PATAGONIAN SCALLOP FISHERY
(VIEIRA PATAGONICA)

Annual Surveillance Visit Final Report
Required by the Marine Stewardship Council

2009-2010

Report Nº 4

Prepared for: Glaciar Pesquera S.A., Argentina.

Prepared by: Organización Internacional Agropecuaria Assessment Team:
Dr. Enrique Morsan, Instituto de Biología Marina & Pesquera "Alte. Storni".
Dr. Pedro Barón, Centro Nacional Patagónico, Conicet, Argentina
Tec. Marcelo Gavensky, Organización Internacional Agropecuaria, Assistant.

Index

1. Title

MSC Surveillance Visit 2010
REPORT for PATAGONIAN SCALLOP FISHERY

Preface
The information, opinions, and conclusions made in this report are the sole responsibility of Organización Internacional Agropecuaria. Advice was sought and provided by Dr. E.M. Morsan, Instituto de Biologia Marina & Pesquera "Alte Storni" and Dr. Pedro Barón of Centro Nacional Patagónico / CONICET.

Certificate Number: 010106/11

Name and Address of Certification Body:

Organización Internacional Agropecuaria (OIA)
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Date of Summary: October 2010

2. General information

Name and contact information for the certified fishery:
Client contact:

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Santiago del Estero 1718 – 1° Piso Of. 7
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General background about the fishery
The Patagonian Scallop (Vieira Patagonica) Fishery was certified in November 2006 by the Organización Internacional Agropecuaria (OIA) following the Principles and Criteria of the Marine Stewardship Council (MSC). The MSC requires that certified fisheries must undergo at least an annual surveillance inspection in order to ensure that the certification is in place and the fishery is fulfilling the conditional requirements imposed in the original certification. The fishery has completed its third period of fishing activity. At the end of the five year certification period, the requirements of the MSC are that the Fishery must complete a re-certification before the anniversary date of the original certification, in order to ensure the uninterrupted use of the certificate and the MSC logo. If the Fishery fails a surveillance audit or re-certification, the use of the Certificate and the MSC logo can be revoked by the MSC or simply lapse.

The Patagonian Scallop fishery commenced in 1996, after a one year experimental fishing programme. Although young, the fishery, is of world importance, and is operated throughout, the year. It employs 4 high-tech, high-cost factory vessels (~50m long), landing up to 11.000 t of scallops muscle (IQF) obtained from 80.000 t of commercial size scallop (> 55 mm height). The

production is exported to Canada, USA and the EEC. There is a clear spatial correspondence between the fishing grounds and oceanographic frontal system associated with the Argentinean Shelf (Bogazzi *et. al.*, 2005). The main fishing area is located (39°S to 45°S; at depths of 90-120 m) is strongly influenced by the shelf break front. The beds are located on muddy-sand substrate. Each year, the fleet performs 31 to 54 fishing trips (each of 20-40 fishing days), during which 40-60 tows/day, using two Otter Nets (22m foot rope). The fishing gear is believed to be non-selective and has an efficiency of between 21-31% (Lasta and Iribarne, 1997). Towing speed averages 4.6 knots, and time of tows ranges from 12-17 min. Using these values, the fleet sweeps an area of about 7 km^2 per day. The ground and bed surface area of 37.000 and 13.000 km^2 respectively.

3. The certification/assessment process

Dates of the Surveillance Visit:
Tuesday 28 September to Thursday 7, 2010. Mar del Plata (see Appendix I).

Members of the Surveillance team:

1) Dr. E.M. Morsan
2) Dr. P.J. Barón
3) Tec. M. Gavensky (OIA Assistant)

Assessment Process
This report represents the fourth annual surveillance, after OIA had notified the client Glaciar Pesquera S.A. where and when the Annual Surveillance Visit would take place. All Stakeholders who had expressed interest and contributed to the Full Assessment, First, Second and Third Audits were directly contacted by e-mail and/or by telephone. As well the intention to conduct the Annual Surveillance Audit and the programme was posted on the MSC and OIA websites. A list of Stakeholders directly contacted is appended (Appendix II). Stakeholder opinion, including managers, scientists, industry and environmental NGO's was sought on the performance of the fishery in relation to any of the relevant conditions of the certification or other issues following the MSC's Principles and Criteria for Sustainable Fishing.

One of the Assessment Team members chosen was involved in the Full Assessment process and in all previous Surveillances. The Assessment Team specifically concentrated on review of:

1) Potential or actual changes in management systems.
2) Changes or additions/deletions to regulations.
3) Changes in scientific personnel, management and industry in order to evaluate impact on the management of the fishery.
4) Changes in the scientific base of information, including stock assessment.

