commercial sized scallops protects high concentrations of j scallops, and setting the TAC at 0.4 B <sub>commercial</sub> maintain a large repro- stock. The direct tracking of biomass in the annual surveys, shows these rules maintain the population at a stable sustainable level, equiva- BMSY.	evel nt or ionary f ve over uvenile ductive harvest alent to
F	References			I
OVER	OVERALL PERFORMANCE INDICATOR SCORE: 90			90
CONE	DITION NU	JMBER	(if relevant):	

PI	1.1.3		Where the stock is depleted, there is evidence of stock rebuilding	J	
SG	Issue	Met? (Y/N)	Justification/Rationale		
60	а		Where stocks are depleted rebuilding strategies which have a reason expectation of success are in place.	able	
	b		A rebuilding timeframe is specified for the depleted stock that is the sl of 30 years or 3 times its generation time. For cases where 3 generation less than 5 years, the rebuilding timeframe is up to 5 years.	norter ions is	
	С		Monitoring is in place to determine whether they are effective in rebuil the stock within a <b>specified</b> timeframe.	lding	
80	а		Where stocks are depleted rebuilding strategies are in place.		
	b		A rebuilding timeframe is specified for the depleted stock that is the sl of 20 years or <b>2 times its generation time</b> . For cases where 2 gener is less than 5 years, the rebuilding timeframe is up to 5 years.	norter ations	
	С		There is <b>evidence</b> that they are rebuilding stocks, or it is <b>highly likely</b> based on simulation modelling or previous performance that they will to rebuild the stock within a <b>specified</b> timeframe.	/ be able	
100	а		Where stocks are depleted, strategies are demonstrated to be rebuild stocks continuously and there is strong evidence that rebuilding will b complete within the specified timeframe.	ing e	
	b		The shortest practicable rebuilding timeframe is specified which does exceed <b>one generation</b> time for the depleted stock.	not	
	Referenc	es		NI - 4	
OVE	RALL PE	RFORM	IANCE INDICATOR SCORE:	Not appli cable	
CON	CONDITION NUMBER (if relevant):				

# Evaluation Table: PI 1.1.3

PI	1.2.1		There is a robust and precautionary harvest strategy in place
SG	Issue	Met? (Y/N)	Justification/Rationale
60	а	Y	The harvest strategy is <b>expected</b> to achieve stock management objectives reflected in the target and limit reference points.
	b	Y	The harvest strategy is <b>likely</b> to work based on prior experience or plausible argument.
	С	Y	Monitoring is in place that is expected to determine whether the harvest strategy is working.
80	а	Y	The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy <b>work together</b> towards achieving management objectives reflected in the target and limit reference points.
	b	Y	The harvest strategy may not have been fully tested but monitoring is in place and evidence exists that it is achieving its objectives.
100	а	Ρ	The harvest strategy is responsive to the state of the stock and is <b>designed</b> to achieve stock management objectives reflected in the target and limit reference points. Many common fishery models aiming to achieve MSY sustainability are inappropriate for sessile stocks with spatially complex distributions. These are more appropriately managed under a rotational fishing regime, which is a more precautionary strategy for protecting the fishery from both growth and recruitment overfishing as well as protecting benthic habitats purposes (Hart, 2003). The annual appraisal of biomass within each management unit and its use in setting the TAC and other harvest rules, maximises the responsiveness of the management strategy to the state of the stocks and achieves MSY.
	b	Ρ	The performance of the harvest strategy has been <b>fully evaluated</b> and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels. All scallop stocks are structured as "metapopulations" in which subpopulations of sedentary individuals are connected with each other through the dispersal of pelagic larvae. When fishing follows a rotational harvest strategy that can be monitored and fully controlled, and when several areas remain unfished, the consequences of stock removal are difficult to test. The population is assessed annually in each management unit so the effectiveness of the management strategy is also directly evaluated each year. These assessments show the management regime is achieving its objectives at the scale of the management unit.

# Evaluation Table: PI 1.2.1

PI 1.2.1			There is a robust and precautionary harvest strategy in place		
SG	Issue	Met? (Y/N)	Met? Justification/Rationale		
			Since the beginning of the fishery the harvest strategy was modified to to improve the original division of the fishery, from two managemer (Northern sector (N) and Southern sector (S)) to 14 Management Un TAC is established for each unit. Each unit can be opened and following rotational criteria. Information derived from fleet operations define the area to be surve the research vessels, under a Bayesian criterion.	in order it zones its. The closed eyed by	
	References				
OVE	OVERALL PERFORMANCE INDICATOR SCORE: 90				
CON	CONDITION NUMBER (if relevant):				

PI	1.2.2		There are well defined and effective harvest control rules in place
SG	Issue	Met? (Y/N)	Justification/Rationale
60	а	Y	<b>Generally understood</b> harvest rules are in place that are consistent with the harvest strategy and which act to reduce the exploitation rate as limit reference points are approached.
	С	Y	There is <b>some evidence</b> that tools used to implement harvest control rules are appropriate and effective in controlling exploitation.
80	а	Y	<b>Well defined</b> harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached.
	b	Y	The <b>selection</b> of the harvest control rules takes into account the <b>main</b> uncertainties.
	С	Y	<b>Available evidence indicates</b> that the tools in use are appropriate and effective in achieving the exploitation levels required under the harvest control rules.
100	a	Y	<ul> <li>Well defined harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached.</li> <li>A set of pre-agreed rules are used for determining the management action in response to changes in indicators of stock status with respect to the TAC.</li> <li>The law requires daily fishing returns provided daily by email and collectively at the end of each fishing trip. Fishing returns are the responsibility of the captain. They detail number of hauls, position, scallop muscle production (total catch is estimated by the management authority using a conversion factor - CF).</li> <li>CFP convert the catch weight (muscle only) to scallop biomass and keep running tallies of scallops landed in each management unit. The TAC is designed to prevent overfishing. The amount of scallops caught is closely monitored by INIDEP, the SSPyA and the fishing companies and area closures can be implemented by the CFP within 1-3 days of the fleet reaching the TAC.</li> <li>Satellite monitoring and Observer records show the positions of each vessel in real time. Once the TAC is reached, the MU is closed. The satellite monitoring and observer records confirm no further fishing occurs there. No TAC overruns occur</li> </ul>
	b	Р	The <b>design</b> of the harvest control rules (HCR) takes into account a <b>wide</b> <b>range</b> of uncertainties. The HCR allow an administrative rapid-response and viable management of

# Evaluation Table: PI 1.2.2

PI	1.2.2		There are well defined and effective harvest control rules in place	•	
SG	Issue	Met? (Y/N)	Justification/Rationale		
	С	Ρ	the resource. The use of conversion factor (CF) proposed by INID varied from 7.14 to 12.16 depending of the scallop size, bed, and s variability of scallop condition. However, the CFP always used a value because of the extreme difficulty to have a different one for eve every year modify it considering all sources of variability. Now thi fixed at 7.14. The use of the one conversion value to estimate be landed, is pragmatic but by utilising the lowest mean value encount conservative and likely to result in fishers catching less biomass to TAC. The HCR do not use a scallop fixed density per unit area because if guaranteed to control fishing because it is dependent on economic such as profitability and trade. <b>Evidence clearly shows</b> that the tools in use are effective in achieving exploitation levels required under the harvest control rules. All the satellite monitoring and observer reporting show that all the F being observed by fishers. The estimates from the annual surveys of be show that the exploitation level achieved by the rules is sustainable.	EP has easonal a single ery bed, s CF is biomass ered, is han the t is not factors ng the ICR are biomass	
]	References				
OVE	OVERALL PERFORMANCE INDICATOR SCORE: 90				
CON	CONDITION NUMBER (if relevant):				

PI	1.2.3		Relevant information is collected to support the harvest strategy
SG	Issue	Met? (Y/N)	Justification/Rationale
60	а	Y	<b>Some</b> relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.
	b	Y	Stock abundance and fishery removals are monitored and at least one indicator is available and monitored with sufficient frequency to support the harvest control rule.
80	а	Y	fleet composition and other data is available to support the harvest strategy.
	b	Y	Stock abundance and fishery removals are <b>regularly monitored at a level</b> of accuracy and coverage consistent with the harvest control rule, and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule.
			Stock abundance is evaluated yearly for each management uit with high precision. The decision rules for this fishery are well documented in Federal Fishing Law, its complementary Decree, resolutions and minutes of the CFP. The measures are adjusted to reality and are consistent with the limitations of the data. The decision rules are evaluated once or twice a year.
	С	Y	There is good information on all other fishery removals from the stock.
			No other fishery takes place in the area where scallops beds occur so scallops are not harvested as bycatch in any fishery.
100	a	Y	A <b>comprehensive range</b> of information (on stock structure, stock productivity, fleet composition, stock abundance, fishery removals and other information such as environmental information), including some that may not be directly related to the current harvest strategy, is available. The spatial structure has been mapped in fine detail by the kriging analysis of grid pattern dredge surveys (Lasta et al., 2001). The distribution of the beds is closely related to the distribution of the oceanographic fronts along the edge and within the Continental Shelf (Bogazzi et al., 2005). The dispersion of larvae by the South-North currents along the Continental Shelf has been modelled to investigate the linkages between the beds (Bogazzi et al., 2003). Reproductive cycle was described by Campodonico et al (2007). Spatial variation in growth rate was estimated by Lomowasky et al (2007, 2008) in several beds. Studies on larval spatial movements within the zones have been studied by Franco (2010). Connectivity between beds has been explored by genetic studies (Ruzzante, 2010). Kittlein (2008), Milessi (2010) and Milessi et al. (2010) modelled fishing mortality rate for sectors and management units. Stock abundance is estimated yearly in each MU, to establish TAC, and stock removal is estimated daily from fishing returns for each vessel and from OBO data. The position of every tow by the scallon trawlers is

## Evaluation Table: Pl 1.2.3

PI 1.2.3			Relevant information is collected to support the harvest strategy		
SG	Issue	Met? (Y/N)	Justification/Rationale		
			recorded from satellite position by Prefectura Naval Argentina.		
	b	Р	All information required by the harvest control rule is monitored with frequency and a high degree of certainty, and there is a good underst of inherent <b>uncertainties</b> in the information [data] and the robustness assessment and management to this uncertainty.	high anding of	
			All information collected by INIDEP and Universidad Nacional de I Plata are available and it is used to design the harvest strategy abundance in each management unit is estimated annualy in b surveys. Harvest levels in each management unit are reported and mo daily. Positions of harvesting are monitored in real time by satellite p tracking. Further verification of vessel catches and position of a comes from daily observer records.	Mar del Stock biomass phitored position ll tows	
			The main uncertainty in catch data is from estimation of catch busing a standard muscle landing biomass conversion factor (CF) lowest of a range of conversion factor is used to estimate biomass catch, this estimate will be conservative. The muscle yield varies ar seasonally, by area, by scallop size, and even by processing plant. A model fitted the relation between muscle weight and covariates semester, scallop bed, scallop size, and two interaction terms) and ex 42% of the variability (Bogazzi, 2009).	biomass As the of the mually, A linear (year, plained	
			The CFP does not apply measures to correct conversion coefficient l of the complexity of the variation in CF and the practical diffic collecting precise information particularly at the scale of the fishery.	because culty in	
]	Referentes				
OVE	RALL PE	RFORM	IANCE INDICATOR SCORE:	90	
CON	CONDITION NUMBER (if relevant):				

PI	1.2.4		There is an adequate assessment of the stock status.
SG	Issue	Met? (Y/N)	Justification/Rationale
60	b	Y	The assessment estimates stock status relative to reference points.
	С	Y	The assessment <b>identifies major sources</b> of uncertainty.
80	а	Y	The assessment is appropriate for the stock and for the harvest control rule.
			The assessment and kriging analysis are appropriate the widespread contagious distribution of a sedentary stock of molluscs. It gives precise estimates of biomass to determine harvest rates on an annual basis and allows precise monitoring of the success of the harvest strategy and sustainability of the population
	b	Y	The assessment takes uncertainty into account.
			Recruitment is the main source of uncertainty in this fishery. Both fleet information and surveys monitor the spatial spread and timing of recruitment. Areas of heavy recruitment are closed to fishing in order to protect the new recruits.
	C	Р	The assessment of stock status is subject to peer review.
			The INIDEP reports are audited and approved by the National Director of Research, but there is no formal system using peer reviewers.
100	а	Y	The assessment is appropriate for the stock and for the harvest control rule and takes into account the major features relevant to the biology of the species and the nature of the fishery.
			The assessment and kriging analysis are appropriate the widespread contagious distribution of a sedentary stock of molluscs. It gives precise estimates of biomass to determine harvest rates on an annual basis and allows precise monitoring of the success of the harvest strategy and sustainability of the population
	b	Ρ	The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a <b>probabilistic</b> way.
			The annual surveys giving direct estimates of biomass allow direct evaluation of the sustainability of the harvest regime.
	С	Ν	The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.
	d	Ν	The assessment has been <b>internally and externally</b> peer reviewed.
I	Reference	es	

# Evaluation Table: PI 1.2.4

PI	1.2.4	There is an adequate assessment of the stock status.		
SG	Issue	Met? (Y/N) Justification/Rationale		
OVERALL PERFORMANCE INDICATOR SCORE:				
CONDITION NUMBER (if relevant):				

PI	2.1.1	The fi	shery does not pose a risk of serious or irreversible harm to the re species and does not hinder recovery of depleted retained species	etained s	
SG	Issue	Met? (Y/N)	Justification/Rationale		
60	а		Main retained species are <b>likely</b> to be within biologically based limits go to scoring issue d below).	(if not,	
	С		If main retained species are outside the limits there are <b>measures</b> in that are <b>expected</b> to ensure that the fishery does not hinder recovery rebuilding of the depleted species.	place and	
	d		If the status is poorly known there are measures or practices in place are expected to result in the fishery not causing the retained species to outside biologically based limits or hindering recovery.	that to be	
80	а		Main retained species are <b>highly likely</b> to be within biologically based (if not, go to scoring issue c below).	1 limits	
	С		If main retained species are outside the limits there is a <b>partial strate</b> <b>demonstrably effective</b> management measures in place such that the fishery does not hinder recovery and rebuilding.	gy of ne	
100	а	Y	There is a <b>high degree of certainty</b> that retained species are within biologically based limits <b>and</b> fluctuating around their target reference	points.	
			The fishery is pursued in a habitat and depth range in which demer are not common. The gear is rigged with doors attached by bridles	sal fish directly	
			to the net and with the net having a low headline height and being	towed	
			records show that no species other than the target are retained in this	fishery.	
			Observers continue monitor this situation.		
	b		Target reference points are defined for retained species.		
			Not applicable.		
ReferencesInterviews with Gabriel Blanco and OBOs report. Previous surveillance reports and the original certification report.					
OVE	RALL PE	RFORM	IANCE INDICATOR SCORE:	100	
CON	CONDITION NUMBER (if relevant):				

Evaluation	Table	DI 2 1 2
Evaluation	rable.	PI 2.1.2

PI	2.1.2	There ens	e is a strategy in place for managing retained species that is designed to sure the fishery does not pose a risk of serious or irreversible harm to retained species
SG	Issue	Met? (Y/N)	Justification/Rationale
60	а	Y	There are <b>measures</b> in place, if necessary, that are expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.
	b	Y	The measures are considered <b>likely</b> to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).
80	<u>a</u>	Y	There is a <b>partial strategy</b> in place, if necessary that is expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.
	b	Y	There is some <b>objective basis for confidence</b> that the partial strategy will work, based on some information directly about the fishery and/or species involved.
	С	Y	There is <b>some evidence</b> that the partial strategy is being <b>implemented successfully.</b>
100	а	Y	There is a <b>strategy</b> in place for managing retained species.
			The gear is rigged with doors attached by bridles directly to the net and with the net having a low headline height it neither herds fish nor captures any off the bottom. The management strategy is not to capture any vertebrates and to not retain any bycatch.
	b	Y	<b>Testing</b> supports <b>high confidence</b> that the strategy will work, based on information directly about the fishery and/or species involved.
			Observers' records show the strategy does work.
	С	Y	There is <b>clear evidence</b> that the strategy is being <b>implemented</b>
			Successfully. Observer records show all fish are returned to sea immediately and then the
			commercial-sized scallops are mechanically sorted from the trawl contents and the bycatch and under-sized scallops returned to the sea within 30 minutes of landing. Observer coverage continues to monitor the successful outcome.
	d	Y	There is some evidence that the strategy is achieving its overall
			objective.

PI	PI 2.1.2 There is a strategy in place for managing retained species that is desig ensure the fishery does not pose a risk of serious or irreversible har retained species		ned to n to		
SG	Issue	Met? (Y/N)	Met? Justification/Rationale		
			Observers' records show the strategy is achieving its overall objective	<b>.</b>	
References			Interviews with Gabriel Blanco and OBOs report. Previous surveillance reports and the original certification report.		
OVE	OVERALL PERFORMANCE INDICATOR SCORE: 100				
CON	CONDITION NUMBER (if relevant):				

# Evaluation Table: PI 2.1.3

PI 2	2.1.3	Inform detern manag	prmation on the nature and extent of retained species is adequate to ermine the risk posed by the fishery and the effectiveness of the strategy to nage retained species		
SG	Issue	Met? (Y/N)	Justification/Rationale		
60	а	Ύ	<b>Qualitative information</b> is available on the amount of main retained species taken by the fishery.		
	b	Y	Information is <b>adequate to qualitatively</b> assess outcome status with respect to biologically based limits.		
	С	Y	Information is adequate to support <b>measures</b> to manage <b>main</b> retained species.		
80	а	Y	Qualitative information and some quantitative information are available on the amount of main retained species taken by the fishery.		
	b	NA	Information is <b>sufficient to estimate</b> outcome status with respect to biologically based limits. [Scoring issue need not be scored when RBF used to score PI 2.1.1]		
	С	NA	Information is adequate to support a <b>partial strategy</b> to manage <b>main</b> retained species.		
	d	Y	Sufficient data continue to be collected to detect any increase in risk level (e.g. due to changes in the outcome indicator score or the operation of the fishery or the effectiveness of the strategy)		
100	а	Y	Accurate and verifiable information is available on the catch of all retained species and the consequences for the status of affected populations. Should any commercial species be retained, the Observer's coverage would ensure the accurate and verifiable information be available.		
	b	NA	Information is <b>sufficient to quantitatively</b> estimate outcome status with <b>a high degree of certainty</b> . Not applicable.		
	C	NA	Information is adequate to support a <b>comprehensive strategy</b> to manage retained species, and evaluate with a <b>high degree of certainty</b> whether the strategy is achieving its objective. Not applicable.		
	d	Y	Monitoring of retained species is conducted in sufficient detail to assess ongoing mortalities to all retained species. As Observers monitor the catch of every tow, should any species be retained, this coverage would ensure that ongoing mortalities could be assessed.		

PI 2.1.3		Inform detern manag	nformation on the nature and extent of retained species is adequate to letermine the risk posed by the fishery and the effectiveness of the strategy to nanage retained species		
SG	Issue	Met? (Y/N) Justification/Rationale			
References			Interviews with Gabriel Blanco and OBOs report. Previous surveillance reports and the original certification report.		
OVE	OVERALL PERFORMANCE INDICATOR SCORE:				
CON	CONDITION NUMBER (if relevant):				

# Evaluation Table: PI 2.2.1

PI	2.2.1	The fi speci	shery does not pose a risk of serious or irreversible harm to the b es or species groups and does not hinder recovery of depleted by species or species groups	ycatch /catch
SG	Issue	Met? (Y/N)	Justification/Rationale	
60	а	Y	Main bycatch species are <b>likely</b> to be within biologically based limits ( go to scoring issue b below).	if not,
	b	NA	If main bycatch species are outside biologically based limits there are mitigation <b>measures</b> in place that are <b>expected</b> to ensure that the fis does not hinder recovery and rebuilding.	hery
			Not applicable.	
	с	NA	If the status is poorly known there are measures or practices in place are expected to result in the fishery not causing the bycatch species t outside biologically based limits or hindering recovery.	that o be
80	а	Y	Main bycatch species are <b>highly likely</b> to be within biologically based (if not, go to scoring issue b below).	l limits
			Sponges are the only "main" bycatch species (as defined by MSC). In any one tow the remaining bycatch consists of approximately 1 benthic species (predators, suspension feeders and deposit feeders) any species dominating. In total more than 100 taxa have been ident the bycatch. The complexity and eveness of species abundance m difficult to define indicator species to estimate biologically based lim find the Assessment Tree difficult to interpret here, for this type of m which is still demonstrating the virgin state of the habitat.	5 to 20 without ified in nakes it nits. We esource
	b	NA	If main bycatch species are outside biologically based limits there is a <b>partial strategy</b> of <b>demonstrably effective</b> mitigation measures in partial such that the fishery does not hinder recovery and rebuilding.	lace
			Not applicable.	
100	а		There is a <b>high degree of certainty</b> that bycatch species are within biologically based limits.	
	<b>Xeterenc</b>	es	See SICA Table for rationale.	
OVE	RALL PE	RFORM	IANCE INDICATOR SCORE:	80
CONDITION NUMBER			R (if relevant):	2

PI 2.2.2		There is a strategy in place for managing bycatch that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to bycatch populations		
SG	Issue	Met? (Y/N)	Justification/Rationale	
60	a	Y	There are <b>measures</b> in place, if necessary, which are expected to maintain main bycatch species at levels which are highly likely to be within biologically based limits or to ensure that the fishery does not hinder their recovery. Bycatch species survive the catching and sorting processes and are returned to the seafloor alive. Mortality of bycatch species returned to the seafloor is considered to be less than 10% (Bremec pers.com.).	
	b	Y	The measures are considered <b>likely</b> to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/species).	
80	a	Y	There is a <b>partial strategy</b> in place, if necessary, for managing bycatch species at levels which are highly likely to be within biologically based limits or to ensure that the fishery does not hinder their recovery. 1. One partial strategy to maintain bycatch species at high levels is to minimize their direct mortality from fishing. By-catch and non-commercial size scallops are separated from the commercial size scallop catch in a large diameter, rotary sieve that revolves slowly, with the by-catch cushioned in flowing water. The by-catch suffers no visible damage and is returned to the seafloor within 30 minutes of capture (C. Bremec, pers. comm.). Little by-catch is killed. Discard mortality for most bycatch species is estimated to be less than 10% apart from the attached Cnidaria and sponges that appear to fail to reattach on discard. 2. Another partial strategy to maintain populations of bycatch species is use of no-fish zones, (set aside from the inception of the fishery), in each management unit (Resolution CFP N° 4/2005, Annex III b). The benthos of these areas will provide sources of larvae of both scallops and by-catch species for re-colonization of fished areas should they become depleted (Roberts et al., 2005; Bohnsack et al., 2004).	
	b	N	There is <b>some objective basis for confidence</b> that the partial strategy will work, based on some information directly about the fishery and/or the species involved. As bycatch species composition and numbers are not significantly different from the pre-fishery condition, these measures appear to be working.	
	С	Y	There is <b>some evidence</b> that the partial strategy is being implemented successfully. On Board Observers monitor the sorting and return of bycatch and the continued protection of the no-fishing zones.	
100	а		There is a <b>strategy</b> in place for managing and minimising bycatch.	
	b		<b>Testing</b> supports <b>high confidence</b> that the strategy will work, based on information directly about the fishery and/or species involved.	

#### Evaluation Table: PI 2.2.2

PI	2.2.2	Ther the	e is a strategy in place for managing bycatch that is designed to e fishery does not pose a risk of serious or irreversible harm to byc populations	nsure atch
SG	Issue	Met? (Y/N)	Justification/Rationale	
	С		There is clear evidence that the strategy is being implemented succe	essfully.
	d		There is some <b>evidence</b> that the strategy is achieving its objective.	
	Referenc	es		
OVE	RALL PE	RFORM	IANCE INDICATOR SCORE:	70
CON		IUMBER	R (if relevant):	3

Evaluation	Table: DI 2 2 3	
Evaluation	Table. FI 2.2.3	

		Inform	nation on the nature and the amount of bycatch is adequate to determine
PI	2.2.3	the ri	sk posed by the fishery and the effectiveness of the strategy to manage
80	lagua	Met?	luctification/Pationala
36	issue	(Y/N)	Justification/Rationale
60	а	Y	<b>Qualitative information</b> is available on the main bycatch species affected by the fishery.
	b		Information is adequate to broadly understand outcome status with
			respect to biologically based limits.
			SICA for PI 2.2.1
	С	Y	Information is adequate to support <b>measures</b> to manage bycatch.
80	а	Р	Qualitative information and some quantitative information are available
			On the amount of main bycatch species affected by the fishery.
			(see Observer manual procedures) and record the weight of scallops, and all accompanying fauna and individually, weight of: scallop valves, sponges, ophuroids, and weight and numbers of ; starfish, echinoids, gastropods, crabs, polychaeta tubes, anemones, ascidians, ray and cases, and since June
			2010, all species of fish (see Observer spreadsheet example). The 10L sub- sample taken randomly from one representative tow every day, on each
			vessel, has been frozen and delivered to the benthic research team at INIDEP
			for specific identification (see Observer Manual procedures). The bycatch
			the same manner for laboratory analysis at INIDEP.
	b	Р	Information is <b>sufficient to estimate</b> outcome status with respect to biologically based limits.
			If all the bycatch survives on its return to the seafloor, the abundance of all species will be maintained. So far no evidence has been found of change in composition of bycatch in the commercial fishery.
			SICA used for PI 2.2.1
	С	Ν	Information is adequate to support a <b>partial strategy</b> to manage main bycatch species.
			One partial strategy is to return all bycatch alive to the sea after sorting.
			Adequate information has been collected on bycatch from biomass surveys
			and the commercial fleet by OBO to determine how effective this strategy
			has been.
	d	Y	Sufficient data continue to be collected to detect any increase in risk to main
			bycatch species (e.g., due to changes in the outcome indicator scores or the
			Samples of bycatch continue to be taken by ORO and biomass surveys but
			still await tabulation and analysis.
100	2		Accurate and verifiable information is available on the amount of all
100	4		bycatch and the consequences for the status of affected populations.

PI 2.2.3		Inforn the ri	nation on the nature and the amount of bycatch is adequate to det sk posed by the fishery and the effectiveness of the strategy to m bycatch	ermine anage	
SG	Issue	Met? (Y/N)	Justification/Rationale		
	b		Information is <b>sufficient</b> to quantitatively estimate outcome status wit respect to biologically based limits with a <b>high degree of certainty</b> .	h	
	С		Information is adequate to support a <b>comprehensive strategy</b> to ma bycatch, and <b>evaluate</b> with a <b>high degree of certainty</b> whether a str is <b>achieving its objective</b> .	nage ategy	
	d		Monitoring of bycatch data is conducted in sufficient detail to assess of mortalities to all bycatch species.	ongoing	
	References				
OVE	OVERALL PERFORMANCE INDICATOR SCORE: 70				
CON	CONDITION NUMBER (if relevant): 4				

PI	2.3.1	The fig	shery meets national and international requirements for the protection of ETP species shery does not pose a risk of serious or irreversible harm to ETP species and does not hinder recovery of ETP species
SG	Issue	Met? (Y/N)	Justification/Rationale
60	а	Y	Known effects of the fishery are <b>likely</b> to be within limits of national and international requirements for protection of ETP species.
	b	Y	Known direct effects are <b>unlikely</b> to create <b>unacceptable impacts</b> to ETP species.
80	а	Y	The effects of the fishery are known and are <b>highly likely</b> to be within limits of national and international requirements for protection of ETP species.
		X	
	D	Y	species.
	с	Y	Indirect effects have been considered and are thought to be unlikely to
			create unacceptable impacts.
100	2	Y	There is a <b>high degree of certainty</b> that the effects of the fishery are within
100	a		limits of national and international requirements for protection of ETP species.
			There are no populations of protected, threatened and endangered species in the habitat of the Patagonian scallop. Whales, other mammals and turtles have never been seen by observers along the Patagonian Shelf Break Front, seabirds are common coastally particularly along coastal fronts but are not found along the shelf-break front, and turtles are only found coastally in the northern sector (G. Blanco, pers. comm.), therefore these cannot be affected
			by the fishery. The footrope and head rope of the trawl are attached directly to the doors and without sweeps the gear does not herd fish well and
			combined with the low headline height, the trawl catches few demersal fish. The few demersal fish caught are all juveniles.
			With the slow towing speed (3,8 knots), and narrow mouth opening (1-1.20 m high; E. González Lemmi, pers. comm. and 11.5-12.6 m wide; Lasta and Iribarne, 1997), the trawl would not readily catch any birds or mammals that might stray into the fishery area. OBO records show none do.
	b	Y	There is a <b>high degree of confidence</b> that there are no significant <b>detrimental direct effects</b> of the fishery on ETP species.
			No ETP species are caught because there are none in the fishery area. OBO records verify this.
	С	Y	There is a <b>high degree of confidence</b> that there are no significant <b>detrimental indirect effects</b> of the fishery on ETP species.

#### Evaluation Table: PI 2.3.1

Referentes					
OVERALL PER	OVERALL PERFORMANCE INDICATOR SCORE:				
CONDITION NUMBER (if relevant):					

#### Evaluation Table: PI 2.3.2

PI	2.3.2	The fis	shery has in place precautionary management strategies designed to: Meet national and international requirements; Ensure the fishery does not pose a risk of serious harm to ETP species; Ensure the fishery does not hinder recovery of ETP species; and Minimise mortality of ETP species.
SG	lssu e	Met? (Y/N)	Justification/Rationale
60	а	Y	There are <b>measures</b> in place that minimise mortality, and are expected to be <b>highly likely to achieve</b> national and international requirements for the protection of ETP species.
	b	Y	The measures are <b>considered likely</b> to work, based on <b>plausible argument</b> (e.g., general experience, theory or comparison with similar fisheries/species).
80	а	Y	There is a <b>strategy</b> in place for <b>managing the fishery's impact</b> on ETP species, including measures to minimise mortality, that is designed to be <b>highly likely to achieve</b> national and international requirements for the protection of ETP species.
	b	Y	There is an <b>objective basis for confidence</b> that the strategy will work, based on <b>information</b> directly about the fishery and/or the species involved.
	С	Y	There is <b>evidence</b> that the strategy is being implemented successfully.
100	a	Y	There is a <b>comprehensive strategy</b> in place for managing the fishery's impact on ETP species, including measures to minimise mortality that is designed to achieve <b>above</b> national and international requirements for the protection of ETP species. There are no populations of protected, threatened and endangered species in the babitat of the Patagonian scallon. Whales and other mammale have never
			been seen by observers, seabirds are common coastally are not found along the shelf-break front, and turtles are only found coastally in the northern sector (G. Blanco, pers. comm.), therefore these cannot be affected by the fishery. The footrope and head rope of the trawl are attached directly to the doors and without sweeps the gear does not herd fish well and combined with the low headline height, the trawl catches few demersal fish. The demersal fish caught are all juveniles.
			With the slow towing speed (3,8 knots), and narrow mouth opening (1-1.20 m high; E. González Lemmi, pers. comm. and 11.5-12.6 m wide; Lasta and Iribarne, 1997), the trawl will not readily catch any birds or mammals that might stray into the fishery area.
	b	Y	The strategy is mainly based on information directly about the fishery and/or species involved, and a <b>quantitative analysis</b> supports <b>high confidence</b> that the strategy will work. The management authority has developed National Action Plans to follow the FAO International Action Plans for Sharks and Seabirds for all Argentinean

PI	2.3.2	The fis	shery has in place precautionary management strategies designed t Meet national and international requirements; Ensure the fishery does not pose a risk of serious harm to ETP sp Ensure the fishery does not hinder recovery of ETP species; and Minimise mortality of ETP species.	o: ecies;
SG	lssu e	Met? (Y/N)	Justification/Rationale	
			fisheries. The Observers Program monitors any interactions between t and Sharks and Seabirds if they occur.	he fleet
	С	Y	There is clear evidence that the strategy is being implemented succes	sfully.
			Juvenile sharks are caught occasionally and the numbers are record every tow by the Observers who return them to the sea. No birds hav recorded.	ded for ve been
	d	Y	There is evidence that the strategy is achieving its objective.	
			Available Observer records show no ETP species are caught	
References		ces	On Board Observer Procedure Manual and Fishing Trips Records. National Action Plans for Sharks and Sea birds.	
OVERALL PERFOR			MANCE INDICATOR SCORE:	100
CONDITION NUMBER (if relevant):				

#### Evaluation Table: PI 2.3.3

PI	2.3.3	Releva impac	ant information is collected to support the management of fishery ts on ETP species including: Information for the development of the management strategy; Information to assess the effectiveness of the management strategy; and Information to determine the outcome status of ETP species.
SG	Issue	Met?	Justification/Rationale
60	a	<u>(Y/N)</u> Y	Information is sufficient to qualitatively estimate the fishery related mortality of ETP species.
	b	Y	Information is <b>adequate</b> to <b>broadly understand</b> the impact of the fishery on ETP species.
	с	Y	Information is adequate to support <b>measures</b> to manage the impacts on ETP species.
80	а	Y	<b>Sufficient data</b> are available to allow fishery related mortality and the impact of fishing to be <b>quantitatively</b> estimated for ETP species.
	b	Y	Information is <b>sufficient</b> to determine whether the fishery may be a threat to protection and recovery of the ETP species.
		v	Information is sufficient to measure trands and support a full stratemy to
	С	T	manage impacts on ETP species.
400		V	laformation is sufficient to supertiablish activate subserve status of ETD
100		Ŷ	There are no populations of protected, threatened and endangered species in the habitat of the Patagonian scallop. Whales and other mammals have never been seen by observers, seabirds are common coastally are not found along the shelf-break front, and turtles are only found coastally in the northern sector (G. Blanco, pers. comm.), therefore these cannot be affected by the fishery. The footrope and head rope of the trawl are attached directly to the doors and without sweeps the gear does not herd fish well and combined with the low headline height, the trawl catches few demersal fish. The demersal fish caught are all juveniles.
	Ø	Ŷ	Accurate and verifiable information is available on the magnitude of all impacts, mortalities and injuries and the consequences for the status of ETP species. Juvenile sharks are caught occasionally and the numbers are recorded for every tow by the Observers who return them to the sea. No birds have been recorded.
	С	Y	Information is adequate to support a <b>comprehensive strategy</b> to manage impacts, minimise mortality and injury of ETP species, and evaluate with a <b>high degree of certainty</b> whether a strategy is achieving its objectives.

PI	2.3.3	Releva impac	ant information is collected to support the management of fishery ts on ETP species including: Information for the development of the management strategy; Information to assess the effectiveness of the management strat and Information to determine the outcome status of ETP species.	egy;	
SG	Issue	Met? (Y/N)	Justification/Rationale		
			Observer reports show the fishing operation ensures no ETP specimpacted.	cies are	
References		es	On Board Observer Procedure Manual and Fishing Trips Records. National Action Plans for Sharks and Sea birds.		
OVERALL PERFORMANCE INDICATOR SCORE:					
CON	CONDITION NUMBER (if relevant):				

PI 2.4.1		The	fishery does not cause serious or irreversible harm to habitat stru considered on a regional or bioregional basis and function	cture,		
SG	Issue	Met? (Y/P/ N)	Justification/Rationale			
60	а		The fishery is <b>unlikely</b> to reduce habitat structure and function to a powere there would be serious or irreversible harm.	oint		
			SICA was performed for this PI.			
80	а		The fishery is <b>highly unlikely</b> to reduce habitat structure and function point where there would be serious or irreversible harm.	n to a		
100	а		There is <b>evidence</b> that the fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irrev harm.	versible		
References			SICA Table			
OVE	OVERALL PERFORMANCE INDICATOR SCORE:					
CON	CONDITION NUMBER (if relevant):					

### Evaluation Table: PI 2.4.1

PI	2.4.2	The	re is a strategy in place that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to habitat types
SG	Issue	Met? (Y/N)	Justification/Rationale
60	а	Y	There are <b>measures</b> in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.
	b	Y	The measures are considered <b>likely</b> to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/habitats).
80	а	Y	There is a <b>partial strategy</b> in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above. The sea floor of the Patagonian Shelf Large Marine Ecosystem is sandy and similar across the whole shelf. Abundance of all benthic species is heightened under the highly Shelf Break Front where bentho-pelagic coupling maintains high benthic production. As the scallops are the principal keystone species that structures the benthic habitat of scallop beds, successful management under principle 1 will ensure that the habitat attains Habitat Outcome 80 and above.
	b	Y	There is some objective basis for confidence that the partial strategy will work, based on information directly about the fishery and/or habitats involved. Fishers follow a rotational harvest strategy that results in fishing moving on from beds before scallops and bed structure become too reduced. Scallop biomass and populations of bycatch species within beds has been maintained through the period of the fishery
	C	Y	There is <b>some evidence</b> that the partial strategy is being implemented successfully. Scallop biomass within beds has been maintained through the period of the fishery hence the habitat they structure has also been maintained also evidenced in the lack of change in abundance and composition of bycatch species over this time.
100	a	Ρ	There is a <b>strategy</b> in place for managing the impact of the fishery on habitat types. The fishery plan that results in sustainability of the scallop fishery, ensures that the habitat primarily structured by the Shelf Break Front and the scallops themselves, is also preserved.
	b		Testing supports high confidence that the strategy will work, based on information directly about the fishery and/or habitats involved.
	C		There is <b>clear evidence</b> that that strategy is being implemented successfully.
	d		There is some evidence that the strategy is achieving its objective.

# Evaluation Table: PI 2.4.2

PI 2.4.2		There is a strategy in place that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to habitat types			
SG	Issue	Met? (Y/N)	Vet? (Y/N) Justification/Rationale		
References			INIDEP Technical Reports. Scallop fishery Management Plan (Resolution CFP Nº 4-2008)		
OVERALL PERFORMANCE INDICATOR SCORE:					
CONDITION NUMBER (if relevant):					

PI	2.4.3	Information is adequate to determine the risk posed to habitat types by the fishery and the effectiveness of the strategy to manage impacts on habitat types			
SG	Issue	Met? (Y/N)	Justification/Rationale		
60	а	Y	There is <b>basic understanding</b> of the types and distribution of main habitats in the area of the fishery.		
	b	Y	Information is adequate to broadly understand the nature of the main impacts of gear use on the main habitats, including spatial overlap of habitat with fishing gear.		
80	а	Y	The nature, distribution and <b>vulnerability</b> of all main habitat types in the fishery are known at a level of detail relevant to the scale and intensity of the fishery.		
			The benth habitat of the Patagonian Shelf Large Marine Ecosystem is simple and widespread and similar across the outer shelf and scallop beds. Scallops are widespread across the shelf but the dense beds are determined by the Shelf Break Front. The scallop beds themselves are the main habitat type. The sediment of the seafloor of the Patagonian Shelf Large Marine Ecosystem is primarily fine sand with some mud and has little relief.		
	b	Y	Sufficient data are available to allow the nature of the impacts of the fishery on habitat types to be identified and there is reliable information on the spatial extent of interaction, and the timing and location of use of the fishing gear.		
			There is sufficient spatial data on biomass of the target species and composition of bycatch collected during the observer monitoring of fishery catch and bycatch as well as the fishery independent annual biomass surveys to identify any change in the habitat.		
	C	Ρ	Sufficient data continue to be collected to detect any increase in risk to habitat (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures). Sufficient data continues to be collected in the fishery to establish that it has little impact on the distribution and abundance of scallop beds and associated fauna.These data are supplemented by data gathered independently of the fishery in annual biomass surveys.		

#### **Evaluation Table: PI 2.4.3**

			associated fauna. These data are supplemented by data gathered independently of the fishery in annual biomass surveys.
100	а	Ρ	The distribution of habitat types is known over their range, with particular attention to the occurrence of vulnerable habitat types. Although the benthic habitat of the entire Patagonian Shelf Large Marine Ecosystem has not been systematically sampled, the evidence from the scallop fishery and other fisheries further inshore, point to being largely one simple habitat.
	b		The physical impacts of the gear on the habitat types have been quantified fully.

	С		Changes in habitat distributions over time are measured.		
References			INIDEP Technical Reports for scallop and bycatch. Scientific publications on bycatch. Observers bycatch data.		
OVERALL PERFORMANCE INDICATOR SCORE:					
CONDITION NUMBER (if relevant):					
PI	2.5.1	The fi	shery does not cause serious or irreversible harm to the key elements of ecosystem structure and function		
-----	----------	---------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------		
SG	Issue	Met? (Y/P/ N)	Justification/Rationale		
60	а	Ý	The fishery is <b>unlikely</b> to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.		
80	а		The fishery is <b>highly unlikely</b> to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.		
			The Patagonian Shelf Large Marine Ecosystem is supported by a high primary production resulting from the "upwelling" of cold waters of the Mavinas Current that when reaching the surface fuel a high primary production (this is named the Atlantic Shelf Break Front). This permanent Shelf Break Front has remained stable in position from year to year and its production is strongly linked to the seafloor in a stable bentho-pelagic coupling. The production of algae and detritus provides food for the scallop populations which are particularly dense underneath the front. Eddies in this frontal system are capable of retaining scallop larvae over these populations and are probably important. Scallops are the keystone species in the habitat and the ecosystem of the Shelf Break Front.		
			As a result of the Patagonia Shelf Break Front production, the whole Argentinean shelf has associated high secondary production which supports important pelagic (squid) and demersal (hake) fisheries. These fisheries are outside the area of the scallop fishery. It is not yet clear whether the high density of scallops associated with the front is due more to larval retention than increased food supply, but it is probably both. An important species assemblage of suspension feeders, deposit feeders and predators are closely associated with the scallop dominated habitat in this rich feeding zone.		
			changes species biodiversity.		
100	а	Р	There is <b>evidence</b> that the fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.		
			Scallop beds have remained unchanged in position and density since the inception of the fishery and the composition and diversity of bycatch has also remained unchanged, but further analyses are required.		
	Referenc	ces	<ul> <li>Alemany, D., M.E. Acha, O. Iribarne. 2009. Relationship between fish biodiversity and oceanographic fronts in the SW Atlantic shelf large scale ecosystem. Journal of Biogeography 36: 2111-2124</li> <li>Botto, F., C. Bremec, A. Marecos, L. Schejter, M. Lasta, O. Iribarne. 2006. Identifying predators of the SW Atlantic Patagonian scallop <i>Zygochlamys patagonica</i> using stable isotopes. Fisheries Research 81:</li> </ul>		

Evoluation	Table	DI 2 5 1
	i able.	FI 2.3. I

PI 2.5.1		The fi	The fishery does not cause serious or irreversible harm to the key elements of ecosystem structure and function				
SG	Issue	Met? (Y/P/ N)	Justification/Rationale				
			<ul> <li>45-50.</li> <li>Franco, B.C., 2010. Drift of Patagonian scallop larvae (<i>Zygoc patagonica</i>) on the southwestern Atlantic Ocean: model studies influences of seasonal mean advection and spawning areas. I tecnico.</li> <li>Matano, R.P., E.D. Palma, A.R. Piola, 2010. The influence of the and Malvinas Currents on the southwestern Atlantic shelf circ Ocean Sci. Discuss., 7, 837–871, 2010.</li> <li>Mauna, A. C., Franco, B. C., Baldoni, A., Acha, E. M., Lasta, M Iribarne. 2008. Cross-frontal variations in recruitment and abundance of the Patagonian scallop (Zygochlamys patagonica) SW Atlantic Shelf Break Front. ICES Journal of Marine Scien 1184-1190</li> </ul>	<i>chlamys</i> of the informe e Brazil ulation. . L., O. 1 adult ) in the ces 65:			
OVERALL PERFORMANCE INDICATOR SCORE:							
CON		NUMBER	R (if relevant):				

PI	2.5.2	There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function		
SG	Issue	Met? (Y/N)	Justification/Rationale	
60	а	Ŷ	There are <b>measures</b> in place, if necessary.	
	b	Y	The <b>measures</b> take into account potential impacts of the fishery on key elements of the ecosystem.	
	С	Y	The measures are considered likely to work, based on <b>plausible argument</b> (e.g., general experience, theory or comparison with similar fisheries/ecosystems).	
80	a	Y	There is a <b>partial strategy</b> in place, if necessary. Bentho-pelagic coupling of thePatagonia Shelf Break Front determines the production of food for scallop and associated species in the benthic community. Eddies in the currents associated with the front probably ensure	
			larvae of scallops and associated species in the benthic community are retained close to parent populations. Fishing can have no effect on the dynamics of this major oceanographic feature. Scallop fishing is confined to the area under the Patagonia Shelf Break Front. Scallop fishing has no impact on the ecosystem beyond the limits of the Shelf Break Front. Therefore,no strategy is needed to protect the ecosystem from fishing.	
	b	Y	The partial strategy takes into account <b>available information and is</b> <b>expected to restrain impacts</b> of the fishery on the ecosystem so as to <b>achieve</b> the Ecosystem Outcome 80 level of performance. The benthic community under the front is primarily structured by scallop populations and the fishery management plan ensures that the scallop population and its associated species are not irreversibly harmed. In this fishery the successful outcome of principle 1 ensures the successful outcome of this Principle 2 indicator.	
	C	Ŷ	There is some suidenes that the measure comprising the particl strategy	
	d	Y	There is <b>some evidence</b> that the measures comprising the partial strategy are being <b>implemented successfully</b> .	