No significant issues which could affect the sustainability and conduct of the fishery that require further investigation were identified, so procedures to embody such events were not required in the Assessment process.

The Assessment Team audited compliance with, and progress and performance against certification conditions; documenting progress with justification for its judgment, following TAB Directive D-013, and MSC Fisheries Certification Methodology.

As all conditions accepted in the Client Action Plan are still in progress no re-scoring of all relevant performance indicators and scoring guideposts relating to the Conditions set in the Final Full Assessment Report was required.

The inspection by the Assessment Team (See Appendix I) involved:

- **Glaciar Pesquera S.A.**, CPN Eduardo Gonzalez Lemmi, President of Glaciar Pesquera S.A. and Dany Jabbour, Argentine Scallop Operations Manager of Clearwater Seafoods Limited Partnership fleet.
- **INIDEP** (National Institute of Fisheries Research and Development) Otto Wöhler, National Director for Fisheries Research and Acting Director of INIDEP; Mario Lasta, Patagonian Scallop Research Group and his team; Claudia Bremec, CONICET-INIDEP, Benthic organism research; Susana Herrera; Angel Marecos; Matías Schwartz; Ronaldo Díaz; María Inés Trucco and Gabriel Blanco, On board Observer Programme Chief.
- The **Universidad Nacional de Mar del Plata** scientists involved in research on Patagonian Scallop lead by Oscar Iribarne, including Marcelo Kittlein, simulation modeling scientist.
- **Fundación Vida Silvestre Argentina**, Guillermo Cañete, Director of the Marine Programme of the organization.
- **Prefectura Naval Argentina,** Ayudante Mayor Julio Alberto Bibbo and Cabo Primero Eduardo Barrios

The methodologies used have been previously outlined in the Assessment Process.

General context
This report is the Fourth Surveillance Audit of the Patagonian Scallop Fishery in Argentina.

Scope and history of assessment
The Assessment followed the MSC Certification Methodology (FCM) for Surveillance Report, version 6 and the TAB Directive, D-013.

The Fishery was certified as an MSC Sustainable Fishery in November 2006 and this Surveillance Audit is the fourth conducted on it.

Stakeholder consultation

Glaciar Pesquera SA

Date: September 29th, 2010
Place: Glaciar Pesquera SA Office – Mar del Plata
Participants:

- Eduardo Gonzalez Lemmi – Gaciar Pesquera SA President
- Danny Jabbour – Scallop Operations - Mannager Clearwater Seafoods Limited Partnership
- Enrique Morsan – Surveillance Team Member
- Pedro Barón – Surveillance Team Member
- Marcelo Gavensky – OIA Administrative Assistant

Synthesis of main issues covered in the interview:

- During the period 2009-2010 the CFP (Federal Fisheries Council of Argentina) maintained the same criteria for the establishment of TAC as in previous years.
- TAC is defined as 40% of the minimum confidence limit for the stock biomass estimation.
- However, in the period 2009-2010 CFP allowed each of the two companies involved in exploitation to fish 50% of TAC, while in previous years only 39% of TAC was licensed to each company and 22% of TAC remained unfished based on an administrative rather than a scientific criterion.
- Up to 2006 TAC figures reached up to 80 thousand ton by year, and since then and probably in the nearby future these will remain around 50 thousand ton.
- Due to a strong recruitment event detected during the period 2009-2010, northern Patagonian scallop beds 1-2 have been closed to exploitation, in compliance with the mandatory regulation imposing the closure of a bed when more than 50% of its individuals are juveniles.
- Meanwhile, the fishery is still sustained by recruits of the 2001-2002 season
- During the period 2009-2010 union-worker strikes prevented INIDEP to normally conduct surveys on the resource as these were planned.
- To allow the stock evaluations to be conducted in a timely manner, both companies provided their own vessels, one at the time.
- Moreover, since the INIDEP direction recommended that at least 8 fishery researchers/technicians should participate in the evaluations of the scallop bed biomass, vessels have been provided by the companies for this exclusive purpose, not as in the past when embarking less numerous survey teams allowed more crew members to embark the vessels and to fish while the survey was being conducted.
- For stock evaluations, during the 2009-2010 stock surveys the historically considered efficiency factor of the fishing gear (bottom trawl) was changed from 35% to 50%; that is, a more conservative factor was considered to estimate bed biomass.
- Public relationships between both companies have been very good during the last period.
- The scallop fishery is the first one to have a follow-up commission working on its performance, composed by members of INIDEP, the Argentinean Fisheries Secretariat and the private companies involved.
- As in previous periods, tow duration ranged from 3 to 25 minutes (10 minutes on the average), allowing 40-50 tows to be conducted by each one vessel side every day (approximately 100 tows per day per vessel).
- Since appointment for dry-dock fishing vessel maintenance has been set in September, only two out of the four fishing vessels allowed to operate in the fishery are operative at this time of the year. This is not casual, but the companies' management decision of lowering the fishing effort during the period of lower meat yields of individuals.
- Individual yields have been high during the 2009-2010 period, with high percentage of high-graded pieces (more than 50% of 60-80 and 80-120 pieces per pound when normal is 30%) being obtained.
- In contrast to the 2006 market-price conditions (6 US$ per kg), prices have been high during the 2009-2010 period, reaching 8-9 US$ per kg.
- While participating in the Brusseles annual fish-product convention, the President of Glaciar Pesquera SA participated in the formation of an Association of Sustainable Fisheries aiming to provide insights on relevant management issues to the MSC to improve certification pitfalls.
- One of the most relevant concerns of Glaciar Pesquera SA authorities is the decrease in the on-board observer (OBO) coverage of the fishery during the period 2009-2010 as compared to previous years.