PI	2.5.2	The	ere are measures in place to ensure the fishery does not pose a ris serious or irreversible harm to ecosystem structure and function	sk of		
SG	Issue	Met? (Y/N)	Justification/Rationale			
			Satellite monitoring and Observer records show the unfished areas undisturbed by fishing.	remain		
100	а	Р	There is a <b>strategy</b> that consists of a <b>plan</b> , in place.			
			The Fishery Management Plan implemented in Principle 1, ensu sustainability of the fishery and protects the ecosystem structu function.	res the re and		
	b	Ρ	The strategy, which consists of a plan, contains measures to addres main impacts of the fishery on the ecosystem, and at least some of measures are in place. The plan and measures are based on well- understood functional relationships between the fishery and the Components and elements of the ecosystem.	s all these		
			This plan provides for <b>development of a full strategy that restrains</b> <b>impacts</b> on the ecosystem to ensure the fishery does not cause serio irreversible harm.	ous or		
			The Fishery Management Plan implemented in Principle 1, ensu sustainability of the fishery and protects the ecosystem structu function.	res the re and		
	С		The measures are considered likely to work based on <b>prior experien</b> plausible argument or <b>information</b> directly from the fishery/ecosystem involved.	ce, ns		
	d		There is evidence that the measures are being <b>implemented succes</b>	sfully.		
			Scallon fishery Management Plan (Resolution CEP Nº 4, 2008)			
I	<b>References</b> Scallop fishery Management Plan (Resolution CFP N° 4-2008)					
OVE	RALL PE	RFORM	IANCE INDICATOR SCORE:	85		
CON	CONDITION NUMBER (if relevant):					

PI	2.5.3	There	e is adequate knowledge of the impacts of the fishery on the ecosystem
SG	Issue	Met? (Y/N)	Justification/Rationale
60	а	Ŷ	Information is adequate to <b>identify</b> the key elements of the ecosystem (e.g., trophic structure and function, community composition, productivity pattern and biodiversity).
	b	Y	Main impacts of the fishery on these key ecosystem elements can be inferred from existing information, and <b>have not been investigated in detail</b> .
80	а	Y	Information is adequate to <b>broadly understand</b> the key elements of the ecosystem.
			The Patagonian Shelf Large Marine Ecosystem covers 2.7 million square kilometres. The scallop fishery operates only 15.000 square kilometres along the Patagonia Shelf Break Front. The Shelf Break Front is the source of the high productivity of phytoplankton dominated by dinoflagellates, coccolythphorids and cyanophyciens which bloom throughout the year unlike coastal driven productivity. Living and dead algae are transported to the seafloor along the front and enhance the productivity of the benthos of the marine ecosystem in this local area.
	b	Y	Main impacts of the fishery on these key ecosystem elements can be inferred from existing information and <b>some have been investigated in detail</b> .
			The scale of the fishery compared to the size of the ecosystem, 0.005%, shows that scallop fishing can have little impact on the ecosystem.
	С	Y	The main functions of the Components (i.e., target, Bycatch, Retained and ETP species and Habitats) in the ecosystem are <b>known</b> .
			All these species and habitats depend on the production of the Patagonia Shelf Break Front as primary or secondary consumers, or predators on the rich algae and fauna developed there. The same fauna exists right across the rest of the ecosystem but at much lower densities and productivity
	d	Y	Sufficient information is available on the impacts of the fishery on these Components to allow some of the main consequences for the ecosystem to be inferred.
			The Patagonian Shelf Large Marine Ecosystem covers 2.7 million square kilometres. The scallop fishery operates only 15.000 square kilometres along the Patagonia Shelf Break Front. The Shelf Break Front is the source of the high productivity of phytoplankton dominated by dinoflagellates, coccolythphorids and cyanophyciens which bloom throughout the year unlike coastal driven productivity. Living and dead algae are transported to the seafloor along the front and enhance the productivity of the benthos of the marine ecosystem in this local area. Fishing can only impact the benthos

PI	2.5.3	There	e is adequate knowledge of the impacts of the fishery on the ecosys	stem		
SG	Issue	Met? (Y/N)	Justification/Rationale			
			of 0,005% of the ecosystem and can have no impact on the Shelf Front itself. The unexploited portion of the benthos can readily repo any reduction of the benthos by the fishery.	Break pulate		
	e	Y	Sufficient data continue to be collected to detect any increase in risk lev (e.g., due to changes in the outcome indicator scores or the operation of fishery or the effectiveness of the measures).	vel of the		
			Bycatch is continued to be monitored by the On Board Observers. Ch in the benthos, if they occur within the fished area can be detected. Ch across the rest of the ecosytemoutside the area fished are not monitored.	nanges nanges being		
100	b	Ρ	Main interactions between the fishery and these ecosystem elements c inferred from existing information, and <b>have been investigated</b> .	an be		
			The scale of the Patagonia Shelf Large Marine Ecosystemand its dyn renders the likelihood of detecting changes due to scallop fishing unlike	namics ely.		
	С	Р	The impacts of the fishery on target, Bycatch and ETP species are <b>identified</b> and the main functions of these Components in the ecosyste are <b>understood</b> .	em		
			The fishery has had no measurable impact on the density and distribut the scallop target species, nor on that of the bycatch species-althoug first signs of of redction in bycatch have been detected. No ETP sp occur in the fishery. The main fuctions of the components in the ecos are understood	tion of gh the pecies system		
	d		Sufficient information is available on the impacts of the fishery on the Components <b>and elements</b> to allow the main consequences for the ecosystem to be inferred.			
	e		Information is sufficient to support the development of strategies to man ecosystem impacts.	nage		
	RALL PE	es REORM		90		
OVE		REORIN	IANCE INDICATOR SCORE.	90		
CON		IUMBER	R (if relevant):			

PI	3.1.1	The m framev Is Pr	anagement system exists within an appropriate legal and/or customary work which ensures that it: capable of delivering sustainable fisheries in accordance with MSC inciples 1 and 2; pserves the legal rights created explicitly or established by custom of
		• Ind	corporates an appropriate dispute resolution framework.
SG	Issue	Met? (Y/N)	Justification/Rationale
60	а	Y	The management system is generally consistent with local, national or international laws or standards that are aimed at achieving sustainable fisheries in accordance with MSC Principles 1 and 2. <b>ZCPAU</b>
			The management decisions taken in the Argentine – Uruguayan Common Fisheries Zone (ZCPAU) by the Joint Technical Commission of the Maritime Front (CTMFM), November 19, 1993, are consistent with the provisions of the Treaty of the Rio de la Plata and its Maritime Front (TRPFM) and other international standards, as well as the recommendations of its technical bodies, composed of researchers from the fisheries research institutes of both countries.
			Part of the Patagonian Scallop fisheries take place in the ZCPAU under TRPFM, whose Administrative Authority is the CTMFM, integrated by political bodies and technicians from each country (Chapter XII of the Treaty). The CTMFM is in charge of establishing the management measures to be enforced for each country, to fishing resources inhabiting both water jurisdictions (Uruguayan and Argentinean EEZ) in the ZCPAU.
			The fishing fleets operating in the ZCPAU over shared resources must respect both regulations of the flag state and those emanating from the CTMFM, but Patagonian scallop is not a shared resource as agreed between both countries in 2003. The sedentary character of the resource forced the application of one of the TRPFM's clauses, by which the vessels of one country cannot operate (fish) over resources which are located exclusively on the Continental Shelf of another. With this agreement, from January 2003, Patagonian Scallop fisheries administration is under Argentinean exclusive responsibility and subject to Argentinean legislation and administrative framework.
			ARGENTINE EXCLUSIVE ECONOMIC ZONE (EEZ)
			The management system is consistent with the Federal Fishing Law 24.922/1998 (Regulatory Decree N° 748/1999) which designates the Consejor Federal Pesquero (CFP) (Federal Fisheries Council) as the Enforcement Authority, fixing the general fishing and research policies, including:
			<ul> <li>Total Allowable Catch for each species</li> <li>Individual Transferable Quotas or Catch Autorizations</li> <li>Fishing licenses and federal revenues</li> <li>Specific regulations for each fishery.</li> </ul>

		The m	anagement system exists within an appropriate legal and/or customary work which ensures that it: canable of delivering sustainable fisheries in accordance with MSC
PI	3.1.1	Pri	inciples 1 and 2;
		• Ot	oserves the legal rights created explicitly or established by custom of
		pe	ople dependent on fishing for food or livelihood; and
		• III	corporates an appropriate dispute resolution manework.
SG	Issue	(Y/N)	Justification/Rationale
			Approval of research plans
			<ul> <li>Stakeholders consultation instances and procedures</li> </ul>
			As established by Law 24.922, the Consejo Federal Pesquero ( <u>www.cfp.gob.ar</u> ) is composed by the Undersecretary of Fisheries and Aquaculture (ex SAGPyA function delegation by Resolution N° 27/2003), who chairs the sessions; one representative from each of the five littoral provinces, a representative of the Secretary of Environment and Sustainable Development, a representative of the Ministerio de <i>Relaciones</i> Exteriores y Culto (Federal Ministry of Foreign Affairs and International Trade and Cult), and two representatives of the Federal Administration.
			The Federal Fishing Law and Law 24922 and Federal Decree 214/99 also establishes the ex-Secretaria de Agricultura, Ganaderia, Pesca y Alimentos (ex-Secretary of Agriculture, livestock, Fisheries and Food) (Actually Minsiterio de Agricultura, Ganaderia y Pesca - Ministry of Agriculture, livestock and Fishery) to be the Enforcement Authority and delegates some of its functions on the Subsecretaria de Pesca y Acuicultura (Undersecretary of Fisheries and Aquaculture) (Federal Decree 748/1999 and ex SAGPyA Resolution N° 27/2003), who acts through its dependant areas: the Direccion Nacional de Coordinacion Pesquera (National Direction of Fisheries Planning) and Direccion Nacional de Regulacion Pesquera (Direction of Fisheries Regulations). Federal Decree N° 373/2007 establishes specific functions for each of these divisions. Federal Decree N° 571/2008 updates functions of the Subsecretaria de Pesca y Acuicultura (Undersecretary of Fisheries and Aquaculture).
			Federal Law 21.673/1977 designates the Instituto Nacional de Investigación y Desarrollo Pesquero (National Institute of Fisheries Research and Development) (INIDEP) as Federal Scientific Authority. INIDEP Resolution N° 118/2010 establishes its new organizational chart.
			Argentine takes part on various intergovernmental treaties and on two international commissions related to the conservation and rational use of fisheries resources: the above mentioned Joint Technical Commission of Maritime Front (CTMFM) and the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR).
			Argentina, as member of the CCAMLR, implements the Commission decisions through mechanisms established by Federal Law 25.263/2000.
			In addition to participation in the aforementioned committees, Argentina takes part on various intergovernmental treaties:

PI	3.1.1	The m framev • Is Pri • Ot pe • Inc	anagement system exists within an appropriate legal and/or customary work which ensures that it: capable of delivering sustainable fisheries in accordance with MSC inciples 1 and 2; oserves the legal rights created explicitly or established by custom of ople dependent on fishing for food or livelihood; and corporates an appropriate dispute resolution framework.
SG	Issue	Met? (Y/N)	Justification/Rationale
		(Y/N)	<ul> <li>Convention on International Trade in Endangered Species of Fauna and Flora (CITES). Approved by Law 22.344/1982.</li> <li>Convention on Migratory Species, also known as CMS or Bonn Convention. Approved by Law 23.918/1991.</li> <li>Convention on Wetlands of International Importance. Approved by Law 23.919/1991.</li> <li>International Convention for the Prevention of Ships Pollution. Approved by Law 24.089/1992.</li> <li>Convention on Biological Diversity. Approved by Law 24.375/1994.</li> <li>United Nations Convention on the Law of the Sea (UNCLOS). Approved by Law 24.543/1995.</li> <li>Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas (Compliance Agreement). Approved by Law 24.608/1996.</li> <li>Agreement on the Implementation of the Provisions of the United Nations Convention on the Development of the Sea –New York 10 December 1982-, related to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks. Approved by Law 25.290/2000.</li> <li>Conservation of Albatrosses and Petrels. Approved by Law 26.107 (2006).</li> <li>With regard to non-binding international instruments:         <ul> <li>Argentina endorsed the Code of Conduct for Responsible Fisheries</li> </ul> </li> </ul>
			<ul> <li>Conducts a National Action Plan to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Catch (IUU – Resolution CFP N° 1/2008);</li> <li>Conducts the National Action Plan for the Conservation and Management of Chondrichthyes in Argentina (Resolution CFP N° 6/2009)</li> <li>Conducts the National Plan to Reduce the Interaction between Birds and Fisheries in Argentina (Resolution CFP N° 03 and 15/2010).</li> </ul>
	b	Y	The management system incorporates or is subject by law to a <b>mechanism</b> for the resolution of legal disputes arising within the system.
	С	Y	Although the management authority or fishery may be subject to continuing
			court challenges, it is not indicating a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability of the fishery.
	d	Y	The management system has a mechanism to generally respect the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of

Ы	3.1.1	The m framev • Is Pri • Ot pe • Inc	anagement system exists within an appropriate legal and/or customary work which ensures that it: capable of delivering sustainable fisheries in accordance with MSC inciples 1 and 2; oserves the legal rights created explicitly or established by custom of ople dependent on fishing for food or livelihood; and corporates an appropriate dispute resolution framework.
SG	Issue	Met?	Justification/Rationale
		(1/N)	MSC Principles 1 and 2.
80	b	Y	The management system incorporates or is subject by law to a <b>transparent mechanism</b> for the resolution of legal disputes which is <b>considered to be effective</b> in dealing with most issues and that is appropriate to the context of the fishery.
	с	Y	The management system or fishery is attempting to comply in a timely fashion within binding judicial decisions arising from any legal challenges.
	d	Y	The management system has a mechanism to <b>observe</b> _the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.
100	b	Y	The management system incorporates or subject by law to a <b>transparent</b> mechanism for the resolution of legal disputes that is appropriate to the context of the fishery and has been <b>tested and proven to be effective</b> .
			The Consejo Federal Pesquero acts when a legal dispute arises, under request from a stakeholder. Decisions are written in Minutes (published online at <u>www.cfp.gob.ar</u> ) and efficacy has been tested during years of practice. Additionally, verbatim transcripts of the proceedings of the CFP do exist, which can be consulted if necessary in order to clarify issues related to the criterion applied in its decisions.
			In case of civilian disputes against administration decisions, the Administrative Procedure Law 19.549 and its Regulatory Federal Decree N° 1759/72 are applied, which establishe, inter alia, the mechanisms for disputes resolution. Fisheries regulations (Law 24.922 and 25.470) repeat the same recursive procedures as Administrative Procedure Law 19.549.
			The aforementioned procedure can be summarized briefly as follows:
			Every time a person feels aggrieved by a decision from any public body, he has the right to arise a reconsideration request and, in case of any unsatisfactory reply, can present the request to a higher authority, and so on until the level of Presidency of the Nation. If it is considered that the grievance persists or has not been obtained satisfactory answer in administrative levels, the possibility of making a presentation to the ordinary justice system (Judiciary) exists, under the condition of having

DI 244		<ul> <li>The management system exists within an appropriate legal and/or customary framework which ensures that it:</li> <li>Is capable of delivering sustainable fisheries in accordance with MSC</li> </ul>				
PI 3.1.1		<ul> <li>Ot</li> <li>pe</li> <li>Inc</li> </ul>	operves 1 and 2; operves the legal rights created explicitly or established by custon ople dependent on fishing for food or livelihood; and corporates an appropriate dispute resolution framework.	n of		
SG	Issue	Met?	Justification/Rationale			
		(1/1)	exhausted the administrative remedies on appropriate authorities National Executive Power.	of the		
			For cases in which the administration's decision involves an imminer to a constitutional right, any citizen can appeal directly to the or justice system and submit an urgent application, which requires the pr judge to resolve in an extremely executive manner (1 to 3 days), in or restore the right allegedly injured.Nevertheless, it will then continue judicial investigation in order to resolve definitively with more infor- and certainty.	nt harm ordinary residing order to e with a rmation		
	С	Y	The management system or fishery acts proactively to avoid legal dis or rapidly implements binding judicial decisions arising from legal challenges.	putes		
			The Dirección Nacional de Regulacion Pesquera (National Direct Fishery Regulations) acts proactively to avoid legal disputes. I involves lawyers specialized in fishery activities and regulations. To minimize the legal wrangling, any administration's decision affec rights of third parties requires a control and legal opinion prior sanction. Such control is carried out by a statutory body external agency that promotes the sanction of the rule.	tion of ts staff ting the to its to the		
d Y The management system has a rights created explicitly or estal fishing for food and livelihood in MSC Principles 1 and 2.		Y	The management system has a mechanism to <b>formally commit</b> to the rights created explicitly or established by custom of people dependent fishing for food and livelihood in a manner consistent with the objective MSC Principles 1 and 2.	e legal t on es of		
			The Assessment team did no identify legal rights created expli- established by custom on people dependent on fishing for for livelihood.	citly or od and		
	Referenc	es	Mentioned though the rationale.			
OVE	RALL PE	RFORM	IANCE INDICATOR SCORE:	100		
CON	CONDITION NUMBER (if relevant):					

PI 3.1.2		The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties		
SG	Issue	Met? (Y/N)	Justification/Rationale	
60	а	Y	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are <b>generally understood</b> .	
	b	Y	The management system includes consultation processes that obtain <b>relevant information</b> from the main affected parties, including local knowledge, to inform the management system.	
80	а	Y	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are <b>explicitly defined and well understood for key areas</b> of responsibility and interaction.	
	b	Y	The management system includes consultation processes that <b>regularly</b> <b>seek and accept relevant</b> information, including local knowledge. The management system demonstrates consideration of the information obtained.	
	С	Y	The consultation process <b>provides opportunity</b> for all interested and affected parties to be involved.	
100	a	Ŷ	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are <b>explicitly defined</b> <b>and well understood for key areas</b> of responsibility and interaction. As established by Law N° 24.922, the Consejo Federal Pesquero is composed by the ex-Secretaria de Agricultura, Ganaderia, Pesca y Alimentos (ex-Secretary of Agriculture, livestock, Fisheries and Food) (Actually Ministerio de Agricultura, Ganaderia y Pesca - Ministry of Agriculture, Livestock and Fishery), who chairs the sessions, one representative from each of the five littoral provinces, a representative of the Secretary of Environment and Sustainable Development, a representative of the Ministerio de Relaciones Exteriores, Comercion Internacional y Culto (Federal Ministry of Foreign Affairs and International Trade and Cult), and two representatives of the Federal Administration. TheConsejo Federal Pesquero's responsibilities are explicit in the Law 24.922 and its Regulatory Federal Decree N° 748/99, while its internal rules, approved by a Resolution CFP N° 16/2009, establish the procedures of operation, the administrative structures and its members' powers and responsibilities. The Federal Fishing Law and Federal Decree N° 214/99 also designates the ex-Secretaria de Agricultura, Ganaderia, Pesca y Alimentos (ex-Secretary of	

PI	3.1.2	The r Th involv	nanagement system has effective consultation processes that are open to interested and affected parties. e roles and responsibilities of organisations and individuals who are ved in the management process are clear and understood by all relevant parties
SG	Issue	Met? (Y/N)	Justification/Rationale
SG	Issue	(Y/N)	Agriculture, livestock, Fisheries and Food) (Actually Ministerio de Agricultura, Ganaderia y Pesca - Ministry of Agriculture, livestock and Fishery) as the Enforcement Authority and delegates same of its functions on the Undersecretary of Fisheries and Aquaculture (ex SAGPyA Resolution N° 27/2003), who acts through its dependant areas: the Direccion Nacional de Coordinacion Pesquera (National Direction of Fisheries Coordination), Direccion Nacional de Planificación Pesquera (National Direction of Fisheries Planning) and Direccion Nacional de Regulacion Pesquera (Direction of Fisheries Regulations). Federal Decree N° 373/2007 establishes specific functions for each of these directions and Federal Decree N° 571/2008 updates the Undersecretary of Fisheries and Aquaculture's functions         Federal Law 21.673/1977 designates the INIDEP as Federal Scientific Authority. INIDEP Resolutions N° 118 /2010 establishe its new organizational chart. Regularly INIDEP Resolution approves/improve the Activities Planning for each of its dependant research, operative and administrative areas during the following years.         Article 15 of Resolution CFP N° 4/2008 created a Commission for Analysis and Monitoring of this fishery, integrated by 2 representatives of INIDEP, 2 representatives of the Application Authority, and 1 representative for each of the companies licensed for the Patagonian scallop's exploitation. This Commission has legal force as an advisor body and must meet, at least, every 3 months, producing a minute summarizing the issues discussed during its meetings and providing its conclusions to the CFP.         The Prefectura Naval Argentina (National Coast Guard), created and regulated by Laws 18398/1969 and 20325/1973, and the Navy collaborate in the control of closed areas, illegal forcein vessels fishing fishing within national waters, navigation safety, amongst other functions. Sanitary control is

PI	PI 3.1.2		nanagement system has effective consultation processes that are open to interested and affected parties. he roles and responsibilities of organisations and individuals who are ved in the management process are clear and understood by all relevant parties	
SG	Issue	Met? (Y/N)	Justification/Rationale	
	b	Ŷ	The management system includes consultation processes that <b>regularly</b> <b>seek and accept relevant</b> information, including local knowledge. The management system demonstrates consideration of the information and <b>explains how it is used or not used</b> .	
			Regularly, the National Institute of Fisheries Research and Development (INIDEP) updates the research program to obtain information and knowledge in order to advice the Management System (www.inidep.edu.ar). I.e, see Resolution INIDEP N° 133/2010. As well, Law N° 24.922 recognizes that scientific data can be provided by other research institutions.	
			The Consejo Federal Pesquero makes their minutes (Acts), Resolutions, technical reports and other received documents public. It also convenes regularly with researchers or interest groups for technical advice prior to the decision-making and reports it in their minutes ( <u>www.cfp.gob.ar</u> ). The SSPyA carries out similar meetings, although there are not saved detailed records (minutes) of them.	
			The Management Plan for the Patagonian Scallop fishery (Resolution CFP N° 4/08, article 15) created a Commission for Analysis and Monitoring of this fishery, integrated by 2 representatives of INIDEP, 2 representatives of the Application Authority, and 1 representative for each company licensed for the exploitation of Patagonian scallop. This Commission has legal force as an advisor body and must meet, at least, every 3 months, producing a minute summarizing the issues discussed during its meetings and providing its conclusions to the CFP.	
			Law 24922 specifically establishes that restrictive measures, such as close areas or seasons, must be given widespread coverage and must be communicated adequately in advance to fishermen and to the proper control, surveillance and monitoring authorities (Article 19 of Fisheries Law 24922). It can be observed from analyzed legislation that fisheries regulations of lower hierarchy set out the requirements in a comprehensible manner, with an adequate extension and basis considering the reasonability of the adopted measures, allowing to understand adequately :	
			<ul> <li>Facts and antecedents to which measures respond</li> <li>Regulated topic.</li> <li>Motivation of measures, meaning knowing the reasons that inducted their establishment.</li> <li>Objective of measures, ensuring these are proportional and adequate.</li> </ul>	
			Decisions based on technical advice or consultation process are expressed through CFP, MINAGRI or SSPyA regulations and applied on desired time to the fishery. Thus, the management of the fishery is adjusted as a result of the consultation process.	
			Finally, Law 25831/2003 establishes the free access to ambient public information.	