- Although Glaciar Pesquera SA vessels had a 100% OBO coverage, vessels from the other company involved in the fishery (Wanchese) frequently embarked inspectors instead of observers, resulting in an overall coverage drop during this period.
- Even though, applicable fisheries regulation mandates that either an observer or an inspector must embark during fishing trips, only observers have function of gathering data on the condition of the resource; thus, embarking inspectors results in a loss of relevant data that should be available to monitor the condition of the beds during the course of the fishing season.
- Furthermore, by agreement with the national food safety organism (SENASA), observers, not inspectors, are trained to take and properly handle scallop samples for red-tide toxin analyses.
- Although up to present critical toxin levels have never been detected in the scallop muscles, toxin levels over the threshold established by regulation has been detected in coral (reproductive organs) in occasions, making this practice a highly recommendable one, and one that can only be reliably conducted by observers.
- Taking these considerations into account, Glaciar Pesquera SA would appreciate the 100% OBO coverage to be re-established for the whole fleet in the future.
- Glaciar Pesquera SA has installed a processing plant in Ushuaia to produce special products required by customers from the French scallop market, thus diversifying its activities.

Dr. Mario Lasta & Dr. Oscar Iribarne

Date: September 29th, 2010
Place: Glaciar Pesquera SA Office – Mar del Plata
Participants:

- Mario Lasta – Patagonian scallop research group - INIDEP
- Oscar Iribarne – Patagonian scallop research group - UNMdP
- Enrique Morsan – Surveillance Team Member
- Pedro Barón – Surveillance Team Member
- Marcelo Gavensky – OIA Representative

Synthesis of main issues covered in the interview:

- At present Lic. Silvana Campodonico is the head of the INIDEP's Patagonian scallop research group.
- During the 2009-2010 period management of the Patagonian scallop fishery has proceeded as programmed.
- Evaluation of the fishing gear selectivity leaded to the adjustment of the selectivity factor to 50%.
- A strong juvenile-recruitment peak to beds 1-2 was observed during the period 2009-2010, resulting in a closure of the bed.
- Also, since an on-board inspector embarked in a vessel from Wanchese SA reported the presence of recruits in beds 2-3, CFP temporarily closed these beds.
- Later, beds 2-3 were surveyed, but no presence of recruits was detected; as a result, beds 2-3 were re-opened.
- During the period 2009-2010 the fishery has been sustained by scallops from the strong recruitment of 2001-2002.
- As scallops from this cohort become older, productivity will tend to decrease, and it is expected that allowed catches will be comparatively low during the next two years.

- As high density beds have already been fished, and the bed boundaries have become diffuse, captains have started to request information to researchers on where to find high density spots.
- For research and management purposes, the criterion defining the outer limit of a bed is a scallop density threshold of 1 t/km^2.
- Closed areas for fishing were originally defined as a measure to protect the reproductive potential of the Patagonian scallop beds.
- Since no information is available on the larval swimming behavior, it has not been possible to complete reliable larval drift models by using oceanographic data, as to understand the efficacy of closed areas as sources for the replenishment of the beds.
- However, relevant research advances have been obtained by oceanographers from the National University of Buenos Aires (UBA), Instituto Argentino de Oceanografía (IADO-CONICET) and the Servicio de Hidrografía Naval (SHN), relating to stochastic modeling of particle drift.
- Furthermore, during the 2009-2020 period the connectivity between beds has been explored by comparison of genetic markers between beds by using microsatellite analyses.
- A first step of analysis was to develop microsatellite loci specific for the species, which were published in Molecular Ecology in 2009.
- Then, polymorphisms were analyzed for scallops collected at 16 locations from approximately 36º to 45ºS along the Argentine outer shelf.
- So far, fairly homogeneous genetic structure has been observed between all scallop beds, with only slight differentiation observed for two samples located approximately at 42ºS.
- However, as more samples are included it is expected that this variability will become negligible.
- Gear selectivity is still an issue on which research must be focused.
- Lasta and Iribarne prepared and provided to the Surveillance Team printed copies[1] of three volumes including detailed information on the research conducted during the period 2009-2010 and published results from previous periods:
    - Volume 1
        - Tables and Figures showing historical trends in Patagonian scallop muscle production, annual fishing activity and location of management units (10 Pp).
        - Report on the estimation of Mortality Sources in the southern sector of the fishery (Author: A.C. Milessi, 18Pp)
        - Report on the estimation of Mortality sources (updated) in the southern sector of the fishery (Author: A.C. Milessi, 15Pp)
        - Scientific Paper (Milessi AC, Lasta M., Iribarne O. and M.J Kitlein, 2010. Direct and indirect estimates of natural mortality for the Patagonian scallop Zygochlamys patagonica. J. Shelfish Res., 29:381-386)
        - Progress Report on the estimation of age and growth of the Patagonian scallop in seven beds across their SW Atlantic distribution range (Authors: Lomovasky and Ribeiro, 22Pp)
        - Report on the estimation of the Patagonian scallop fecundity at size (Authors: Campodónico S., E. Christensen, G. Macchi and M. Lasta; 4Pp).
        - Technical report on the estimation of the Patagonian scallop stock status for 2009 and projections of biomass dynamics in scallop beds under different catch intensities (Authors; Kittlein M & ML Lasta, 2010; 16Pp)

[1] The members of the Surveillance Team and OIA do not take responsibility for any mandatory permit required to reproduce documents from official institution or authors of technical reports, scientific manuscripts and papers, thesis, or any other kind of document provided during the interview.

- Technical report on the "Drift of Patagonian scallop larvae on the SW Atlantic Ocean: model studies of the influences of seasonal mean advection and spawning areas" (Author: Franco, BC, 2010; 15Pp).
- Scientific manuscript on the "Changes in benthic trophic web across an oceanographic frontal/non-frontal areas" (Authors: Mauna, C, F Botto, B Franco, M Schwartz, M Acha, M Lasta and O Iribarne; 34Pp)
- Scientific manuscript on the "Variations in biological characteristics of the Patagonian scallop across the Argentine shelf break front" (Authors: Mauna, C, B Lomovasky, BC Franco, JM Schwartz, F Botto, EM Acha, M Lasta and O Iribarne; 29Pp)
- Transference Article "Franco BC, AR Piola, AL Rivas & ED Palma, 2009. La corriente de Malvinas: Ramas y frentes oceánicos en el mar patagónico. Ciencia Hoy, 19(114): 27-31"
- Scientific Paper "Matano RP, ED Palma & AR Piola, 2010. The Influence of the Brazil and Malvinas Currents on the southwestern Atlantic shelf circulation, Ocean Studies Discussions, 7: 837-871"
- Scientific Paper: "Almany et al., 2009. Permanent Genetic Resources added to Molecular Ecology Resources Database 1 May 2009 – 31 July 2009, Molecular Ecology Resources, 9: 1460-1559".
- Progress report on "the population structure of Zygochlamys patagnica up to August 2010" (Author D. Ruzzante, 5Pp)

o Volume 2

- INIDEP's Survey report: "Evaluación de vieira patagonica Zygochlamys patagonica) 2010. Sector Norte (Unidades de Manejo 1.1, 1.2, 2) y Sector Sur (Unidad de Manejo 3)" (Authors: Marecos A., M. Schartz & S. Herrera; 25Pp).
- INIDEP's Survey report: "Evaluación de Biomasa de vieira patagonica Sector Sur: Unidades de Manejo 5, 6 y 7) AS III 1-2010-Marzo 2010" (Authors: Marecos A., S. Campodónico, M. Schartz & S. Herrera; 21Pp).
- INIDEP's Survey report MT 01-2010 "Evaluación de Biomasa de Vieira Patagónica Unidades de Manejo 8, 9 y 10" (Authors: Marecos A. & S. Campodónico, 22Pp).
- INIDEP's Official Technical Report 007-2010 "Vieira Patagónica (*Zygochlamys patagonica*): Estadísticas de la pesquería durante el año 2009" (Authors: Campodónico, S, M. Lasta & S. Herrera, 13Pp).
- INIDEP's Official Technical Report 10-2010 "Vieira Patagónica Sector Sur: Evaluación de biomasa año 2010, Unidades de Manejo 5, 6 y 7" (Authors: Lasta, M, D. Hernández & S. Campodónico; 21Pp).
- INIDEP's Consulting and Transference Report 10-2010 "Actividad de Observadores a bordo en la pesquería de vieira patagónica (*Zygochlamys patagonica*)" (Authors: Campodónico, S., S. Herrera, M. Schwartz, Á. Marecos & M. Lasta; 5Pp)
- INIDEP's Official Technical Report 11-2010 "Vieira Patagónica Sector Sur. Evaluación de biomasa año 2010. Unidades de Manejo 8, 9 y 10" (Authors: Lasta, M, D. Hernández & S. Campodónico; 19Pp).
- INIDEP's Official Technical Report 27-2010 "Vieira Patagónica-Sector Norte y UM 3. Evaluación de biomasa año 2010" (Authors: Lasta, M, D. Hernández, S. Campodónico & C. Mauna; 17Pp).