PI 3.1.2		The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties			
SG	Issue	Met? (Y/N)	Justification/Rationale		
	С	Y	The consultation process <b>provides opportunity and encouragemen</b> interested and affected parties to be involved, and <b>facilitates</b> their eff engagement.	it for all ective	
			As mentioned, a Patagonian Scallop Follow up Commission was (Consejo Federal Pesquero Resolution N° 4/2008, article 15°), w consulted by both CFP and SSPyA prior to taking any decision fishery.	created hich is on the	
			An Honorary Consultant Commission at the Consejo Federal Pesque exist (Article 10° of the federal Fisheries Law and Resolution O 7/2004). Is composed of all the associations business and worke present in the country, and is used to advise on all matters related to activities. As well, the Consejo Federal Pesquero and the Secret Ambiente y Desarrollo Sustentable (Secretary of Environme Sustainable Development) promote stakeholders meetings/worksh specific issues. In both cases stakeholders are encouraged to partice different events according to the issue involved, by means of sendin concerns to the aforementioned advisory commission or to the S Follow up Commission.	ro does CFP N° ers that fishing aría de nt and ops on ipate in ng their Scallops	
			The Consejo Federal Pesquero makes public written in Minutes (pu online at <u>www.cfp.gob.ar</u> ). Additionally, verbatim transcripts of the proceedings do exist (limited access), which can be consulted if necession order to clarify issues related to the criterion applied in its decisions.	blished CFP's ssary in	
I	<b>References</b> Mentioned though the rationale.				
OVE	RALL PE	RFORM	IANCE INDICATOR SCORE:	100	
CON	CONDITION NUMBER (if relevant):				

PI	3.1.3	The makin	e management policy has clear long-term objectives to guide decision- ng that are consistent with MSC Principles and Criteria, and incorporates the precautionary approach
SG	Issue	Met? (Y/P/ N)	Justification/Rationale
60	а	Ŷ	Long-term objectives to guide decision-making, consistent with the MSC Principles and Criteria and the precautionary approach, are <b>implicit</b> within management policy
80	а	Y	<b>Clear</b> long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach are <b>explicit</b> within management policy.
100	a	Y	<ul> <li>Clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, are explicit within and required by_management policy.</li> <li>The Federal Fishing Law 24922 (Article 1°) establishes that Argentina will foment the practice of maritime fishing in order to accopmlish a maximum development compatible with the rational exploitation of living marine resources, will promote the effective protection of national interests related to fishing and will promote the sustainability of the fishing activity, the long-term conservation of the resources, the development of industrial processes environmentally appropriate to reach the maximum added value and the maximum argentine employment. These minimal premises must be complied by all fisheries in Argentine waters, as defined by the Argentine Fishery Policy established in Article 1, which is mandatory for the whole fishery system and, particularly, for the administration system, whose task is to design management policies in order to achieve the Law objectives.</li> <li>The concept of Maximum Sustainable Yield (MSY) included in Law 24922 is expressed in Article 8° of its Regulatory Decree N° 748/1999: "It must be understood as Maximum Sustainable Yield (MSY) of an species, the maximum biomass that can be captured annually without affecting its conservation".</li> <li>Additionally, other sections of the Federal Fisheries Law 24922 are related to preventing excesses on exploitation and the sustainable utilization of the fishery resources:         <ul> <li>Article 17°, by prescribing fishing in the comlpete Argentine maritime jurisdiction to be subjected to restrictions established with the objective of avoiding exploitation excesses.</li> <li>Article 11° by banning every method technique equipment and</li> </ul> </li></ul>
			<ul> <li>Article 21°, by banning every method, technique, equipment and fishing gear that may cause damage on the live aquatic resources.</li> <li>Article 22°, by referring to the organization and maintenance of a fishing regulation within the Economic Exclusive Zone, establishing measures for organization and conservation directed to the rationalization of the exploitation and insurance of the conservation of resources.</li> </ul>

PI	3.1.3	The makir	e management policy has clear long-term objectives to guide decision- ng that are consistent with MSC Principles and Criteria, and incorporates the precautionary approach
SG	Issue	Met? (Y/P/ N)	Justification/Rationale
			- Article 37°, related to the access to the fishing activity in the maritime areas under Argentine jurisdiction to fishing vessels with foreign flan. This articles indicates that determination of the capture fishing capacity by the Argentine fleet in order to estimate the available biomass for foreign fleets, could only be done considering biologic features of the exploited resource, and not considering normal cyclic reductions on fishing activity due to specific situations or extraordinary events that could have affected the operation of a particular fleet.
			The Argentine Government by means of Resolution ex-SAGPyA N° 150/96 in 1996 authorized the fishing of the Patagonian Scallop to be carried out by 4 factory vessels belonging to 2 Argentine registered companies. In essence, the Argentine Government established a legal regulation in order to ensure that the fishery is developed following scientific advice. This resolution also established basic principles for the Management Plan, which was signed on March 1999 (Disposition SSPyA N° 17/1999) and reedited by Resolutions CFP N° 4/2005, 9/2006 and 4/2008. Up to the last one, (Resolution CFP N° 4/2008) which was sanctioned without any programmed revision, as is common in argentine legal framework, all Management Plans developed have been set for a duration of 5 years, and to be developed and sanctioned again for other 5 years, including recommended improvements by the Research system and or by the Follow up Commission.
			Incorporating an adaptive criterion, both operational and long-term measures were implemented. The first are related to annual survey results, such as open-closed areas and establishment of a Total Allowable Catch (TAC). The long-term measures are:
			<ul> <li>minimum legal size was set at 55 mm of total height (3-4 years).</li> <li>no fishing season imposed.</li> <li>fishing effort fixed at four vessels (two per company).</li> <li>TAC: harvest rate fixed at no more than 0.4 of lowest or mid biomass determination from those particular areas inside a given management unit where biomass density is equal or superior to 10 tons per square kilometer.</li> <li>obligatory discard of free living juveniles at the place of capture.</li> <li>establishment of no taken zones for research and reproductive purposes which are around 5.4 % of the total area defined as management units (Resolution CFP N° 5/2009).</li> <li>creation of a government – private Technical Fisheries Advisor Commission.</li> </ul>
			Since 1999, two Management Areas with 15 Management Units have been defined: "North", between 36° 45' – 39° 30' S, and "South", between 39° 30' - 43° 30' S and Management Units 1.1, 1.2, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14.
			Accordingly SAGPyA, the Enforcement Authority of Federal Fishery Law, acting under the scientific advice of INIDEP, has always rejected the

PI	3.1.3	The management policy has clear long-term objectives to guide decision- making that are consistent with MSC Principles and Criteria, and incorporates the precautionary approach		
SG	Issue	Met? (Y/P/ N)	Justification/Rationale	
			application of new entrants and the CFP has declared itself in sup these decisions.	port of
			Long-term objectives on rational exploitation, stock's prod protection, social and inter generational equinity and species conse are explicitly referenced in all relevant legislation and same precat approach is included in technical recommendations.	uctivity rvation, itionary
			Additionally, management measures such as minimum catch authorized gear, on board inspectors and/or observers, landings electronic daily logbook, VMS, on board video cameras, etc., are taken and some of them are in practice since several years ago.	length, control, already
			Incentives to rational exploitation have been introduced by means Catch Authorization system.	of the
			The precautionary approach is established by the Argentine f legislation by means of the prescriptions present in Article 17° of the Fisheries Law 24922, which establishes "Fishing activity throughout all maritime areas under Argentine juris will be subjected to restrictions set by the Consejo Federal Pesquero conservation of resources, in order to avoid excesses of exploitant prevent damages over the environment and the ecological system Issues related to the conservation of fisheries resources can be also f Articles 1°, 21° and 27° of the Federal Fisheries Law 24922 and in 1° and 12° of its Regulatory Decree 748/1999. As well, the precau approach is explicitly contemplated in Article 5° of Resolution ( 14/2008, through establishment of an Administration Reserve providing the Authorization of Captures (see also Act CFP N° 48/200	isheries Federal that diction, for the ion and n unit". ound in Articles utionary CFP N° e when 7).
			The precautionary approach is also present in the stock assessment and in the technical recommendations of biologically acceptable cap a result of the uncertainty surrounding recruitment of new individual for each management unit are established at 0.4 of the lowest biomass determination from those particular areas inside a management unit where biomass density is equal or superior to 10 t square kilometer (see INIDEP Technical Report N° 10 and 11/20 4/2011, among others).	models ture, as s. TAC or mid given ons per 010 and
			Provision on ecosystem-related aspects are also considered Management Plan, establishing habilitated low impact gears (articl Resolution CFP N° $4/2008$ ) and the immediate obligatory discard catch species with the least damage as possible.	by the e 3° of l of by
I	Referenc	es	Mentioned though the rationale.	
OVE	RALL PE	RFORM	IANCE INDICATOR SCORE:	100
CON	CONDITION NUMBER (if relevant):			

PI	3.1.4	TI sus	he management system provides economic and social incentives for tainable fishing and does not operate with subsidies that contribute to unsustainable fishing
SG	Issue	Met? (Y/P/ N)	Justification/Rationale
60	а	Y	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2.
80	a	Y	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and seeks to ensure <b>that perverse incentives</b> do not arise.
100	a	P	<ul> <li>The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and explicitly considers incentives in a regular review of management policy or procedures to ensure they not contribute to unsustainable fishing practices.</li> <li>The Catch Authorizations Management System and its associated policies provide stability and security for fisheries operations and introduces a powerful conservation incentive, as it is established as a percentage of the TAC. The general management system (Acts CFP N° 48/2007 and 27/2008 and Resolution CFP N° 10/2008 and 14/2008) establishes, within other measures, that:</li> <li>The CAs are conceptually and legally similar to the ITQs.</li> <li>CAs are established as a percentage of the specie's TAC for each management unit (MU).</li> <li>Only the four vessels of the fishery have rights to be assigned a CA.</li> <li>Equity objective is guaranteed by assigning the CAs based on historical rights.</li> <li>A maximum concentration of the TAC's 40% is established as CA by company or companies group.</li> <li>CAs are allocated for 5 years (2009 – 2013).</li> <li>Using CAs, the companies must respect all other general and specific regulations which regulate the fishery.</li> <li>CAs are totally or partially transferable.</li> <li>With Precautionary Criterion a percentage of the TAC is saved as an Administrative Reserve (15%).</li> <li>CAs lost by the enterprises, due to different factors (sanctions, closure of the company, suspension of fishing licenses, etc), are incorporated to the Quota Re-assignation Fund, managed by the CFP.</li> <li>5 % of assignation of CAs corresponds to lack of sanction from the fishing companies.</li> </ul>

PI 3.1.4		The management system provides economic and social incentives for sustainable fishing and does not operate with subsidies that contribute to unsustainable fishing		
SG	Issue	Met? (Y/P/ N)	Justification/Rationale	
			or entities maintaining any type of relation, legal or economical, with vessels operating without fishing licenses, neither to those receiving any advantage or profit from them.	
			Likewise, the Enforcement Authority will not register association of enterprises or companies groups when one or more of its presidents, directors, managers or solicitors may have been sanctioned with suspension or cancellation of its registration in the records established by Article 41°, due to infractions to the Law 24922 or its regulatory decree. Also, through this article it is established that an association or group of companies that would not exclude the offender, will have its registration license withdrawn. Article 64° establishes that when individuals or legal entities are sanctioned with the cancellation of the registration license based on final judgment, neither the the first ones nor the members of the second ones will be allowed to be part of the representative, administration and/or direction bodies of other companies associations or groups to develop activities established by the Law 24922.	
			Compliance with other regulations is also considered as a key issue: for allocation of fishing licenses, enterprises owners of fishing vessels will be required to prove compliance with legal, social security spending and tax obligations in force (Law 24922, Article 26 , subs. 3)	
			Sanctioning regime considers the possibility of suspending or cancelling fishing licenses, ITQs and Capture Authorizations (Article 51°, subs. c, d, g) when transgressions to the fishery regulations may occur. When the infraction is related to fishing operations without license, the penalty should be 500 times higher than the minimum.	
			Customary and legal rights are taken into account in the management system.	
			There is recognition of international treaty partnership for the protection of living resources.	
			There are mechanisms in place and opportunities for all stakeholders.	
			No direct subsidies contributing to unsustainable fishing exist.	
			Finally it must be said that, even when there are enough incentives and regulations already established to promote sustainable fishing of the main species and some of the by catch species, there is the need to promote actions in order to deal with uncertainties existing on several subjects related to the effect of the fishing gear on the habitat and by catch species. For example, considerations could be given to management plans in order to provide incentives for the development of gear that could reduce by catch.	
	Referenc	es	Mentioned though the rationale.	

PI	3.1.4	The management system provides economic and social incentives f sustainable fishing and does not operate with subsidies that contribut unsustainable fishing		ior te to
SG	lssue	Met? (Y/P/ N)	Justification/Rationale	
OVERALL PERFORMANCE INDICATOR SCORE:				
CONDITION NUMBER (if relevant):				

PI	3.2.1	The	fishery has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2
SG	Issue	Met? (Y/P N)	Justification/Rationale
60	а	Ý	<b>Objectives</b> , which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are <b>implicit</b> within the fishery's management system.
80	а	Y	<b>Short and long-term objectives</b> , which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery's management system.
100	а	Ρ	<b>Well defined and measurable short and long-term objectives</b> , which are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery's management system. The existence of a Management Plan reviewed and renewed every 5 years, the management system based on fishing licenses as authorization to enter the fishing ground and Capture Authorizations allowing access to the exploitation of fisheries resources, defines the long-term objectives of the fishery. These objectives are both explicit and implicit in the Management Plan (Resolution CFP N° 4/2008), by means of the establishment of spatial closures for research and protection of population's reproductive capacity purposes (Resolution CFP N° 5/2009), and by means of the management policy through Capture Authorizations, included in Acts CFP N° 48/2007 and 27/2008, and Resolutions CFP N° 10/2008 and 14/2008, which involve, among other measures, the following:
			<ul> <li>Existence of a Management Plan, whose main objective is "maintaining the sustainability of the Fishery": <ul> <li>a. 15 Management Units are defined and precisely delimited</li> <li>b. Management measures are set based on scientific data.</li> <li>c. TAC is set annually for each Management Unit in tons of total legal sized scallop.</li> <li>d. If scientific data is not available for an specific Management Unit, a provisional TAC is set following a precautionary approach.</li> <li>e. A MU for which TAC has not been established, is not opened to fishing activity.</li> <li>f. When TAC is reached, the MU is closed to fishing.</li> <li>g. Capture estimations are done based on scallop muscle produced and unloaded, using a conversion factor of 7.14.</li> <li>h. When catches are taken outside the MUs, these will not be included in any MU's TAC.</li> <li>i. Licensed vessels must inform scallop muscle production in a daily basis to the DNCP electronically.</li> </ul> </li> </ul>

PI	3.2.1	The	fishery has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2
SG	Issue	Met? (Y/P N)	Justification/Rationale
		,	INIDEP when 90% of the TAC is reached.
			k. The CFP can establish fixed or mobile and temporal or spatial
			closures based on scientific reports, for research or conservation of
			juvenile or reproductive individuals purposes.
			1. Otter nets area authorized for fishing Patagonian scallop.
			m. With previous authorization by the Enforcement Authority, dredge
			can be accepted as an alternative fishing gear, if the impact to the sea bottom is minimal
			n. Should a new fishing bed be found, the company that
			discovers it should communicate it, through written means,
			to the DNCP and INIDEP within 5 day.
			o. Should a new fishing bed be found, the CFP can stipulate its study
			in order to estimate the scallops abundance and establish
			exploitation rules. Vessels will not be allowed to operate in the
			new discovered area for more than 60 consecutive days or until
			management measures are set.
			p. Minimum size: 55 mm valve height (3 to 5 years).
			q. Immediate and mandatory return to sea of under-sized scallops.
			r. Immediate and mandatory return to sea of bycatch.
			s. Prohibition of fishing in areas with more than 50 % of legal under-
			sized individuals.
			t. Fishing effort is limited to 4 fishing vessels.
			u. Patagonian Scallop Fishery Follow-up Commission is created to
			advise the CFP, setting its members as follows: 2
			representatives of SSPvA, 2 representatives of INIDEP and 1
			representative of each of the fishing companies authorized to
			capture the resource
			v Each fishing vessel must either allow operation during 20 days
			or afford the required costs for INIDEP Research Vessels to operate during the same length.
			w. All fishing vessels must have an On Board Observer and Inspector
			in all fishing trips.
			x. A sanction regime is established.
			• No taken zones for research and protection of reproductive capacity purposes in each MU, which represents 5,4 % of total bed areas (Resolution CFP N° 5/2009)
			• Allocation of Capture Authorizations, with the following details:
			• The CAs are conceptually and legally similar to the ITOs

PI	3.2.1	The	fishery has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2
SG	Issue	Met? (Y/P N)	Justification/Rationale
			<ul> <li>CAs are established as a percentage of the species' TAC for each management unit (MU).</li> <li>Only the four vessels of the fishery have rights to be assigned a CA.</li> <li>A maximum CAs concentration by company or companies group of 40% of TAC is established.</li> <li>CAs are allocated for 5 years (2009 – 2013).</li> <li>In order to utilize their CAs, copmanies must respect all other general and specific regulations which regulate the fishery.</li> <li>CAs are totally or partially transferable.</li> <li>CAs are assigned up to 85 % of each MU TAC.</li> <li>With Precautionary Criterion a percentage of the TAC is saved as an Administrative Reserve (15%).</li> <li>CAs lost by the enterprises due to different factors (sanctions, closure of the company, suspension of fishing licenses, etc) are incorporated to the Quota Re-assignation Fund, managed by the CFP.</li> <li>5 % of assignation of CAs corresponds to lack of sanction from the fishing companies.</li> </ul>
			The Consejo Federal Pesquero (CFP) establishes a TAC based on the INIDEP reports recommending biological TAC, and other issues. When there is not a technical report for a given year or MU, the CFP may establish a provisional TAC based on previous years'information until having the technical advice to adequate it. Provision on ecosystem-related aspects are also considered by Management Plan establishing habilitated low impact gears (article 3° of Resolution CFP N° 4/2008) and with the obligatory discard of by catch species immediately and with the least damage as possible.
			Data collection of environmental aspects of the fishery during fishing operations is the responsibility of the on board observers program (see data collection onboard observers protocol on Anex 2 of present report), while the INIDEP research program is in charge of the data analysis and conclusions (see Resolution INIDEP N° 133/2010 - INIDEP: Program Benthic Mollusks, page 182). It also estates the objectives of Scallop and associated species research objectives.
			Objectives for marine birds' protection are established in the National Action Plan for Birds (Consejo Federal Pesquero Resolution 15/2010).
			Objectives for Chondrichthyes protection are established in the National Action Plan for Chondrichthyes (CFP Resolution 6/2009).
			The federal Law 25577/2002 protects Cetaceans from any kind of intentional catch. Federal Law 25052/1998 and its complementary Decree N° 598/2003 prohibit catch and commercialization of Killer Whale ( <i>Orcinus orca</i> ).

PI 3.2.1		The	The fishery has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2				
SG	Issue	Met? (Y/P N)	Justification/Rationale				
			The Consejo Federal Pesquero also regulated by means of its Resolu 3/2001, the data collection and analysis of birds, reptiles and mamn catch during fishing activities.	tion N° nals by-			
			No more clear objectives for mammal's protection exist yet, althoug is the National Action Plan for Marine Mammals Protection stakeholders consulting process.	gh there in the			
			<u>Conclusion</u> : even though explicit Long Term Objectives do exist management system, they are not in a single regulation, obstruct overall comprehension. Thus the assessment team considered reduction of 10.	t in the ting its a score			
References			Mentioned though the rationale.				
OVE	OVERALL PERFORMANCE INDICATOR SCORE: 90						
CON		IUMBE	R (if relevant):				

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives			
SG	Issue	Met? (Y/N)	Justification/Rationale		
60	а	Ύ	There are <b>some</b> decision-making processes in place that result in measures and strategies to achieve the fishery-specific objectives.		
	b	Y	Decision-making processes respond to <b>serious issues</b> _identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take <b>some</b> account of the wider implications of decisions.		
80	а	Y	and strategies to achieve the fishery-specific objectives.		
	b	Y	Decision-making processes respond to <b>serious and other important</b> <b>issues</b> identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.		
	С	Y	Decision-making processes use the precautionary approach and are based on best available information.		
	d	Y	<b>Explanations</b> are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.		
100	а	Р	Decision-making processes respond to <b>all issues</b> identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.		
			Management decision making processes are clearly outlined in the Federal Fisheries Law N° 24922, the Federal Decrees N° 748/1999, 571/2008 and 373/2007, amongst other legal documents. The Consejo Federal Pesquero is the main authority, who establishes the TAC based on scientific biological recommendations and other social and economic aspects. The CFP has the responsibility to ensure it is provided with carefully analysed alternatives for taking into account before making any decisions.		
			The Consejo Federal Pesquero Resolution N° 4/2008 creates the Patagonian Scallop Technical Adviser Commission, integrated by representatives from the two Argentina Patagonian Scallop fishery companies, 2 representatives for the SSPyA and 2 representatives for the INIDEP, in order to advice the CFP on fishery issues, including environmental changes associated with the fishery.		

PI	3.2.2	The f	ishery-specific management system includes effective decision-making cesses that result in measures and strategies to achieve the objectives
SG	Issue	Met? (Y/N)	Justification/Rationale
			The INIDEP Resolution 133/2010 establishes research programs led to obtain information and knowledge in order to advice the Management System (www.inidep.edu.ar).
			An Honorary Commission at the Consejo Federal Pesquero exists and is used to work on specific issues for which involved stakeholders are invited to participate (article10° of Federal Fisheries Law 24922).
			All consultative commissions and stakeholders are called by the CFP or by the SSPyA when required. Any stakeholder may request a hearing with the administration bodies and is heard prior to decision-making.
			Frequently workshops are conducted with all interest parties in order to analyze the issues prior to the decision-making, even though there are no records reporting the use of such methodology in the Patagonian Scallop fishery. However, the same is currently used in both the administrative and research systems, thus it can be carried out if necessary.
	b	Р	<b>Formal reporting</b> to all interested stakeholders describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity. No clear evidence of formal reporting to all interested stakeholders describing how the management system responds to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity exists.
			INIDEP Technical Reports are referred to the CFP and its reception published in its meetings' records, which in turn are published on its website ( <u>www.cfp.gob.ar</u> ). Once published by the CFP, they become available for anyone who wants to obtain a copy on INIDEP's web site ( <u>www.inidep.edu.ar</u> ). Fishery statistics are also published in the CFP's and SSPyA's web sites, as well as the positioning of fishing vessels, which is updated twice a day ( <u>www.minagri.gob.ar</u> ).
			Even though the DNCP controls the catches for each MU and reports to the companies and INIDEP when it reaches 90 % of the TAC (articles 7° and 10° of Resolution CFP N° 04/2008), the fishery statistics published in MINAGRI's web site do not discriminate the catches by each MU, making it difficult to follow the evolution of the remaining TAC. The person responsible for recording the catches from daily electronic logbooks sent by companies declared to the assessment team that they are working to have that problem solveed in the near future.
			The CFP makes public through their Minutes any considerations and technical and legal advice taken into account in decision-making as well as the concerns being submitted or exposed for any stakeholders to the CFP.
	Referenc	es	Mentioned though the rationale.

PI 3.2.2		The f proc	The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives			
SG	Issue	Met? (Y/N)	Met? (Y/N) Justification/Rationale			
OVERALL PERFORMANCE INDICATOR SCORE:						
CONDITION NUMBER (if relevant):						

PI	3.2.3	Μ	onitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with
SG	Issue	Met? (Y/N)	Justification/Rationale
60	а	Y	Monitoring, control and surveillance <u>mechanisms</u> exist are implemented in the fishery under assessment and there is a reasonable expectation that they are effective.
	b	Y	Sanctions to deal with non-compliance exist and there is some evidence that they are applied.
	С	Y	Fishers are <b>generally thought</b> to comply with the management system for the fishery under assessment, including, when required, providing information of importance to the effective management of the fishery.
80	а	Y	A monitoring, control and surveillance <b>system</b> has been implemented in the fishery under assessment and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.
	b	Y	Sanctions to deal with non-compliance exist, <b>are consistently applied</b> and thought to provide effective deterrence
	С	Y	<b>Some evidence exists</b> to demonstrate fishers comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery.
	d	Y	There is no evidence of systematic non-compliance.
100	а	Y	A <b>comprehensive</b> monitoring, control and surveillance system has been implemented in the fishery under assessment and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.
			Argentina endeavors to deter fisheries-related offenses through a successful prosecution and deterrent penalties. Penalties to fisheries-related offences include fines and forfeiture of fish, vessels, other property and quota (Law 25470, articles 46° to 65° of Federal Fisheries Law 24922 and articles 42° to 57° of Federal Decree N° 748/1999).
			A number of monitoring, control and surveillance tools are used in order to control the activities of vessels fishing within Argentine fisheries waters, including:
			<ul> <li>Fishing permit requirements (article 23°, 24° and 26° of Law 24922),</li> <li>Requirement to hold annual catch entitlement to cover target and</li> </ul>
			Requirement to note annual caten entitlement to cover target and

PI	3.2.3	М	onitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with
SG	Issue	Met? (Y/N)	Justification/Rationale
			<ul> <li>bycatch species caught (article 27°, 27° bis and 28° of Law 24922, article 21° of Federal Decree 748/1999 and CFP Resolution N° 04/2008 and 10/2009).</li> <li>Fishing permit and fishing vessel registers (article 41°, 42° and 71° of Law 24922 and article 14° of Federal Decree 748/1999).</li> <li>Vessel Monitoring System (VMS) requirements (article 33° of Law 24922 and Disposition SSPyA N° 2/2003 and 206/2010),</li> <li>Vessel and gear marking requirements,</li> <li>Fishing gear and method restrictions (article 17° and 21° of Law 24922 and article 3° of Resolution CFP N° 04/2008),</li> <li>On board observer or inspectors in all fishing travels (article 17° of Resolution CFP N° 04/2008),</li> <li>Reporting (including catch and effort reporting) requirements (article 19°, 25° and 32° of Law 24922, article 30° of Federal Decree 748/1999, Resolution ex-SAGPyA 167/2009 and Disposition SSPyA N° 8/2009),</li> <li>Electronic log book by haul (SAGyP Resolution N° 167/2009),</li> <li>Vessel inspections,</li> <li>Control of landings (e.g. requirement to land only to licensed fish receivers) (SAGyP Resolution N° 167/2009),</li> <li>Record keeping requirements (article 19° of Law 24922),</li> <li>Control of transhipment (article 15° and 16°° of Federal Decree 748/1999),</li> <li>Information management and intelligence analysis,</li> <li>Analysis of catch and effort reporting and comparison with VMS, observer, landing and trade data to confirm accuracy (SAGyP Resolution N° 167/2009),</li> <li>Boarding and inspection by fisheries officers at sea,</li> <li>Aerial and surfease surveillance by on board video camera recording and transmitting (SSPA Disposition N° 200/2010 and 1/2011), And</li> <li>Legal Catch Certification System (SPYA Disposition N° 8/2009)</li> </ul> All this control tools are adequately implemented and seem to be extremely efficient, to the extent that there is not systematic non-compliance with in force regulations, due to a very strict control system, proving its ability to enforce regulations, due
	b	Y	Sanctions to deal with non-compliance exist, are consistently applied and <b>demonstrably</b> provide effective deterrence.

PI 3.2.3		М	onitoring, control and surveillance mechanisms ensure the fisher management measures are enforced and complied with	y's	
SG	Issue	Met? (Y/N)	Justification/Rationale		
			Although sanctions to non-compliance exist and are thought to effective deterrence, no clear evidence on how consistently these m are applied and how demonstrably provide with the effective deterren There is no evidence of systematic non-compliance.	provide easures ce.	
	С	Y	There is a <b>high degree of confidence</b> that fishers comply with the management system under assessment, including, providing information importance to the effective management of the fishery.	tion of	
			As mentioned, the assessment team believes the fishery to clearly resp main stablished regulatory or customary rules. During the assessment team interview to the Direccion Nacio Coordinacion Pesquera (National Director of Fisheries Coordinatio Direccion Nacional de Planificación Pesquera (National Direc Fisheries Planning), they commented there have not been non-com sanctions during last years, and there have not been much the beggi the fishery either. Nevertheless, if any exist, it is unlikely to be rela negative impact on fishing recourses or to the stock's detriment.	pect the onal de on) and ctor of upliance ning of ated toa	
I	References         Mentioned though the rationale.				
OVE	OVERALL PERFORMANCE INDICATOR SCORE: 100				
CON	CONDITION NUMBER (if relevant):				

PI	3.2.4	Th	e fishery has a research plan that addresses the information needs of management
SG	Issue	Met? (Y/N)	Justification/Rationale
60	а	Y	<b>Research</b> is undertaken, as required, to achieve the objectives consistent with MSC's Principles 1 and 2.
	b	Y	Research results are <b>available</b> to interested parties.
80	а	Y	A <b>research plan</b> provides the management system with a strategic approach to research and <b>reliable and timely information</b> sufficient to achieve the objectives consistent with MSC's Principles 1 and 2.
	b	Y	Research results are <b>disseminated</b> to all interested parties in a <b>timely</b> fashion.
100	a	Ρ	A comprehensive research plan provides the management system with a coherent and strategic approach to research across P1, P2 and P3, and reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2. The INIDEP Resolution 133/2010 (page 181 to 188) establishes a research program on Bentic Moluscs to obtain information and knowledge in order to advice the Management System (www.inidep.edu.ar). Some lack of information may exist since the last research cruise. The complete INIDEP research programs include Patagonian Scallop fishery, genetics, related species, oceanographic conditions and other ecosystem-related issues, such as productivity. INIDEP technical information is sent immediately to the Consejo Federal Pesquero and the SSPyA. Both organisms receive information of research groups from other academic institutions along with the INIDEP. A clear example is the PANs elaboration procedure, which included workshops with all country public and civilian organizations interested on participating or especially invited. As it was said in previous sections, there are other academic institutions dealing with Patagonian Scallop Fishery, mainly Universidad Nacional de Mar del Plata. These groups are in contact with INIDEP researchers, although no clear formal relations included in the research programs of any individual group have been identified. Both enterpices participating in the fishery lend their fishing vessels for research activities to the INIDEP (20 days year/vessel) and one of them gives financial support to the Universidad Nacional de Mar del Plata's Scallop research team. The other company has pointed to the assessment team their intention to participate on it.

 Referenc	es	Mentioned though the rationale.	
b	Р	Patagonian Scallop fishery and the on board observers program. Research <b>plan</b> and results are <b>disseminated</b> to all interested parties <b>timely</b> fashion and are <b>widely and publicly available</b> . Research results are widely and publicly available (article 13° of Fisheries Law 24922) on INIDEP's web site (www.inidep.edu.ar) in a fashion, although not proactively disseminated.	in a Federal a timely
		Even though the Research Plan and the stock assessment was com appropriate for the fishery, it is not whole comprehensive on the ecc aspects. It could be recommended to incorporate more comprehens explicitly environmental-based studies on the interaction of the fishe the ecosystem, as well as generating discussion and information ex- instances between formal local research groups dealing with issues re	sidered osystem ive and ery with achange lated to

PI	3.2.5	There Th	is a system of monitoring and evaluating the performance of the fishery- specific management system against its objectives ere is effective and timely review of the fishery-specific management system
SG	Issue	Met?	Justification/Rationale
60	а	Y	The fishery has in place mechanisms to evaluate <b>some</b> parts of the management system.
	b	Y	The fishery-specific management system is subject to <b>occasional internal</b> review.
80	а	Y	The fishery has in place mechanisms to evaluate <b>key</b> parts of the management system
	b	Y	The fishery-specific management system is subject to <b>regular internal</b> and <b>occasional external</b> review.
100	а	P	The fishery has in place mechanisms to evaluate <b>all</b> parts of the management system.
			Key aspects of the management system are subject to a regular internal review from the MINAGRI – Internal Audit Unit and occasional external reviews from the National General Syndication, which depends on National Congress (Law 24156/1990), and the Auditoria General de la Nación (National General Auditory). Also, Any administration's decision affecting the rights of third parties requires a control and legal opinion prior to its sanction. Such control is carried out by a statutory body external to the agency that promotes the sanction of the rule. All this procedures are established by Administrative Procedure law 19.549 and its Regulatory Federal Decree N° 1759/72.
			INIDEP has a permanent delegation from the SIndicatura General de la Nación (National General Syndication), through which a Biologist audits on a biannual basis the performance of all INIDEP's Projects and Programs. The control is based on indicators previously designed for each of them (see corresponding interview in this report).
	b	Р	The fishery-specific management system is subject to <b>regular internal and</b> external review.
			The Patagonian Scallop Fishery follow up Commission could be considered as a revision instance for the complete system (management, research and fishery), with the participation of companies which are part of the fishery but external to the research and management system.
			On board inspectors should elaborate a fishing trip, which is submitted to the DNCP to be reviewed by the Enforcement Authority in order to evaluate their performance.

			Frequently workshops are conducted with the participation of all is parties in order to analyze the issues prior to the decision-making though there are not much records reporting the use of such methodo Patagonian Scallop fishery. However, the same is currently used in b administrative and research systems, thus it can be carried out if necess Fishery statistics are also published in the CFP's and SSPyA's well such as the positioning of fishing vessels, which is updated twice a www.minagri.gob.ar ). The way in which CFP publishes its sessions and decisions, such Publishing of the INIDEP reports, imply the opportunity for a stakeholders to assess the system (see www.cfp.gob.ar www.inidep.edu.ar ).	interest g, even logy in oth the sary. b sites, a day ( as the all the and ith that xternal			
	Referenc	es	Mentioned though the rationale.				
OVERALL PERFORMANCE INDICATOR SCORE:							
CONDITION NUMBER (if relevant):							

# Appendix 1.2 Risk Based Framework (RBF) Outputs

### Appendix 1.2.1 Scale Intensity Consequence Analysis (SICA)

 Table 1.2.1.c Scoring Template for PI 2.2.1 Bycatch Species

Performance Indicator	Risk-causing activities from fishery under assessment	Spatial scale of activity	Temporal scale of activity	Intensity of activities	Relevant subcomponents	Consequence score	MSC Score			
PRINCIPLE TWO: Bycatch Species Outcome	• Fishing				Population size	2	80			
Species:										
Echinoids/ Echinodorms		1	3	3						
Rationale:	Worst plausible scenario definition:									
	<ul> <li>Fishing activity is considered the most risky activity, due to the disturbance of the fishing gear to the bottom surface. The fis gear is the only element of the fishery which has contact physically with the bottom and its communities, and to remorganisms from the communities.</li> <li>Echinoids/Echinoderms were considered most vulnerable group, first due to its important biomass as bycatch and because fragility. The most abundant echinoids (sea urchins) species in the bycatch are: <i>Steredinus agassizii, Pseudoech magellanicus, Austrocidaris canaliculata, Arbacia dufresnii</i> and <i>Tryphilaster philippi</i>. Asteroids were considered altern species at risk, e.g. the species; <i>Ctenodiscus australis</i> and <i>Comasterias lurida</i>.</li> </ul>									
There was concerned that risk was best assessed in functional groups. In the case of achineids all species have a similar										
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------										
There was consensus that fisk was best assessed in functional groups. In the case of echinolds an species have a similar										
runctional ecological role and was considered to have the highest risk of indirect fishing mortality.										
Population size was the subcomponent selected as the most affected. The consensus of empirical knowledge of the workshop participants was that the main echinoids/echinoderms bycatch species are distributed throughout the continental shelf. Scallop fishing can only reduce the population in the area of the fishery. Echinoderms distributed within the rest of the shelf can contribute to recruitment in the fishery area.										
Scorings										
Spatial scale is 1 for the representing species of echinoids/echinoderms.										
Temporal scale was considered 3. The fishery is divided into 14 management units. The fleet of 4 vessels operates 810 days-year averaging 200 days/year/vessel. Vessels fish the management units following a rotational strategy. Hence each management unit in fished on average 1-100 days/year.										
Intensity was chosen as level 3. The stakeholders participating in the SICA workshop considered that the fishing activity occurs in very restricted locations compared to the broad geographic range of the echinoids/echinoderms. However, the intensity of fishing at the local scale is not rare but moderate. As a precautionary approach the consensus was to choose the moderate intensity score.										
The consequence for the population size of main echinoids/echinoderms was considered at risk level 2. Changes have been detected on abundance of echinoids in fished areas. Biomass of echinoids species has not been studied in the non-fished area of their distribution. Because the area disturbed by fishing is minimal compared to the whole distribution of the species, it is unlikely that fishing impacts will have detectable effects on population size/growth rate.										

## Table 1.2.1.d Scoring Template for PI 2.4.1 Habitats

Performance Indicator	Risk-causing activities from fishery under assessment	Spatial scale of activity	Temporal scale of activity	Intensity of activities	Relevant subcomponents	Consequence score	MSC Score
PRINCIPLE TWO: Habitats Outcome Habitat: Scallop beds	• Fishing	2	3	3	Habitat structure and function	2	70
Rationale:	<ul> <li>Worst plausible scenario definition:</li> <li>Fishing activity is considered the most important risk-causing activity as the fishing gear is the main disturbance to the scallop-bed bottom community.</li> <li>The most vulnerable habitat type was identified following the MSC FAM benthic habitat identification guidance. Each benthic habitat unit is defined based on three attributes - substratum (sediment type) geomorphology (seafloor topography) and fauna (dominant faunal group) (SGF). SICA workshop participants concluded that mixed sand-mud sediments are homogenous throughout the continental platform. The most affected geomorphology were the high density commercial Patagonian scallops beds in the region of the shelf front. Scallops are considered the major constructor of the community, both physically and biogenically.</li> <li>Habitat structure and function was selected as the most vulnerable subcomponent for the combined activity-element. Scallops are the main builders of this habitat and their removal by otter trawl nets may affect structure and biogenic function.</li> <li>Scorings</li> </ul>						

Spatial scale is 2 for the habitat type selected because the fishing occurs on only 13.5% of all scallops beds during a year.
Temporal scale was considered 3. The fishery is divided into 14 management units. The fleet of 4 vessels operates 810 days-year averaging 200 days/year/vessel. Vessels fish the management units following a rotational strategy. Hence each management unit in fished on average 1-100 days/year.
Intensity was chosen as level 3. The stakeholders participating in the SICA workshop considered that there is a moderate detection of activity at broader spatial scale and obvious but local detection by fishing on scallop beds.
The consequence level chosen by the workshop was 2 – "Detectable impact on habitat structure and function. Time to recover from impact on the scale up to one year, regardless of spatial scale." Further discussion by some workshop attendees recognized that regeneration time within fished scallop beds will be longer than 1 year as scallops are probably the main constructor of the habitat. This would raise the risk level to 3.

## Appendix 1.2.2 Productivity-Susceptibility Analysis (PSA)

PSA was not conducted for any of PIs analyzed by RBF.

# **Appendix 1.3 Conditions**

Performance Indicator	PI 1.2.4. There is an adequate assessment of the stock status.
Score	75
Rationale	The assessment is appropriate for the stock and for the harvest control rule, and is evaluating stock status relative to surrogate of reference points used in this fishery. Recruitment is the main source of uncertainty in this fishery. Both fleet information and surveys monitor the spatial spread and timing of recruitment. Areas of heavy recruitment are closed to fishing to protect the new recruits. However, there is no formal system using peer reviewers of INIDEP reports, which are only audited and approved by the National Director of Research. Peer review is a process used for checking the work performed by one's equals (peers) to ensure it meets specific criteria. Generally, the goal of all peer review, identify any deviations from the standards, and provide suggestions for improvements. In the particular case of Patagonian scallop, the technical reports containing information of surveys and suggestions about TAC need to be audited for a independent and impartial review means external to the fisheries management system.
Condition	Technical reports, containing the evaluation of the stock and harvest control rules must be audited by external peer reviewers. It can be done at request of INIDEP National Director of Research or CFP.
Milestones	Year 1: Provide information that a peer review process for technical reports related to stock assessment and harvest strategy has being commenced. Year 2: Provide documentation that the peer review process is regular, and it functioning in order to improve decisions
Client action plan	<ul> <li>Year 1: Starting the peer review process of technical reports related to stock assessment and harvest strategy by doing a workshop to review and discuss these issues. A report of the results of this workshop will be produced.</li> <li>Year 2 to 5: Technical reports related to stock assessment and harvest strategy will be annually peer reviewed by external scientists.</li> </ul>
Observation	<ol> <li>The Assessment Team modify the frequency of Peer Review of technical reports relating to stock assessment. It will be requested every two years.</li> <li>Independency of peer reviewers is of significant relevance.</li> </ol>
Score that shall be achieved at interim milestones	Client Action Plan milestone Year 1. Score would be maintained at 75. Client Action Plan milestone Year 2-5. When external peer review such as the proposed by the Peer Reviewer 2 (Appendix 2, page 213) be conducted an score over 85 will be achieved by the fishery.
Consultation on condition	

## Table 1.3: Condition 1

Condition 2	
Performance Indicator	PI 2.2.1. The fishery does not pose a risk of serious or irreversible harm to the bycatch species or species groups and does not hinder recovery of

	depleted bycatch species or species groups			
Score	80 (using SICA)			
Rationale	Bycatch is sorted in a rotary drum cushioned in water so it should remain undamaged. This process is quick so bycatch is returned to the seafloor less than 30 minutes after being caught and it is not exposed to drying out. Subsequent mortality of this bycatch returned to the seafloor should therefore be minimal. This assumption has not been adequately tested, and as bycatch is a substantial part of the trawl contents (30 to 60% according to On Board Observer Record sheets, in this nearly virgin fishery, subsequent mortality could have substantial effects on populations of benthic bycatch species as well as on the benthic habitat.			
Condition	Record the components of bycatch, describe how they, and the undersized scallops, are sorted from the scallop catch. Describe damage, attribute causes of damage in the sorting process, and quantify damage to main bycatch species in the sorting process. Measure subsequent mortality of main bycatch species in experiments on the sea floor. These studies will give a baseline to measure reductions in bycatch mortality brought about by gear improvements. This Condition requires INIDEP to: 1) describe clearly the sorting mechanisms for bycatch and define sources of damage, and damage that could subsequently result in mortality, 2) to measure the survival of the main bycatch species after sorting of the catch in experiments on the seafloor. Should new gear be introduced through following CONDITION 3, these estimates of mortality will need to be reassessed.			
Milestones	<ul> <li>Year 1. Describe and document the sorting mechanisms on all four vessels. Define and document damage caused to main bycatch species (especially echinoids) during sorting of catch. Provide documentation to Surveillance 1.</li> <li>Year 2. Test post-sorting mortality in experiments of main bycatch species returned to the seafloor. Commence reporting results in scientific papers. Provide documentation and initial drafts of papers to Surveillance 2.</li> <li>Year 3. Complete scientific papers describing the sorting process, damage it causes bycatch organisms and experimental tests of post-sorting mortality of main bycatch species on seafloor and submit for publication. Provide copies of scientific papers submitted to Surveillance 3.</li> <li>Year 4. Consider and document methods of sorting that lessen damage to the bycatch and accelerate its return to the seafloor. Provide documentation to surveillance 4.</li> </ul>			
Client action plan	<ul> <li>Year 1. Provide a technical report with the description of the sorting mechanisms on all four vessels. Characterize and document in a technical report damage caused to main bycatch species (especially echinoids) during the catch sorting.</li> <li>Year 2. Performing at sea experiments testing post-sorting mortality of the main bycatch species returned to the seafloor. Reporting results in technical reports and presenting drafts of scientific papers.</li> <li>Year 3. Presenting scientific papers or their advanced drafts describing the</li> </ul>			

	<ul><li>sorting process, damage caused to bycatch organisms and results of the experimental tests of post-sorting mortality of these species.</li><li>Year 4. Presenting technical reports evaluating alternative methods of sorting that could potentially decrease damage to the bycatch and accelerate its return to the seafloor.</li></ul>
Score that shall be achieved at interim milestones	Client Action Plan milestone Year 1. Score would be maintained at 80. Client Action Plan milestone Year 2. Score would be raised to 90. Client Action Plan milestone Year 2. Score would be raised to 95. Client Action Plan milestone Year 2. Score would be raised to 100.
Consultation on condition	If advanced drafts of scientific papers describing the sorting process, damage caused to bycatch organisms and results of the experimental tests of post-sorting mortality of these species are presented in Surveillance of Year 3, at Surveillance of Year 4 scientific papers submission on this issue should be presented.