o Volume 3

- INIDEP's Research Report June 2010 "Fauna Acompañante de la Pesquería de Vieira Patagónica: los Peces" (Authors: Schejter, L., P. Ibáñez, C. Remaggi, M. Schwartz & M. Inés Trucco; 10Pp).
- Research Paper: "Lopez Gappa, J. and N. Landoni, 2009. Space utilization patterns of bryozoans on the Patagonian scallop *Psychrochlamys patagonica,* Scientia Marina 73(1) 161-171".
- Research Paper: "Schejter, L., C. Bremec, D. Waloszek & M. Escolar, 2010. Recently Settled Stages and Larval Developmental Mode of the Bivalves *Zygochlamys patagonica* and *Hiatella meridionalis* in the Argentine Sea. Journal of Shellfish Research, Vol. 29, No. 1, 63–67".
- Doctoral Thesis "Escolar, M. 2010. Variaciones espacio-temporales en la comunidad de invertebrados bentónicos asociada al frente de talud. Equinodermos como caso de estudio. Tesis presentada para optar al título de Doctor de la Universidad de Buenos Aires en el área: Ciencias Biológicas-UBA. Directora: Claudia Bremec, 180Pp."
- Bachelor's (Licenciatura) Thesis: "Souto, V. 2010. Estructura y producción de la comunidad de la vieira Estructura y producción de la comunidad de la vieira *Zygochlamys patagonica* en el banco "Reclutas" (39º S) entre los años 1995 y 2006. Tesis para optar por el grado de Licenciatura, UNMdP. Facultad de Ciencias Exactas y Naturales, Universidad Nacional del Mar Del Plata, Directora: Dra. Claudia S. Bremec, Codirector: Dr. Diego Gilberto; 46Pp".

INIDEP's Patagonian Scallop Research Group
INIDEP/CONICET's Argentinean Sea Bottom Community Research Group

Date: September 30th, 2010
Place: INIDEP building
Participants:

- Mario Lasta – Scallop research group - INIDEP
- Claudia Bremec – Bottom community research group – CONICET/INIDEP
- Susana Herrera – On Board Observer Trainer – INIDEP's Patagonian scallop research group.
- Ronaldo Díaz - INIDEP's Patagonian scallop research group.
- Matías Schwartz – INIDEP's Patagonian scallop research group (student)
- Angel Marecos – INIDEP's Patagonian scallop research group
- Enrique Morsan – Surveillance Team Member
- Pedro Barón – Surveillance Team Member
- Marcelo Gavensky – OIA Representative

Synthesis of main issues covered in the interview:

- At present Lic. Silvana Campodonico is the head of the INIDEP's Patagonian scallop project (not present in the interview).
- On the average, fishing vessels perform 50-60 tows every day (for double beam trawlers this figure should be doubled), during fishing trips with 25 days of fishing operations.
- Every 5 tows observers take samples and record data including:
    - Bridge data (e.g., fishing effort, position, climate data, etc.)
    - Capture data
    - Size structure (half set)
    - Steam-cooking meat yields