## Condition 3

Performance Indicator	PI 2.2.2 . There is a strategy in place for managing bycatch that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to bycatch populations
Score	70
Rationale	One aim of the fishery should be to reduce landings and mortality of bycatch species so bycatch populations are maintained, benthic habitat is less modified, trophic webs preserved, ecosystem services maintained and productivity of the fishery enhanced. Discarded bycatch is a major issue in fisheries world-wide, but the quantities of bycatch taken could be reduced substantially by modifying fishing gear (Hall and Mainprize 2005; Harrington et al., 2005). As an example, the WWF International SmartGear (www.smartgear.org ) competition showed how bycatch could be reduced and big savings made in fuel costs at the same time. The Runner-Up-2009, CP2 Batwing Otter Boards, reduced drag, resulted in less damage to the benthic ecosystem (reduced weight on the seafloor) and reduced bycatch by 90% in a prawn fishery. Another prawn fishery developed a light bottom rope with electrodes to produce weak electric fields to get prawns to swim off the bottom thus reducing bycatch. It is unlikely that this method would work with scallops or in the much deeper water of their habitat, but other stimuli–perhaps tickler chains, or some other form of vibration-producing device, could reduce bycatch by triggering scallops' escape reaction to swim off the seafloor.
Condition	This Condition requires the fishing companies to test experimentally and document development of trawl gear that reduces bycatch. The fishing companies should convene workshop(s) of the four skippers of the commercial vessels, along with gear technologists, to discuss how different gear and different rigging of the nets could be utilized and developed to reduce impact of the gear on the seafloor, reduce bycatch landed by inducing scallops to swim off the seafloor, and to reduce crushing injury of seafloor organisms by not needing to fish the gear hard down. The results of the workshop(s) must be documented. When promising gear is found, develop a programme on experimental testing in conjunction with INIDEP measuring the changes in bycatch (both quantity and species composition).

Milestones	<ul> <li>Year 1. To convene workshop(s) and document results. Should promising gear be found, develop action plan and experimental design to test it. Provide documentation to Surveillance 1.</li> <li>Year 2. Should promising gear be found, carry out experimental testing and document the results. Should experimental testing be successful, scope the implications of introducing new technology on all vessels. Provide documentation to Surveillance 2.</li> <li>Year 3. Document results of all four vessels fishing with the new gear. INIDEP will need to estimate the efficiency of this new gear if it used in biomass assessments. Documentation from INIDEP Observer Programme comparison of bycatch data from before and after use of gear. Provide documentation of fishing gear results and Observer bycatch analysis to Surveillance 3.</li> </ul>
	<ul> <li>Year 4. Continued documentation from INIDEP Observer Programme comparing bycatch data from before and after use of gear. Provide documentation to Surveillance 4.</li> <li>Year 1. To convene a workshop with skippers and gear technicians to discuss alternative gear methods that could increase efficiency and selectivity but reducing seafloor impact. Develop action plans to test at sea promising new or</li> </ul>
Oligant action when	<ul><li>improved devices. Production a technical report summarizing results.</li><li>Year 2. Performing at sea experimental testing of alternative fishing devices. If new devices perform better analyze the implications of introducing them to the fleet. Production a technical report summarizing results.</li></ul>
Client action plan	<b>Year 3.</b> If new gears are implemented, their efficiency will be evaluated for their use in the stock assessment procedures. In particular, with the help of the INIDEP Observer Program the bycatch data from before and after use of the new device will be compared. Production a technical report summarizing results.
	Year 4. Continued documentation from INIDEP Observer Programme comparing bycatch data from before and after use of new gears if they are incorporated to the fleet. Production a technical report summarizing results.
Score that shall be achieved at interim milestones	Client Action Plan milestone Year 1. Score would be raised to 75. Client Action Plan milestone Year 2. Score would be raised to 80. Client Action Plan milestone Year 3. Score would be raised to 95. Client Action Plan milestone Year 4. Score would be raised to 100.
Consultation on condition	

### Condition 4

Performance Indicator	PI 2.2.3. Information on the nature and the amount of bycatch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch
Score	70
Rationale	Information on the nature and amount of bycatch has been gathered in several programmes since the fishery began. 1. INIDEP Observers have been carried on all vessels from the inception of the fishery and have recorded the amount of scallops, scallop shells and amount of main bycatch groups (asteroids, ophiuroids, echinoids, gastropods, crabs, sponges, anemones, ascidians, and

	polycheate tubes) in every tow. 2. INIDEP Observers have randomly taken a 10L sample of bycatch every day from each vessel and frozen it for return to INIDEP where the benthic group has sorted it, identifying to the lowest taxon possible, and recorded numbers. These data do not cover the management units systematically, but cover those areas fished by the fleet in each year. 3. The biomass of scallops has been estimated in a systematic biomass survey covering every management unit every year. Earlier surveys were carried out by research vessel using a dredge to sample, latter surveys have used commercial vessels sampling by commercial trawl. The bycatch from these surveys has been identified and recorded and provides a database comprehensively covering all scallop beds. These data have yet to be analyzed in spite of the recommendation to do so in the Certification Document in 2005.
	Modification of benthic habitat may reduce the productivity of the fishery. Analysis of bycatch data will show whether benthic habitat is modified by fishing and whether it regenerates when an area is left un-fished. Regeneration of benthic habitat is linked to increasing productivity of fisheries. Speed of habitat regeneration is partly determined by distance from sources of propagules and partly by period without disturbance. Habitat recovery can be facilitated by rotational fishing (resulting in regular periods without disturbance), and the provision of numerous un-fished refugia (providing abundant sources of propagules). Analysis of the bycatch data will be useful in helping determine optimal period for rotation cycles and sizes and distribution of refugia areas to enhance habitat recovery.
	N.B. In most Argentinean fisheries observers are seen as important strategies to establish and maintain compliance with regulation. Compliance has not been an issue in the scallop fishery. The INIDEP Observer Program is much more important in this fishery than any other trawl fishery in Argentina as it provides the major key to monitoring the effect of the fishery on the benthic environment. Failure to maintain observer presence and bycatch sampling on all vessels will compromise the sustainability status of the scallop fishery. INIDEP and the Clients should give high priority to maintaining 100% observer coverage of all fishing trips.
Condition	Document the Observer data that has recorded tow by tow information of main species bycatch, commercial scallop weight, juvenile scallop weight, scallop shell weight. Develop statistical tests to explore trends in the long-term data set. Document all the quantitative data from the 10L by-catch samples collected for each bed, by the On Board Observer Programme, compare these with the 1995 data base, develop statistical tests to compare changes over the years of the fishery.
	Using tests of sufficient power to establish significance, analyze the quantitative by-catch data obtained during the annual research biomass surveys from the trawls or dredges in fished areas with those obtained from trawls or dredges in non-fished zones within the same beds. Develop statistical tests to explore trends in the long-term data set.
Milestones	Year 1. 1-Document all tow records of Observer program with annual breakdown by management unit and discussion of how long and short term trends can be analysed. Provide documentation to Surveillance 1. 2-Document all 10L bycatch samples taken by Observer program, status of sorting and

identification and discussion of how these samples will be analysed for testing long term changes. Provide documentation to Surveillance 1. 3-Document all bycatch samples taken on biomass surveys, status of sorting and identification and discussion of how these samples will be analysed for testing long term changes. Provide documentation to Surveillance 1. Year 2. Analyse data collected in 3 projects over past year and add information to database. 1. Complete analysis of all Observer tow by tow reports of bycatch from the start of the fishery. Present analyses showing trends in numbers and weight of main groups in different Management Units and relate short and long term changes to fishing intensity on that management unit, and on any ecosystem changes. Provide draft report to Surveillance 2. 2. Complete analysis of all Observer taken samples of bycatch from the start of the fishery. Present analyses showing trends in numbers and weight of all taxa in different Management Units and relate short and long term changes to fishing intensity on that management unit, and on any ecosystem changes. Test changes for significance. Provide draft report to Surveillance 2. 3. Complete analysis of all bycatch samples taken on biomass surveys from the start of the fishery. Present analyses showing trends in numbers and weight of all taxa in different Management Units and relate short and long term changes to fishing intensity on that management unit, and on any ecosystem changes. Test for significance and compare and contrast results with the Observer taken bycatch samples. Provide draft report to Surveillance 2. Year 3. Analyse data collected in 3 projects over past year and add information to database. **1.** Draft scientific papers presenting analyses of trends in numbers and weight of main groups in different Management Units recorded in Observers since the commencement of the fishery in every commercial tow, testing the significance of changes and relating short and long term changes to fishing intensity on that management unit, and on any ecosystem changes. Provide initial draft papers to Surveillance 3. 2. Draft scientific papers presenting analyses and significance of trends in changes in numbers and weight of all taxa in different Management Units in Observer taken samples of bycatch from the beginning of the fishery. Relate short and long term changes to fishing intensity on that management unit, and on any ecosystem changes. Provide initial draft papers to Surveillance 3. 3. Draft scientific papers presenting analyses and significance of trends in changes in numbers and weight of all taxa in different Management Units taken in biomass surveys since the commencement of the fishery. Relate short and long term changes to fishing intensity on that management unit, on any ecosystem changes. Test for significance and compare and contrast results with the Observer taken bycatch samples. Analyse significance of differences between bycatch from dredge surveys with that from trawl surveys. Provide initial draft papers to Surveillance 3. Year 4. Analyse data collected in 3 projects over past year and add information to database. 1. Complete scientific paper(s) presenting analyses of trends in numbers and weight of main groups in different Management Units recorded in Observers since the commencement of the fishery in every commercial tow. The trends on all management units related to fishing intensity and tested for significance. Papers submitted for publication. Provide copies of papers submitted to Surveillance 4. 2. Complete scientific paper(s) presenting analyses

and significance of trends in changes in numbers and weight of all taxa in

	different Management Units in Observer taken samples of bycatch from the beginning of the fishery. Papers submitted for publication. Provide copies of papers submitted to Surveillance 4. <b>3.</b> Complete scientific papers presenting analyses and significance of trends in changes in numbers and weight of all taxa in different Management Units taken in biomass surveys since the commencement of the fishery. Changes related to fishing intensity, compared with trends in observer samples and tested for significance as well as the significance of differences between bycatch from dredge surveys with that from trawl surveys. Papers submitted for publication. Provide copies of papers <u>submitted to Surveillance 4.</u> Year 5. Continue to document and analyse data collected in 3 projects over past year and add information to database. <u>Provide documentation to Surveillance 5.</u>
Client action plan	<ul> <li>Year 1.</li> <li>1.Production of a Technical Report that will include a summarizing of historical information from the OP discriminated by MU with annual breakdown of the information of main bycatch species. There will also be a discussion of alternative to analyze long and short term trends.</li> <li>2. Production of a Technical Report documenting all 10L bycatch samples taken by OP, status of sorting and identification and discussion of how these samples will be analyzed for testing long term changes.</li> <li>3. Production of a Technical Report documenting all bycatch samples taken on biomass surveys, status of sorting and identification and discussion of how these samples will be analyzed for testing long term changes.</li> <li>Year 2. Production of a Technical Report that will include: <ol> <li>Analysis of all OP tow by tow reports of bycatch and biomass surveys from the start of the fishery, presenting analyses showing trends in numbers and weight of main groups in different MU and relate short and long term changes to fishing intensity on that MU. Test for significance and comparison between different data sources (OP vs biomass surveys).</li> </ol> </li> <li>Year 3. Production of draft scientific papers on the a analyses of trends in numbers and weight of main groups in different MU recorded in the OP and biomass surveys since the beginning of the fishery in every commercial tow, testing the significance of changes and relating short and long term changes to fishing intensity on that MU. Analyze significance of differences between bycatch from dredge surveys with that from trawl surveys.</li> <li>Year 4. Continue with the process of the Year 3, but now producing well advanced draft of papers to be submitted to scientific peer reviewed journals.</li> <li>Year 5. Continue to document and analyze data collected in 3 projects over past year and, as every years, add information to database.</li> </ul>
Score that shall be achieved at interim milestones	Client Action Plan milestones Year 1. Score would be raised to 80. Client Action Plan milestone Year 2. Score would be raised to 90. Client Action Plan milestone Year 3. Score would be raised to 95. Client Action Plan milestone Year 4 and 5. Score would be raised to 100.
condition	

Performance Indicators	<ul> <li>PI 2.4.1. The fishery does not cause serious or irreversible harm to habitat structure, considered on a regional or bioregional basis and function</li> <li>PI 2.4.3. Information is adequate to determine the risk posed to habitat types by the fishery and the effectiveness of the strategy to manage impacts on habitat types</li> </ul>
Score	2.4.1.: 70 2.4.3.: 75
Rationale	The benthic habitat exploited by the fishery for scallops, is widespread across the entire Patagonian Shelf but in the area of the fishery is primarily structured by the highly productive shelf break front so all benthic organisms attain high densities. The nutrient enrichment of the water masses mixing in the front result in the high year-round production of algae that support high densities of benthic suspension feeders on the seafloor under the front. The dead algae that drop to the seafloor here also support high densities of deposit feeders. Thus the algal production of the frontal system results in a very localized enhancement of a widespread benthic habitat occurring in much lower density on the rest of the Patagonian Shelf. The complex eddy currents along the front maintain larvae and propagules of scallops and benthic fauna within the frontal region so recruitment of the benthic habitat here is also enhanced. Fishing can have no impact on the frontal system. The fishing method that returns bycatch to the seafloor alive is also unlikely to have any impact on the density of benthic organsisms. Our knowledge of the benthic habitat largely comes from the bycatch of scallop trawlers (INIDEP Observer Program) or from bycatch from the scallop dredge used in the annual INIDEP biomass surveys. Initial surveys using a Picard dredge, has revealed a much wider range of benthos than shown in bycatch of dredges and the commercial trawls. In common with Australia and New Zealand shelf benthos, bryozoa are likely to be an important component of the smaller benthos here. The previously un-sampled portion of the benthos may be important in production of scallops and benthos. This portion of the benthos which has hitherto not been caught could be impacted by fishing gear on the seafloor, and so effect the productivity of the fishery. The fauna should be described from sampling with less selective gear so any effect the fishery has on
Condition	Use a Picard dredge or similarly non-size selective benthic sampling device, to systematically sample each Management Unit, with an equal number of stations in fished areas and un-fished reserve areas. Identify all organisms to lowest possible taxon and count and weigh each taxon. Describe the benthic habitat from these samples. Compare benthos between fished and un-fished areas and between Management Units.
Milestones	Year 1. Complete the first survey with an equal number of stations in fished areas and un-fished reserve areas of all management units. Commence sorting, identification, and weighing and counting to lowest possible taxon of all benthos, with especial emphasis on bryozoa which are likely to be an important component of the smaller benthos. Provide documentation of numbers and locations of samples and the level of sorting achieved to Surveillance 1.

#### Condition 5

	possible taxon of all benthos. Analyse the data comparing benthic habitat between fished and un-fished areas and between Management Units and document. Does the evidence indicate that fishing has serious effects on benthic habitat? Commence writing scientific papers. <u>Provide documentation of analyses, survey results and copies of draft papers to surveillance 2.</u>
	Year 3. Complete analysis of benthic habitat. Complete comparison of benthos of fished and un-fished areas and between management units, complete tests for significance of differences. Does the evidence indicate that fishing has serious effects on benthic habitat? Complete scientific papers presenting these data and submit for publication. Provide copies of papers submitted to Surveillance 3.
	Year 4. Complete second survey with an equal number of stations in fished areas and un-fished reserve areas of all management units. Commence sorting, identification, and weighing and counting to lowest possible taxon of all benthos, with especial emphasis on bryozoa which are likely to be an important component of the smaller benthos. Document numbers and locations of samples and the level of sorting achieved. Provide documentation to Surveillance 4.
	Year 5. Complete analysis of survey 2 and compare results with survey 1. Complete and submit scientific papers presenting these data. Provide copies of scientific papers submitted to surveillance 5.
	Year 1. Complete the first survey with an equal number of stations in fished and un-fished reserve areas of all MU. Starting the sorting, identification, and weighing and counting to lowest possible taxon of all benthos species, with special emphasis on bryozoans. Production of a Technical report providing numbers and locations of samples and the level of sorting achieved.
	<b>Year 2.</b> Complete sorting identification, and weighing and counting to lowest possible taxon of all benthos species. Analyze data comparing fished and unfished areas and between MU. Production of a Technical report addressing the question if there are evidences that fishing seriously affect the benthic habitat. Report it in a draft of scientific papers.
<b>-</b>	<b>Year 3.</b> Continue the process initiated in Year 2. Complete scientific papers presenting these data and submitting it for publication.
	Year 4. Second survey repeating what was done on Year 1. Production of a Technical report providing numbers and locations of samples and the level of sorting achieved.
	Year 5. Complete analysis of survey 2 and compare results with survey 1. Production of a Technical report with this analysis. If something scientifically new or different appears, a scientific paper will be produced.
Score that shall be achieved at interim milestones	PI 2.4.1 Client Action Plan milestone Year 1. Score would be maintained at 70. Client Action Plan milestone Year 2. Score would be raised to 75. Client Action Plan milestone Year 3. Score would be maintained at 75. Client Action Plan milestone Year 4. Score would be raised to 80. Client Action Plan milestone Year 4. Score would be raised to 85.

	PI 2.4.3
	Client Action Plan milestone Year 1 and 2. Score would be maintained at 75.
	Client Action Plan milestone Year 3. Score would be maintained at 75.
	Client Action Plan milestone Year 4. Score would be raised to 80.
	Client Action Plan milestone Year 4. Score would be raised to 85.
Consultation on condition	Client should provide clear definition and justification of the fishing gear used.

# **Appendix 2. Peer Review Reports**

a. Identification of specifically what (if any) changes to scoring, rationales, or conditions have been made.

Suggestion of changes in scoring was accepted and made for the following Performance Indicators:

- PI 2.4.2 Habitat Management: score has been changed from 80 to 90.
- PI 2.5.2 Ecosystem Management: score has been changed from 80 to 85.
- PI 2.5.3 Ecosystem Information: score has been changed from 80 to 90.
- PI 3.1.3 Governance and policy Long term objectives: score has been changed from 90 to 100.
- PI 3.1.4 Governance and policy Incentives for sustainable fishing: score has been changed from 85 to 90.
- PI 3.2.2 Fishery specific management system Decision making processes: score has been changed from 90 to 95.

Conditions and Rationales were maintained as original. See Conformity Assessment Body Responses below in Peer Reviewer report tables.

# Peer Reviewer 1.

## **Overall Opinion**

Has the assessment team arrived at an appropriate conclusion based on the evidence presented in the assessment report?	Yes	Conformity Assessment Body Response
Justification: This is a long and detailed assessment and, bas findings presented, I agree that this fishery sho certified according to the MSC principles and cr	ed on the uld be iteria	The Assessment Team accepts this comment, however is not able to shorthen it at this stage.

Do you think the condition(c) raised are	No	Conformity Accordment Body
Do you tillik the condition(s) raised are	NO	Comonnity Assessment Body
appropriately written to achieve the SG80		Response
outcome within the specified timeframe?		
Justification:		The Client Action Plan has appropiatelly
Condition 1 is clear, concise and appropriately	written but	addressed the Condition set by the
Conditions 2-5 do not state clearly and concise	y what	Assessment Team.
outcomes are required. Rather, together with th	e	
Milestones, they set out a very detailed research	h	The Assessment Team will consider
programme to be followed but it is not clear wh	at the	alternative trials if required in the
objectives are or how this will achieve the SG80	outcome	Surveillance Audits.
within the specified timeframe. In the case of C	ondition 3,	
for example, the experiments to develop gear th	at will	
reduce bycatch are certainly worthwhile, but this	s is	
speculative research and may not come up with	n any	
worthwhile developments and it is not clear, wh	atever the	
outcome of these trials, how this would contribute	ute to	
SC80b, which was the scoring issue that that w	as not met	
and which led to the condition being set. Furth	ermore.	
specifying a programme in such detail leaves th	ne client	
with little scope to decide for themselves what	should bo	
with fittle scope to decide for themselves what a		
included in their action plan to achieve the desi	rea	
outcomes.		

#### If included:

n moladoa.		
Do you think the client action plan is sufficient	Yes/No	Conformity Assessment Body
to close the conditions raised?		Response
Justification:		OIA, as the Certification Body has
Although I have expressed reservations about t	he detailed	requested to the Client the confirmation
wording of the Conditions, the Action Plan pro	vided sets	of their availability in resources of
out to gather all the information that has been	requested	manpower and ship-time and the Client
and follows very closely the detailed program	me set out	have responded that they will provide all
in the Conditions. The Action Plan also specifie	s, for each	necessary resources.
condition, which organisations will be involve	ed and the	
resources required. However, it does not cor	nfirm if the	
resources of manpower and ship-time will	be made	
available and if the funding bodies have agreed	to provide	
the necessary resources.		