  - Associated fauna
  - Valve injuries (only 3 days every fishing trip during the last 2 years)
- Up to 2005 approximately half of the OBO's folders were discarded due to lack of confidence on the data accuracy.
- Efficiency in the classification of associated fauna was low; therefore, data collection protocols were modified during the period 2009-2010 as to simplify spreadsheets by grouping similar functional taxa.
- However, important steps to understand the community structure of benthic invertebrates associated to the slope frontal zone were taken during the period 2009-2010, including:
  - The publication of a Doctoral Thesis covering the space-time variation of the benthic community structure using Equinoderms (mainly ophiurans and also some seastars) as study case (Escolar, 2010), covering both latitudinal and bathymetric variability.
  - The publication of a Bachelor's (Licenciatura) Thesis focused on the structure and production of the Patagonian scallop community in one of the beds through a 10-year period (Souto, 2010).
  - From the beginning of 2010 up to present the volume of fishes as by-catch from the Patagonian scallop fishery is being quantified.
- Also, there are on-going research efforts being conducted to understand the role of poripherans as relevant species in the bottom community associated to the Patagonian scallop fishery acting as a living substrate for scallop postlarval recruitment (Dr. Laura Schejter project)
- The INIDEP's Patagonian scallop research group members were concerned about the decreasing trend of the percentage coverage of on board observers during the last period, and claimed that it is very relevant to count with data from the whole fleet (not only from the vessels of one company).
- Also, on-board observer participation is very important to estimate the performance of on-board scallop processing. Regular sampling of post-cooked scallop meat yield has reached coverage of up to 50% of the production in a single fishing trip, but it is normally 3%. However, it is relevant to monitor all processing plants (different vessels) in different seasons and on different beds.
- Asked about the study of benthic substrata condition on the bottoms, Dr. Claudia Bremec indicated that sediment samples have never been taken, neither in the area where trawlers operate nor in the nearby areas out of the beds.
- According to the researchers, the lack of information on this aspect is not a minor issue. This could be solved by simply using a dredge to sample frequently fish bottoms and those that remain unfished.

Lic. Gabriel Blanco - INIDEP's On-board Observers Program

Date: September 30th, 2010
Place: INIDEP building
Participants:

- Gabriel Blanco – Chief of the INIDEP's On-board Observers Program
- Enrique Morsan – Surveillance Team Member
- Pedro Barón – Surveillance Team Member
- Marcelo Gavensky – OIA Representative

Synthesis of main issues covered in the interview:

- The decreasing trend in the Patagonian scallop percent coverage of OBO's during the period 2009-2010 is due to an uneven distribution of observers and inspectors in fishing vessels

from the two companies involved in fishing operations (Wanchese SA vessels most frequently embark Inspectors, while Glaciar Pesquera SA vessels embark OBO's).
- As fishing legal normative stipulates that either an Inspector or an OBO must embark in a fishing vessel during each fishing trip, the Fisheries Direction (Dirección de Pesca) dependent on the Subsecretariat of Fisheries (Subsecretaría de Pesca) of Argentina is the organism responsible to determine which one embark on each vessel's fishing trip.
- Although, on-board inspectors have never penalized any of the vessels operating on the Patagonian scallop, the worker union defending inspectors and some few OBO's makes negotiations so as both inspectors and OBO's embark.
- There is an on-going project in development aiming to professionalize both OBO's and On-board inspectors involving INIDEP and the Universidad Nacional de Mar del Plata.
- During the 2009-2010 period, a protocol to sample hydrozooans was incorporated to the tasks of OBO's.
- Also, a sampling protocol for Elasmobranches was conducted on board of the fishing vessels; however sampling is "only qualitative not quantitative".
- OBO's of the Patagonian scallop fishery take and label samples of muscle and viscera for bio-toxin analysis (position of the tow from which scallops were obtained is recorded in the labels).
- Asked about the requisites of Waters Classification imposed by the European Community for imports of bivalves fished on the shelf, Blanco indicated that to his knowledge no regular water sampling is conducted (only scallop samples are analyzed for toxin content by SENASA).
- As in previous years, initial and final position of the tows is recorded as part of the "bridge data"
- 1/8 of the net contents is sampled.
- Size structure of scallop samples is obtained by registering valve height with calipers.
- Associated fauna (both commercial and non commercial) is sampled with the new protocol: Presence/absence by group (by species if possible) / sampling of rare specimens for later classification by specialists.
- Yield losses due to the processing in valve peelers and during cooking are estimated.

Dr. Marcelo Kittlein – Universidad Nacional de Mar del Plata

Date: September 30th 2010
Place: Astor Hotel Lobby
Participants:
- Dr. Marcelo Kittlein – Universidad Nacional de Mar del Plata (UNMdP)
- Enrique Morsan – Surveillance Team Member
- Pedro Barón – Surveillance Team Member
- Marcelo Gavensky – OIA Representative

Synthesis of main issues covered in the interview:
- Dr. Marcelo Kittlein presented the model developed to obtain 10-year projections of the Patagonian scallop biomass dynamics under alternative scenarios of fishing effort.
- The model was develop based on spatially explicit catch data obtained from individual tows made by the Patagonian scallop fleet through a 15-year period on three beds providing 85% of catch biomass, with boundaries previously defined by Bogazzi (2008) based on the fleet activity.