### General Comments on the Assessment Report

For the scale and complexity of this fishery (one country, two companies, four boats, one species, one gear) this is a very long assessment report (200+ pages). This is partly due to a fair amount of repetition but is mainly caused by the presentation of very long lists of information, not all of which is relevant to this assessment, but with very little synthesis. This makes it very hard for the reader to rapidly pick out the pertinent facts. Despite this, I believe that this is a very well managed fishery, supported by a substantial and very able group of research scientists.

Overall, I believe the scores awarded are reasonable and have provided the right outcome, however, I have had difficulty understanding how some individual scores have been allocated and I am not sure that the assessment team has always followed the methodology set out in the 'Certification Requirements'. For example, the extensive 'Rationales' in the Evaluation Tables rarely make direct reference to every scoring issue and whether it is fully met (27.10.6.2), instead a lot of information is listed and the reader is left to determine for himself whether of not

the condition is met. This is not aided by the fact that the 'Met Y/N' column has not always been filled in. Furthermore, while the letter 'P' is permitted to partially score and obtain intermediate scores for PI's where there is only one scoring issue (27.10.6.3), there are many instances in this report where the letter 'P' is included and presumable partial scores allocated for PIs where there are two, three or four scoring issues (eg. 1.2.1, 1.2.2, and 2.2.3). Very rarely are any references listed in the Tables.

## Performance Indicator Review

Performanc e Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification	Conformity Assessment Body Response
1.1.1	Yes	Yes	NA		
1.1.2	Yes	Yes	NA	Although surrogate reference points are used for the assessment and management of this stock I am in agreement with this approach for this, and other, scallop stocks where annual biomas is estimated directly and believe that an adequate precautionary strategy has been used in setting these levels.	Ok. Biomass estimation is an adequate surrogate when the stock: recruitment is not clear and the stock dynamic unable to apply a predictive model.
1.1.3	NA	NA	NA		
1.2.1	Yes	Yes	NA	I think this could perhaps have been scored slightly higher as I think the fishery clearly meets 100 a & 100d and does not fall far short of 100b.	We consider this Performance Indicator does not fully achieve the SG100.

Performanc e Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification	Conformity Assessment Body Response
1.2.2	Yes	No	NA	I would have liked to see a clearer rationale stating why the assessment team did not consider 100b & c to be met.	Some level of uncertainty exist in the use of Conversion Factor and, as consequence, we considered partially met the SG 100b. The SG 100c coulb be considered met, but we would give the same score.
1.2.3	Yes	Yes	NA	I think that 100b is not met but would give it the same score.	We evaluated "Partial" in merit to the amount of information available to management, and considering the source of variability represented by the Conversion Factor.
1.2.4	Yes	Yes	Yes	Condition 1 can be easily implemented and will raise the score to 80 - and this could be improved further if some external peer review is included.	Some issues like 100a & b are fully and partially met, but the fishery do not met 80c and 100d since there is not peer review for the reports. If the condition 1 is implemented the score coulb be rise more than 80.
2.1.1	Yes	Yes	NA		
2.1.2	Yes	Yes	NA		

Performanc e Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification	Conformity Assessment Body Response
2.1.3	Yes	Yes	NA		
2.2.1	Yes	Yes	No	Score of 80 from SICA are based on reasonable input scores. Condition 2 is a list of actions to be taken but does not clearly state what the object is or how it will help the fishery improve its performance.	Faunistic changes produced in a trawled zone are embebed in uncertainty. Condition 2 and 3 were addresed to reduce this. The first to evaluate the degree of damage of bycatch species, and the second to reduce it by trawling gear modification.

Performanc e Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification	Conformity Assessment Body Response
2.2.2	Yes	No	No	The fishery failed to score 80, triggering Condiiton 3 to be set, because the team did not consider that there was some objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and/or the species involved (80b) – though they point out that the bycatch species composition and numbers are not significantly different from the pre- fishery condition, so the measures appear to be working. It is not at all clear to me how trials that attempt to find a dredge that reduces bycatch will help it meet 80b. If the team consider it will do this it needs the justification to be more explicit.	There is no a strategy, or measures explicitly formulated to maintain the main bycatch species at levels to be within biologically based limits. However, the area rotation and the determination to open fishing beds can be considered a strategy in this direction. The modification of fishing gear (e.g. use of square mesh) ha been discussed during the annual surveillances of previuous years, experimentally tested but never documented.

Performanc e Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification	Conformity Assessment Body Response
2.2.3	Yes	Yes	Yes	This fishery has an enormous amount of qualitative and quantitative bycatch data compared with most similar fisheries but unfortunately not all of this has been analysed, despite a recommendation in the original assessment. Condition 4 requires that the samples already collected be appropriately analysed and if the observers continue to take samples (although not necessarily for each tow) then the fishery should easily meet the SG80 level or higher in a future assessment.	We agree that the amount of data collected in the fishery by on board observers could be enough to satisfy the Condition 4. However, these data should be transformed in information (documents) that can be used to design management measures based on bycatch data.
2.3.1	Yes	Yes	NA		

Performanc e Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification	Conformity Assessment Body Response
2.3.2	Yes	Yes	NA	This is one of these instances that arise with the MSC scoring scheme where, as there are no ETP species, the management has not had to put measures in place, so it is probably not true to say that there is a comprehensive strategy in place (100a). However, it would be churlish to award less than 100 on this basis.	Yes, we agree with this comment.
2.3.3	Yes	Yes	NA		

Performanc e Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification	Conformity Assessment Body Response
2.4.1	Yes	No	Yes	This is a SICA score, based on reasonable assumptions, however I am not clear why the consequence score of 2 was converted to an MSC score or 70 and not 80 as in Table CC14 in the Certification Requirements and this is not explained. The benthic community study detailed in Condition 5 will certainly improve the state of knowledge of likely impacts, though it is not clearly stated how this will contribute to raising the fishery to the SG80 level.	During the SICA Workshop there was a discussion about the score for Consequence (2 or 3). Even when the score was 2 we decide to explain the discrepancy in the rationale, and the score for the PI was 70. The discrepancy was based in the regeneration time of scallop, considered as main constructor of habitat.
2.4.2	Yes	Yes	NA		
2.4.3	Yes	Yes	Yes	Condition 5 will allow 80c to be met and should go some way to meeting the SG100 scoring issues	We agree with this comment.
2.5.1	Yes	Yes	NA		

Performanc e Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification	Conformity Assessment Body Response
2.5.2	Yes	No	NA	I think it is likely that the fishery could score more than 80 but the scoring justications in the Evaluation Table have not all been completed and do not explicitly state why the fishery fails to meet any of the SG100 scoring issues. It seems to me that this fishery has no shortage of detailed planning.	The unique strategy in place is that established for the Principle 1, which indirectly protects the ecosystem structure and function. For this reason, we decided that the compliance was partial. Therefore the SG 100 is not considered met.
2.5.3	Yes	No	NA	The same comments used above for 2.5.2 apply. This is a fairly well researched fishery with substantial knowledge on benthic impacts.	The key elements of the ecosystem such as trophic structure and function, community composition, productivity pattern and biodiversity have been deeply studied. However, the scientist who work in ecological issues have different interpretations about recent results. Some concern about the habitat structure and function has been mentioned in some papers. Then, we decided to score 80, without condition, but to analyze these items in the future.

Performanc e Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification	Conformity Assessment Body Response
3.1.1	Yes	Yes	NA	I do not believe that such long Justifications are necessary, or indeed beneficial. A shorter statement directed explicitly at the scoring issues would be preferable.	Ok. We accept It can result repetitive. However, we believe the modifications suggested can be useful for the next stages of the process.
3.1.2	Yes	Yes	NA	As above.	As above.
3.1.3	Yes	No	NA	Despite the long justification text it is not clear why SG100 has only been awarded a proportion of the marks.	We agree with the rationale is too large and we re-scored the Performance Indicator and considered it fully met (SG100). SCORE CHANGED.
3.1.4	Yes	Yes	NA	This is good. Despite the long rationale it does have a summarising paragraph to explain why it only partially meets SG100. However, given the amount of incentive and regulations in place I think the score is rather low.	We agree with you justification and consider fair to raise the score to 90. SCORE CHANGED.

Performanc e Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification	Conformity Assessment Body Response
3.2.1	Yes	Yes	NA	Again, very good to see a short conclusion following the exceptionally long rationale. I agree with the logic – one regulation would be beneficial to all concerned in view of the present plethora of regulations and regulating bodies.	Ok.
3.2.2	Yes	No	NA	The Met? column has not been filled in and it is not clear from the rationale how the score of 90 was allocated	We completed the column "Met" with Y for 100a and P for 100b. For the last issue, the comment about the lack of formal reporting to all interested parties was taken into account to score. As consequence, it was established an score of 95. SCORE CHANGED.
3.2.3	Yes	Yes	NA	Good clear Evaluation Table – they should all be like this.	

Performanc e Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification	Conformity Assessment Body Response
3.2.4	Yes	No	NA	The allocation of the score is not explained, and there is no rationale included for the SG60 and SG80 scoring issues.	The SG 60 and 80 were met. The rationale about the research plan was detailed only for SC100. The issue 100a was considered partially met because the research plan is not completely comprehensive on the ecosystem aspects.
3.2.5	Yes	Yes	NA		

## Any Other Comments

Comments	Conformity Assessment Body Response
There is a factual error in the Rationale for Condition 2 on page 183. The Isle of Man queen scallop trawl fishery is not 100 years old – it started in 1969. In fact, this portion of the sentence would be better deleted as it is not stated how the proportion of the bycatch differs in the two fisheries, or what the significance of this is. These two fisheries are for different species, in very different geographical areas, so attributing any differences in bycatch proportion to the length of the fishery would be highly speculative. Also there is no reference included.	The sentence was deleted. The references will be included in the Final Report.

Performance Indicator	Does the report clearly explain how the process used to determine risk using the RBF led to the stated outcome? Yes/No	Are the RBF risk scores well- referenced? Yes/No	<b>Justification:</b> Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response:
1.1.1	NA			
2.1.1	NA			
2.2.1	Yes	No	There are no references included in this section and the information, although apparently accurate, is largely anecdotal.	OK. We will insert the references in the Final Report.
2.4.1	Yes	No	Again, no actual references, but the conclusions of the SICA workshop appear to be reasonable. As stated above, I am not clear why the Consequence score of 2 was converted to 70 and not 80 as in Table CC14 of the Certification Requirements. As there was a division of opinion at the SICA workshop about the appropriate Consequence score, with a number of attendees considering the appropriate level to be 3, this would have reduced the MSC score to 60. The implications of this should have been explained.	We will insert the references in the Final Report. The Assessment Team decided to score half the score between Consequence score 2 and 3. The decision was made during the SICA workshop with all participants.
2.5.1	NA			

# For reports using the Risk-Based Framework:

# Peer Reviewer 2.

## **Overall Opinion**

Has the assessment team arrived at an appropriate conclusion based on the evidence presented in the assessment report?	Yes/No Yes	Conformity Assessment Body Response
Justification: Adequate PIS for major components to recomm MSC Certification	Ok.	

Do you think the condition(s) raised are appropriately written to achieve the SG80 outcome within the specified timeframe?	Yes/No No	Conformity Assessment Body Response
<u>Justification:</u> Conditions related to invertebrate bycatch issues and and biased. If all conditions are met, scores would I 80.	We consider conditions are set to improve the fishery. A condition is set to result in improved performance to at least the 80 level (CR 27.11.1.3). The client proposed in their Action Plan adequate actions to achieve Assessment Team expected results.	
Do you think the client action plan is sufficient to close the conditions raised?	Yes/No NA	Conformity Assessment Body Response

<u>Justification:</u> Standard Requirement. PI 1.2.4. The Fishery Improvement Plan is acceptable. External peer review of stock assessment noted. Peer review of stock assessment need not be done yearly.	We accept this comment and will include an observation in the Conditions tables noting that Peer Review should be done every two years.
Standard Requirement. PI 2.2.1. The Fishery Improvement Plan is acceptable. Research to determine discard mortality on sea floor is difficult and need not be a requirement for a PIS of 80. Assessment of physical damage to juvenile and sub-legal scallops and invertebrate bycatch a priority. Then figure out how to further assess impacts on invertebrate bycatch Plans are in place to do the necessary evaluation.	We consider this condition will improve the fishery. A condition is set to result in improved performance to at least the 80 level (CR 27.11.1.3). The client proposed adequate actions to achieve Assessment Team expected results.
Standard Requirement. PI 2.2.2. Fishery Improvement Plan is acceptable. As stated in review, gear modifications to reduce bycatch must be associated with status quo or improvements in selectivity and efficiency for target specie.	
Standard Requirement. PI 2.4.1 Fishery Improvement Plan acceptable. As stated, corrective actions are excessive and if implemented would result in a PIS of above 80.	We consider this condition will improve the fishery. A condition is set to result in improved performance to at least the 80 level (CR 27.11.1.3).
General Comment. The Fishery Improvement Plan is aggresive and quite acceptable. Completion of all action plans and conditions would result in a PIS of 80 or above where noted.	The Assessment Team is aware of this and was the members intention to have an Action Plan that could lead to a higher standard in the weaker areas of the fishery found at this assessment process. See interim milestones score in Appendix 1.3.

## **General Comments on the Assessment Report**

As stated, the emphasis on invertebrate bycatch and associated Conditions is overbearing and detracts from the accomplishments of all parties to develop a well managed fishery.

Biomass estimates obtained from surveys may be questioned. No information is given pertaining to calibration of survey results from vessel to vessel and gear to gear changes.

Proposed gear changes to reduce invertebrate bycatch should proceed with caution as any changes in selectivity and/or efficiency may be counter-productive.

Catch of scallop meats in 2009 (kg/fishing day) appear to have had a significant decline from 2006 levels. It would be important to see the catch from 2010. Are there any concerns about the decline from 2006? There is no mention of the decline in the catch for 2009 in the assessment report.

## **Performance Indicator Review**

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification	Conformity Assessment Body Response
1.1.1	Yes	Yes	NA	The score of 85 is conservative given the variety of assessments and a very conservative TAC (40% of the minimum confidence level). Consideration should be given to increase the score to 90. There is no indication of recruitment overfishing. There is no indication of a stock:recruitmnet relationship. Agree with the assumption that it is imposible to assess any adverse effect on recruitment due to trawling.	We re-analyzed the score given and rationale and we still consider 85 is the score that should be given to this Performance Indicator, taking into account the general purpose of the Performance Indicator.
1.1.2	Yes	Yes	NA		
1.1.3	NA	NA	NA		

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification	Conformity Assessment Body Response
1.2.1	Yes	Yes	NA		
1.2.2	Yes	Yes	NA	More credit should be given to using the most conservative condition factor of 7.14. Considering the highest CF is 12.16 the magnitude of the difference is noteworthy. The understanding of changes in shell height to muscle weight is becoming more important in optimizing scallop yield for rotational area management strategies with a set TAC. Consider raising performance indicator score to 95. Allthough temporal and spatial factors account for only 42% of the variabiliity in the CF, one should consider evaluating more closely the processing efficiency using vessel and scallop muscle size as variables	We have considered the season and spatial variations in CF. We understand the necessity of using a fixed CFand we believe 90 is a fair score for this Performance Indicator.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification	Conformity Assessment Body Response
1.2.3	Yes	Yes	NA	See above. Also, it could be noted here that there may be some concern about the survey methodology. It appears that both the survey vessel and survey instrument was changed in 2008 from a dredge to a commercial trawl. There is no information pertaining to efforts to calibrate both changes in order to maintain the time series and data compatability. Assuming both gears were non selective, changes in efficiency from vessel to vessel and gear to gear could effect biomass estimates	Yes, we agree with this comment.
1.2.4	Yes	Yes	Yes	One might suggest the model used for scallops by the U.S, National Marine Fisheries Service, Stock Assessmnet Committee. Contact Larry Jacobson at <u>larry.jacobson@noaa.gov</u> . This process appears to work well for an external review of the stock assessmnet for the US sea scallop fishery resource. If a similar process is implemented, it should be sufficient to raise the Indicator Score to 80 or above.	Ok. We have crossed referenced the milestones in Appendix 1.3 to your comment.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification	Conformity Assessment Body Response
2.1.1	Yes	Yes	NA		
2.1.2	Yes	Yes	NA		
2.1.3	Yes	Yes	NA		

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification	Conformity Assessment Body Response
2.2.1	Yes	No	NA	The Performance Indicator Score is at 80 but yet there is a condition attached to this indicator. Agree that the complexity of the invertebrate bycatch species is daunting, but the report indicates that there has not been a significant change/shift in bycatch complexity or abundance in fished areas. Since there are no established biological based limits pertaining to invertebrate bycatch species, a score of 80 is low. Considering the very conservative harvesting strategy for the target species using rotational area management, closed areas for habitat protection and research, very short tow times (15 minutes) and a very rapid catch sorting process (30 minutes) suggesting a research plan to further assess the potential adverse impacts to invertebrate bycatch is well meaning, but excessive. A legitimate first step would be to assess any physical damage to the invertebrates during sorting. See attachment for additional comments.	When using SICA for scoring a Performance Indicator even if the Consequence score is 2 and the final MSC value could be 80 a Condition should be set. We understand that there is a need for going to a more community oriented management strategy, and to consider the impact over some species group as defined during SICA Workshop.

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Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification	Conformity Assessment Body Response
2.2.2	No	No	No	The area management strategy in place for the target species should also be considered as the same strategy to manage bycatch and habitat impacts. All indications present a situation where impacts are minimal and discard mortality is less than 10%. Bycatch species composition and numbers are not significantly different from pre-fishery conditions. Fishing is an extractive process and to expect no changes in habitat and bycatch composition is unrealistic. The score of 70 for this indicator is unrealistic. Items in Condition 3, if met, would elevate the score to above 80. Certain elements within Condition 3 have merit however the motives behind the conditions are not well placed. We should recognize the value within the overall objectives of a rotational area management strategy for scallops; that is to maximize CPUE and minimize fishing gear bottom contact time in a TAC limited fishery. See attachment for additional comments.	There is no a strategy, or measures explicitly formulated to maintain the main bycatch species at levels to be within biologically based limits. However, the area rotation and the determination of open fishing beds can be considered a strategy. We understand that some degree of impact must to be accepted within a fished area, but this proccess have an inherent uncertainty about the degree of damage that demand more results in that direction.
Performance Indicator	Has all the relevant information available been used to score	Does the information and/or rationale used to score this Indicator support	Will the condition(s) raised improve the fishery's performance to	Justification	Conformity Assessment Body Response
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	this Indicator? (Yes/No)	the given score? (Yes/No)	the SG80 level? (Yes/No/NA)		
2.2.3	Yes	No	No	Conditions 4 is unrealistic. If criteria are met in the multi year plan, score would be above 80. Given the present degree of sampling, a score of 80 is warrented. The strategy to return all bycatch alive after sorting appears to be working. Items listed for a score of 80 have beeen me.t	These evidences are based in the lack of difference in species richness or species composition between fished and unfished areas (see Schejter et al. 2008). Some local effects has been described (Bremec et al. 2008 JSR) and they may have some effects on settlement, but this hypothesis has not been evaluated yet. Now, there are new studies which report changes in fished versus unfished zones.
2.3.1	Yes	Yes	NA		
2.3.2	Yes	Yes	NA		
2.3.3	Yes	Yes	NA		

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification	Conformity Assessment Body Response
2.4.1	Yes	No		Condition 5 is excessive to meet a PIS of 80.	We consider conditions are set to improve the fishery. A condition is set to result in improved performance <u>to at least</u> the 80 level (CR 27.11.1.3). The client proposed in their Action Plan adequate actions to achieve Assessment Team expected results.
2.4.2	Yes	No	NA	There is a strategy in place to manage impacts of the fishery on habitat and preserve the habitat of the target species. Note: eviscerated scallop shells are discarded at the place of harvest which contributes to the preservation of the habitat as well as providing structure for the attachment of post larval scallops. PIS 90.	The area rotation is a management strategy addressed to scallop that decrease the effect on the habitat, but the sediment biogeochemical structure may be affected, which may have ecosystem effects.The score can be modified to 90. SCORE CHANGED.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification	Conformity Assessment Body Response
2.4.3	Yes	No	No	Condition 5 is excessive to meet a PIS of 80.	We consider conditions are set to improve the fishery. A condition is set to result in improved performance <u>to at least</u> the 80 level (CR 27.11.1.3). The client proposed in their Action Plan adequate actions to achieve Assessment Team expected results.
2.5.1	Yes	Yes	NA	See comment on discarded scallop shells.	1
2.5.2	Yes	No	NA	Strategies are in place and indications are that the measures are successful and are based on functional relationships. PIS of 85.	Comment accepted. SCORE CHANGED.
2.5.3	Yes	No		Partial scores for SG 100 are in place and appropriate. PIS 90.	Comment accepted. SCORE CHANGED.
3.1.1	Yes	Yes	NA		
3.1.2	Yes	Yes	NA		

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification	Conformity Assessment Body Response
3.1.3	Yes	No	NA	The report does not give an explanation as to why the Performance Indicator Score did not warrant a 100.	We agree with the comments of the Peer Reviewer and accept to modify the score to 100. SCORE CHANGED.
3.1.4	Yes	No	NA	The rationale used to assign a PIS of 85 is weak. Vague references to uncertainties to habitat and bycatch species. The lack of incentives to develop gear to reduce bycatch is misplaced and should not be a fault. PIS score should be increased to 90.	We accept to modify the score to 90. SCORE CHANGED.
3.2.1	Yes	No	NA	The rationale used in the conclusion to reduce the score 10 points is weak. Inclusion of all management parameters in a single regulation would be unworkable.	We believe that the short and long-term objectives are not fully well defined for this fishery and this could be improved.
3.2.2	Yes	Yes	NA		
3.2.3	Yes	Yes	NA		

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification	Conformity Assessment Body Response
3.2.4	Yes	No	NA	Reasons to lower score for this indicator are weak and confusing. The research plan does address environmental based studies and the exchange of information. How much more is necessary is not explained. PIS 90.	The issue 100a was considered partially met because the research plan is not fully comprehensive on the ecosystem aspects. The impact of trawling over the community composition, changes in abundance of several species, and effects over the dynamics of more sensitive species remain as open issue to research. We consider that the research plan need to be more focused on environmental aspects.
3.2.5	Yes	yes	Na		

# For reports using the Risk-Based Framework:

Performance Indicator	Does the report clearly explain how the process used to determine risk using the RBF led to the stated outcome?	Are the RBF risk scores well- referenced? Yes/No	Justification: Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response:
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	Yes/No			
1.1.1				
2.1.1				
2.2.1	Yes	Yes		
2.4.1	Yes	No	Rationale does not include the contribution to the habitat provided by discarded scallop shells which provide settlement surfaces for post larval scallops and other invertebrates. Studies have documented the value of discarded shells to preserve habitat structure and function. Guay, M. and JH Himmelman (2004)	We agree with the role of scallop shell as input to habitat providing surfaces. It is a management measure in several scallop fisheries.
2.5.1				

#### Extra comments of Peer Reviewer 2 on Conditions.

2.2.1

But to further measure the survival of the bycatch after sorting in experiments on the sea floor is exceedingly difficult and unwarranted. The very conservative area management harvesting strategy should be sufficient to mitigate any adverse impacts considering that only 13% of the resource area is fished in a given year.

# Conformity Assessment Body Response: We believe that in high productivity fishing grounds the fishing effort is very high and this could have a significant impact on bycatch.

2.2.2

This can be realized by recognizing the growth potential of scallops to maximize yield and setting minimum biomass levels for closing areas. The objectives can be enhanced by developing fishing gears that have improved selectivity while maintaining a high degree of efficiency. These same strategies are valid for bycatch reduction and mortality.

To develop a fishing gear to reduce bycatch in a TAC controlled fishery, we must not inadvertently reduce the efficiency of the gear which would in effect increase bottom time in order to obtain the TAC. We know that efforts to improve selectivity in scallop trawls by increasing mesh size in the US scallop fishery was not very effective (DuPaul et al; 1988). That was also the case for the Patagonian scallop fishery. So the condition to convene a workshop to discuss

how gear could be modified to address the bycatch issue must be tempered with maintaining (currently estimated to be at 50%) or increasing catch efficiency. It was mentioned that a square mesh cod end may be useful; could be. A modified scallop dredge currently used in the US scallop fishery to protect sea turtles has shown promise for reducing bycatch (see New England Fishery Management Council Scallop Fishery Management Plan, Framework 23). In any event, gear testing could be easily done on vessels that can tow two nets (gear) at the same time. Paired tow experiments can be analyzed by the methods of R.B. Millar to test for changes in selectivity and efficiency of two different gear types. See also Rudders and DuPaul; in preparation Rudders PhD Dissertation), Yochum and DuPaul; 2008. Gedamke et al. 2004, 2005.

# Conformity Assessment Body Response: We agree with this comment. The milestones of Condition 3 may be re-considered in Surveillance Year 2 or 3 depending on findings.

References:

DuPaul, W.D, E. Heist, J. Kirkley and S. Testsaverde; 1988. A Comparative Analysis of the Effects on Technical Efficiency and Harvest of Sea Scallops by Otter Trawls of Various Mesh Sizes. Virginia Institute of Marine Science. Marine Resource Report 88-10.

Guay, M. and J.H. Himmelman. 2004. Would Adding Scallop Shells (Chlamys islandica) Add to the Recruitment of Commercial Species. Journal of Experimental Biology and Ecology. 312(2) 299-317.

Gedamke, T., W.D. DuPaul and J. Hoenig. 2004. A Spatially Explicit Open-Ocean DeLury Analysis to Estimate Gear Efficiency in the Dredge Fishery for Sea Scallops (P. magellanicus). North American Journal of Fisheries Management. 24:335-351.

Gedamke, T., W.D. DuPaul and J. Hoenig. 2005. Index-Removal estimates of Dredge Efficiency for Sea Scallops on Georges Bank. North American Journal of Fisheries Management. 25:1122-1129.

Rudders, D.B. 2010. Incorporating Industry Based Dredge Surveys into the Assessment of Sea Scallops (P. magellanicus). PhD Dissertation. Virginia Institute of Marine Science, College of William and Mary.

Yochum, N. and W.D. DuPaul. 2008 Size Selectivity of the Northwest Atlantic Sea Scallop (P. magellanicus) Dredge. Journal of Shellfish Research. 27(2):265-271.

# Appendix 3. Stakeholder submissions

In compliance with requirement CR 27.15.3.1 below we detail written submissions from stakeholders received during consultation opportunities.

No comments were received on:

- a. The announcement of full assessment
- b. Proposed team membership
- c. Proposed peer reviewers

d. The proposal for the use or modification of the default tree and/or use of the RBF (Annex CC).

No written nor verbal submissions received during site visits material refered to specific scoring levels, however we detail in this section and rationale tables some justifications provided by stakeholders that influenced scorings.

a. No comment regarding that any PI score that would fall below 60 was received.

b. Principle 2 PIs on Bycatch and Habitat outcome was indicated as being in a status to be scored between 60 and 80. These comments triggered use of RBF in a second on-site visit.

c. No comment regarding that PI scores within any Principle for which the aggregate score at the Principle level falls below 80 was received.

#### All written submissions made by stakeholders during consultation opportunities:

#### **Previous to onsite visit:**

- 1. Mario Lasta publications' submitted on June, 2011. Previous to Assessment team 1<sup>st</sup> on-site visit:
  - . Info.Tec. Ofic. Nº 4- 2011. Evalua. SS-11 UM 4-5
  - a. Scientific research proposal for 2011-2015
  - b. Informe de campaña A. Surf I- 1-2010
  - c. Info. Camp. Nº 8-2010. SS-marzo 2010-UM 5, 6 y 7 A. Surf III
  - d. Estadisticas 2009-Info Tec Ofic. Nº 7
  - e. Info.Tec. Ofic. Nº 4- 2011. Evalua. SS-11 UM 4-5
  - f. Informe AyT Nº 10-2010 Observadores
  - g. Info.Tec. Ofic. Nº 11-2010. Evalua. SS-10 UM 8-9-10
  - h. Info. Camp Nº 10-2010. SS-marzo 2010-UM 8, 9 y 10
  - i. Info.Tec. Nº 27 SECTOR Norte-10
  - j. Info.Tec. Ofic. N 10- 2010. Evalua. SS-10 UM 5-6-7
  - k. Schejter y Bremec (draft version)
  - 1. Gulleret al (draft version)
  - m. Schejter, Escolary, Bremec (draft version)

#### During 1<sup>st</sup> on-site visit, June, 2011:

- 2. Claudia Bremec (Benthic Resources Fisheries Group INIDEP –Researcher). Documents submitted on the 1<sup>st</sup> on-site visit, June, 2011:
  - n. Spatial distribution, biomass and size structure of Ctenodiscus australis (Echinodermata: Asteroidea) in shelf-break areas, Argentine (manuscript Escolar, M., Hernández, D.R., Bremec, C.)
  - o. Sánchez, M.A., Giberto, D., Schejter, L., Bremec. C. The Patagonian scallop fishing grounds in shelf break frontal areas: the non assessed benthic fraction. Lat. Am. J. Aquat. Res., 39(1): 167-171, 2011.
  - p. Technical Research Report N° 4/2011. Fauna Acompañante de la Pesquería de Vieira Patagónica: Los Peces II. Unidades de Manejo al Norte de 40° S.

- q. Technical Research Report Nº 22/2010. Riqueza específica y asociaciones faunísticas en los bancos comerciales de Vieira patagónica (*Zygochlamys patagonica*) a lo largo del frente de talud. Período 2009.
- r. Technical Research Report Nº 51/2010. Fauna Acompañante de la Pesquería de Vieira Patagónica: Los Peces.
- s. Bremec, C., Schejter, L.. Benthic diversity in a submarine canyon in the Argentine Sea. Revista Chilena de Historia Natural 83: 453-57, 2010.
- t. Technical Research Report Nº 80/2010. Riqueza específica en los bancos comerciales de vieira patagónica (*Zygochlamys patagonica*) a lo largo del frente de talud. Período 2010.

#### Posterior to 1<sup>st</sup> on-site visit:

- **3.** Alejandra Cornejo (ONG CeDePesca representative) submitted a technical file report on the Patagonian scallop resource and fishery with comments on its management. Main issues were:
  - Catches are published in a fixed annual period while the TACs are established in variable periods. INIDEP does not have the official statistics detailed by management unit or sector. This represents the main reason why 100% coverage of OBOs in this fishery is considered so important.
  - One of the main issues detected at the beginning of the fishery in 1995 to establish exclusion areas of fishing for ecological studies, in intensely disturbed areas and control areas.
  - The fishing gear efficiency estimated at the beginning of the fishery was 21-31% and showed no selectivity by size for scallops, even when increasing the mesh size from 80 mm to the current mesh of 120 mm. This estimation needs revision.
  - The main impacts of trawling registered on bycatch are at short term, the damage to non target invertebrates (mainly ophiuroids, sea urchins and crustaceans) and at long term, reduction of sessile invertebrates such as sponges and cnidarians. From a trophic point of view, the fishing effort in some areas have favored presence of depredators (snails and starfish species) and reduced the presence of sessile filter species.

#### During 2<sup>nd</sup> on-site visit:

- 4. Cecilia Mauna (Benthic Resources Fisheries Group INIDEP –Researcher). Documents submitted on the 2<sup>nd</sup> on-site visit, September, 2011:
  - u. Shifts in an epibenthic trophic web across a marine frontal area in the Southwestern Atlantic (Argentina) (manuscript of Mauna, A.C., Acha M., Lasta, M.L., Iribarne, O.O.)
  - v. The influence of a large SW Atlantic shelf-break frontal system on epibenthic community composition, trophic guilds, and diversity. Journal of Sea Research 66 (2011) 39–46.
- 5. Gabriel Blanco (OBOs Program Manager). Documents submitted on the 2<sup>nd</sup> on-site visit, September, 2011:
  - w. Fishing trip final report for Patagonian scallop vessels.
  - x. Fishing trip final report for a demersal species for comparison with Patagonian scallop vessels.
  - y. Protocol of tasks and operations for OBOs on Patagonian scallop vessels.
  - z. Sampling protocol for muscles being processed on factory vessels for sanitary analysis on laboratories officially accredited by SENASA.
  - aa. OBOs fishery data tables, as example.

#### Client on Preliminar Draft Report:

The condition 2 request to:

Record the components of bycatch, describe how they, and the undersized scallops, are Describe damage, attribute causes of damage in the sorted from the scallop catch. Describe damage, attribute causes of damage in the sorting process, and quantify damage to main bycatch species in the sorting process. Measure subsequent mortality of main bycatch species in experiments on the sea floor. These studies will give a baseline to measure reductions in bycatch mortality brought about by gear improvements. This Condition requires INIDEP to: 1) describe clearly the sorting mechanisms for bycatch and define sources of damage, and damage that could subsequently result in mortality, 2) to measure the survival of the main bycatch species after sorting of the catch in experiments on the seafloor.

It will be interesting to give some suggestions of what is considered "main" species.

It seems that it is not so critical to measure the exact mortality rates of bycatch species. Just to o have good monitoring of changes in bycatch rates may be a good indicator. However, bycatch species may change biomass due to factors others than fishing (as scallops do!). Thus, it may still be worth to have some estimation of bycatch mortality rate as described in the condition, but it does not seems to be the most usefull information to evaluate fishing effects.

#### Condition 5

Use a Picard dredge or similarly non-size selective benthic sampling device, to systematically sample each Management Unit, with an equal number of stations in fished areas and un-fished reserve areas. Identify all organisms to lowest possible taxon and count and weigh each taxon. Describe the benthic habitat from these samples. Compare benthos between fished and un-fished areas and between Management Units.

- It may be obvious, but it should be clearly stated that the experimental fished not fished areas should have similar fishing (effort) history, and the fished areas should be under similar fishing pressure.
- There is not previous information to predict which the optimal time frame to see recovery is. Given that, the ideal situation will be to sample more frequently (e.g. every year) and then evaluate recovery rate (that is to see trends). This may also provide information in relation to recovery time frame. But there is no previous information that suggests that 3-4 years is a good time frame to se recovery (it may be shorter or longer time).

The Assessment Team answer: These comments will be considered within the Client Action Plan proposed.

The proposed Client Action Plan was accepted as presented. Observations were made, these can be found in Appendix 1.3.

Detailed summary of verbal submissions received during site visits regarding issues of concern material to the outcome of the assessment:

#### 1<sup>st</sup> on-site visit – June, 2011.

- 1) Client Group meeting. Main issues:
  - Use of 22% of the administrative reserve in 2010 by the companies. It is required by regulation that companies cannot be licensed with more than 40% of quota to avoid monopolio.
  - Quotas of each vessel are transferable for vessels of the same company, it is a common practice. It is a catch assignation system, it is similar to quotas but with a slight difference.
  - Both companies have being working in some issues but in practical form, not within a programe research with lighter otter nets to reduce by-catch and habitat impacts.
  - There is no interaction of the fleet and seabirds since there is no significant and visual discards to attract them in the fishery. The discards from the plant are soft-liquid discards of branchias and soft tissue from scallops and minced valves.
  - Daily electronic logbook is currently in use by both companies.
  - Video cameras are not in use yet. Wanchese Argentina S.A. doubts the potential use of such data.
  - Multibean was not fully exploited when available to get new data about the sea bottoms.
  - Financing for research by companies have helped research groups to improve information on the species and fishery.
- 2) INIDEP Directorate. Otto Wöhler and Daniel Bertuche discussed with Assessment Team the following main topics:
  - Actual management of Mollusk Fisheries.
  - Current and future research plans.
  - Position of INIDEP regarding MSC certification.
  - Benefits of certification on Patagonian scallop research and fishery.
- 3) INIDEP Sub-programme research on Fisheries Ecology. Dr. Claudia Bremec and Dr. Laura Schetjer discussed with the Assessment Team these main issues:
  - There is a study of the benthic communities of three types of grounds: in 1995 (baseline of the fishery) 1996-2002 (fishing interrupted ground) 1996-2007 (fishing uninterrupted ground). There is a significant statistical difference in species density which suggests that the rotational system is benefic to the exploited resource but not for the by-catch associated.
  - Chetopterus sp are large polychaetes forming U tubes which use scallops as their substrate. This species is important to monitor the impacts of the fishery.
  - Due to changes in gear of prospecting surveys and reduction on sampling on commercial fishing operations, many interannual samples are not comparable and analysis of fishery impacts have been affected.
  - The research group expects to expand our monitoring programme to areas outside the fishing grounds but within the management units.
  - Main species are the ones forming the association mentioned in papers.
- 4) INIDEP Programme research on Benthic Mollusk Fisheries. Researcher Dr. Mario Lasta on Patagonian scallop was interviewed by Assessment team and main issues discussed were:

- There are intentions to undertake studies to reduce the impact of the net on the bottom by removing from the ground the scallops since up to the present there have not been enough effort on this research area.
- The companies have undertaken informal studies but there are no reports on such tests because the companies are more practical.
- For increasing productivity/production the only way is to increase the efficiency of muscle extraction in the processing. The Patagonian scallop fishery is exploiting the maximum sustainable biomass. Several practical experiments are under progress.
- It is necessary to establish clearer guidelines on management measure on percentage of juveniles.
- The recommended biomass follows a precautionary approach since it is set after the adult commercial biomass surveyed in the patches within the fishing grounds.
- 5) Fishing Federal Direction, Under-secretariat of Fishing and Aquaculture Mar del Plata Local district. Juan Carlos Pita Chief of Port was interviewed regarding surveillance of the fishery:
  - Inspectors are designated from the head office in Buenos Aires.
  - Both inspectors and OBOs would accompany the trips.
  - This fishery is simple to monitor because they have no restriction in fishing gear.
  - Lately, there was an inspector report informing that muscle of individuals from the management unit 2 were too small. This lead to a closure of this area, the Canepa (INIDEP research vessel) made an evaluation concluding that organisms of that area were old-small sized compared with other areas and that not recruitment was occurring.
  - The Fishing Federal Direction Mar del Plata Local district counts with enough staff to undertake monitoring, surveillance and control. There are 80 inspectors in Mar del Plata from a total of 110.
- 6) CeDePesca ONG. Alejandra Cornejo discussed with Assessment Team the following main issues:
  - The south sector is evaluated during the first semester of the year, while the northern sector during the second semester of the year, therefore TACs are established in different times for management units in both sectors. There are no public statistical estimations available by management unit to calculate the percentage of TAC annually established for each management unit.
  - The electronic fishing report is sent to the Fishing National Direction (Under-Secretariat of Fishing and Aquaculture) using a color system to alert the state of the catches in relation to the TAC of the specific managament unit fished.
  - The coverage of fishing trips with OBOs has decreased in 2009 to 45%, comparing to 2006 to 2008, with 100% coverage.
  - There is a lack of management measures established for associated fauna.
  - It is important to establish the status of exploitation of the stock in Uruguay, although it is considered to be no fishing in that country because the biomass in their ZEE is not commercially viable, and since a controversy in 2002 Argentina is the unique part managing and exploiting the resource including the Common Fishing Zone between both countries.
- 7) Fundación Vida Silvestre Argentina ONG. Mr. Guillermo Cañete mentioned these main issues:
  - There is a bias between presence of inspectors and OBOs among the two licensed companies. The stock recruitment relationship is unknown in this fishery, then TAC is less important than the limit of 50% juveniles present in the trawl in this fishery, that's

why presence of on board observers is essential. It is therefore very important to analyze the quality of the information of OBOs.

- There is a clear intent from management authorities to protect the reproductive capacity by estimating the TAC from biomass of commercial adults, in high yield.
- 8) On Board Observers Programme INIDEP. Gabriel Blanco expressed the following main issues:
  - OBOs coverage since January 2010 to June 2011 by Glaciar Pesquera was 100% for both vessels and 100 and 66% for Wanchese Argentina's vessels. At the beginning the fishery companies were excluded of taking inspectors. After a recent regulation, it was an obligation of the management authority to include 100%. For me 100 % OBOs coverage is excessive. 60-50% would be very good provided that the coverage be symmetric between companies. It is very difficult to maintain a well trained OBO team, due to the physical exhaustion suffered by the members. OBOs are in contact with the research group before every fishing trip. The OBOs performance is evaluated after each fishing trip.
  - The OBO protocol has been improved by the recognition of Chondrichthyes according to the PAN-Sharks.
  - There is a research going on to detect survivorship of discarded scallops. Valve edges' color, texture and distance allow analyzing if the damage has been recently caused by the haul or to previous impact.
  - Infractions have not been detected.
  - Catch of juveniles: if after 10 sets there are more non commercial organisms than commercial, the trend is to move to other area. There is not a well-defined formal triggering measure.
  - Fishery management systems throughout the world are reducing the on board inspectors program because of its low effectiveness, although unexpected boarding is still considered relevant for control purposes.
  - Resolution 04/2008 eliminated the articles of the previous management plan on bycatch.
  - There are no impacts of seabirds on the cables because discards are negligible and no attractive to birds. Processing discards consist on water and scallop gills.

#### 2<sup>nd</sup> on-site visit – September, 2011.

- 1) SICA Workshop. Participants:
  - Silvana Campodónico, Susana Herrera, Cecilia Mauna, Mario Lasta Benthic Mollusk Fisheries Researchers (INIDEP)
  - Gabriel Blanco On Board Observer Programme (INIDEP)
  - Alejandra Cornejo CeDePesca (NGO)
  - Glaciar Pesquera fishing gear specialist
  - Rodrigo Polanco and Patricia Bianchi MSC Observer
  - Mónica Pérez-Ramírez CIBNOR México Observer

Oscar Iribarne (University of Mar del Plata), Guillermo Cañete (ONG FVSA), Argentine Naval Prefecture (PNA), Claudia Bremec and Laura Schejter (INIDEP) were main invited participants to the SICA Workshop, although were not available to participate due to unexpected circumstances.

The Assessment Team included main conclusions of discussions in the SICA workshop in the SICA tables.

- 2) Glaciar Pesquera S.A. President CPN Eduardo Gonzalez Lemmi discussed with Assessment Team the following main topics:
  - Plan to upgrade general features of the fishery fishing effor for the next years.
  - Market condition.
  - Operativity of the fleet.
- 3) INIDEP Directorate. Otto Wöhler and Daniel Bertuche discussed with Assessment Team the following main topics:
  - External review of INIDEP.
  - Fisheries Assessment Methodology and Risk Based Framework methodology.
- 4) Under-secretariat of Fisheries and Aquaculture. Dr. Ramiro Sánchez discussed with Assessment Team the following main topics:
  - Management system objectives.
  - Ecosystemic management approach and its challenges in Argentina.
  - Relevance on environmental research.
  - FAO Project to Review Argentine Fisheries Management.
- 5) Federal Fishing Council. President Deputy Ing. H. Marcelo Santos Dr. Ramiro Sánchez discussed with Assessment Team the following main topics:
  - Management system general objectives.
  - Management specific objectives for the Patagonian scallop fishery. Review of management plan.
  - OBOs coverage revelance.
  - Inspectors' role and coverage.

#### Explicit responses from the team to stakeholder submissions:

The Assessment Team included discussion of all written and oral stakeholder comments through the rationales of PIs, and have been included also in the SICA tables.

The Assessment Team accepted the Action Plan proposed by the Client.

#### (REQUIRED FOR FR AND PCR)

- 1. The report shall include all written submissions made by stakeholders about the public comment draft report in full, together with the explicit responses of the team to points raised in comments on the public comment draft report that identify:
- a. Specifically what (if any) changes to scoring, rationales, or conditions have been made.
- b. A substantiated justification for not making changes where stakeholders suggest changes but the team makes no change.

(Reference: CR 27.15.4)

# **Appendix 4. Surveillance Frequency**

# (REQUIRED FOR THE PCR ONLY)

The report shall include a completed fishery surveillance plan table using the results from assessments described in CR 27.22.1

Score from CR Table C3	Surveillance Category	Year 1	Year 2	Year 3	Year 4
	Normal Surveillance	On-site surveillance audit	On-site surveillance audit	On-site surveillance audit	On-site surveillance audit & recertification site visit

#### Table A4: Fishery Surveillance Plan

# **Appendix 5. Client Agreement**

## (REQUIRED FOR PCR)

The report shall include confirmation from the CAB that the Client has accepted the PCR. This may be a statement from the CAB, or a signature or statement from the client.

(*Reference: CR: 27.19.2*)

### **Appendix 5.1 Objections Process**

### (REQUIRED FOR THE PCR IN ASSESSMENTS WHERE AN OBJECTION WAS RAISED AND ACCEPTED BY AN INDEPENDENT ADJUDICATOR)

The report shall include all written decisions arising from an objection.