- Both data from INIDEP survey trips and from the commercial fleet were used to obtain abundance indexes and size-frequency distribution of scallops in each bed, and these were used to estimate the parameters of a Deriso's model.
- The model uses a Bayesian method for parameter estimation of the delay-based Deriso's model.
- Trajectories of biomass probability of the three most important beds under different TAC scenarios are projected up to 2018 using the model.
- The model predicts that maintaining historical fishing efforts applied to each of the Patagonian scallop beds would result in only an approximately 15% decrease of total biomass by 2018 under historical average recruitment and individual growth conditions.

Lic. Guillermo Cañete – Marine Program Fundación Vida Silvestre Argentina (FVSA)

Date: September 31st 2010
Place: Astor Hotel Lobby
Participants:

- Guillermo Cañete - Marine Program Fundación Vida Silvestre Argentina (FVSA)
- Enrique Morsan – Surveillance Team Member
- Pedro Barón – Surveillance Team Member
- Marcelo Gavensky – OIA Representative

Synthesis of main issues covered in the interview:

- As a result of the imposition of new legal rules to the fisheries sector by the Argentine Fisheries Authorities in response to the requirements established by the European Economic Community on reduction of illegal captures, there is a general perception that controls on the fisheries sector have attained a level of reliability; however, this is not the case for many other reasons.
- Particularly for the scallop fishery it was observed that the OBO coverage decreased during the last period, and that OBO coverage was unevenly distributed between fishing vessels and companies involved.
- Repeated years of null recruitment to the fishery may threat its long-term sustainability.
- Recent recruitment to the northern beds should be taken as an opportunity to take advantage from.
- INIDEP has many operational problems due to the lack of an effective strategy to negotiate with the workers unions (e.g. SIMAPE) of personnel involved in fisheries research (crew, inspector, some OBO).
- From 2009 up to present either one inspector or one OBO must embark during scallop fishing trips; the official decision comes from the Direction of Fisheries.
- FVSA considers that periodic workshops for the revision of the fisheries performance, with participation of specialists, could be a good management measure.

Prefectura Naval Argentina (PNA) representatives

Date: October 4th 2010
Place: Astor Hotel Lobby
Participants:

- Ayudante Mayor Julio Bibbó – Auxiliary Fishing Police Section – PNA
- Cabo Eduardo Barrios - – Auxiliary Fishing Police Section – PNA
- Enrique Morsan – Surveillance Team Member

- Pedro Barón – Surveillance Team Member
- Marcelo Gavensky – OIA Representative

Synthesis of main issues covered in the interview:

- In other surveillances conducted in the past the PNA commission participating in the interview included personnel with more experience in the scallop fishery and a permanent position in the coastguard vessel (Gonzalez).
- The Auxiliary Fisheries Police Section in PNA Mar del Plata depends on the Operations Direction, with headquarters located in Buenos Aires.
- All of the coastal PNA dependencies have an office from the Auxiliary Fisheries Police.
- PNA has three Radio-communication Jurisdictions, one covering the marine coast and shelf from Buenos Aires to Bahía Blanca, other operating from Comodoro Rivadavia and another one located in Ushuaia.
- About 400 fishing vessels, including 70 artisanal ones up to 17,5-m long, operate from the port of Mar del Plata.
- There is almost no control on semi-rigid fishing embarkations that are not even included in the "artisanal fishing" category, due to the many landing points used by this fleet along the marine coastline.
- To control vessels activity, PNA counts with the Thompson Coast Guard Vessel that navigates the 200-mile national jurisdiction border, two Germany-built Coast Guard vessels operating inside the 12-mile jurisdictional limit , and other two vessels surveying the coastal fishing vessels.
- The only interaction of PNA with vessels from the Patagonian scallop fishery was a control conducted by PNA in an occasion in which a management unit had to be closed and the displacement of the fleet to other bed had to be corroborated.
- The navigational safety of the vessels involved in the Patagonian scallop fishery has been always in rule; also, hygiene conditions on board are very good as compared to other fishing fleets, and managers from the fishing companies frequently embark to control operations.
- The Patagonian scallop fishing fleet has a good response to adapt to changes in regulations; the only conflicts that eventually occur relate to the claims from the fisherman worker unions (SOMU, SIMAPE), as is common in any of the other fleets.
- One of the fishing vessels, "Mr. Big" from Glaciar Pesquera S.A. was discontinued from scallop fishing operations and transfered to other fishing fleet.
- Control services of PNA are organized based on warnings from the Satellite Positioning System reports in occasion of presumed infractions; however these are very infrequent.
- Administrative interaction of PNA with the Patagonian scallop fishery is unfrequent; only when fishing vessels reach the limit allowed catches, the Subsecretaría de Pesca (Fisheries Sub-secretary) informs PNA and PNA transmit the instruction to the vessels to detain their fishing operations.
- The Satellite Control System is operating normally; mandatory implementation in the close-coastal fishing vessels was supposed to take place in August, but an extension to the end of the year has been requested to fisheries authorities.
- Regarding controls, the Patagonian scallop fishing vessels embark an inspector or an OBO in every fishing trip; also landing inspections are conducted.
- Administrative requisites for embarkation of inspectors (presentation of a regular ID) are less strict than those for OBO's (embark document required).
- PNA is not informed in advanced about who (Inspector / OBO) will embark in a given fishing vessel.
- Up to present, the fisheries administration has used funds from PNUD to pay salaries to On-board .inspector; CFP regulates the daily salaries.

Otto Wholer - INIDEP Director

Date: October 5th 2010
Place: INIDEP Building
Participants:

- Otto Wholer – INIDEP's Scientific Director
- Daniel Bertuche – INIDEP's Benthic Fisheries Program
- Enrique Morsan – Surveillance Team Member
- Pedro Barón – Surveillance Team Member
- Marcelo Gavensky – OIA Representative

Synthesis of main issues covered in the interview:

- Due to the irregular pattern of recruitment to the Patagonian scallop fishery, modeling the biomass production under different scenarios of exploitation is an important step towards understanding the fisheries behavior.
- Dr. Mario Lasta (INIDEP) associated to Dr. Kittlein (UNMdP) to produce this model; however, it still is not used as a management tool (only the Patagonian scallop commission discussed its general aspects).
- For the traditional management of the Patagonian scallop beds a conservative reference point, the lower confidence limit of the 40% biomass estimation, has been adopted (originally it was the mean of the 40% biomass estimation), and only 88% of this value was actually fished by fishing companies in the past (the other 22% was kept as an administrative reserve.
- Although a strong recruitment has been detected this year, this is restricted to only one management unit (the northernmost one).
- In response to the evolution of the "Z index", Management Unit 1 was closed by the CFP earlier this year.
- If recruitment is not successful in the following years, biomass may fall to levels that could not sustain the fishing activity.
- While there are no recruits incorporating to the beds, individual growth of Patagonian scallops is sustaining the fishery, at least until the individuals from the cohorts of 2000-2001 die of senescence or most of them are fished.
- Longevity estimates have changed from the beginning of exploitation from about 10 years to 14 years in the northern management units and 20 years in the southern ones.
- There is no trigger clause in the fisheries regulation to stop exploitation if density becomes too low; instead, it is simply assumed that companies will stop fishing operations once a low density threshold is overpassed.
- Exclusion areas established for the fishery are very small to act as reproductive reserves; instead these are useful to contrast fished / unfished scenarios in experimental studies.
- Although abundant information has been collected on the associated fauna of the Patagonian scallop, at present management decisions do not involve its consideration.
- During 2009 there were administrative problems with the transference of funds for the OBO's program, limiting the number of embarks.
- Since also the number of OBO's available was insufficient to cover the demands from all fleets, this year a new cohort of OBO's (25-30 candidates) was trained, and thus it is expected that this problem will be overcome.
- Estimation of exploited biomass is indirect, and based on a conversion factor varying between beds, seasons and vessels (i.e., volume of exploited scallops is calculated as the volume of muscle pieces multiplied by the conversion factor).

- Since determination of the conversion factor affects the catches allowed for a given vessel, information should not be taken by OBO's but by inspectors, as to avoid loss of data reliability.

Abstract of CEDEPESCA's Comments on the Fourth Annual Surveillance of the Patagonian scallop fishery MSC Certification

- After the previous surveillance, at the beginning of 2010 the FV Erin Bruce reported the presence of Patagonian scallop recruits in Management Units 2 and 3.
- Taking this report into consideration, CFP temporarily closed UM's 2 and 3.
- Since no OBO was embarked at the time of this observation, a vessel with OBO was sent to prospect these UM's.
- Based on the information obtained, INIDEP released Technical Report Nº 27 /2010, pointing out that recruits were actually present in MU 1.2 not in UM's 2 and 3.
- As a result, UM's 2 and 3 were re-opened, TAC for MU 1.1 were set and 7700 t and MU 1.2 was closed.
- INIDEP recommends maintaining the control of spatial distribution of catch effort by satellite monitoring to preserve the density of reproductively mature scallops from the Reproductive Reserves.
- OBO's coverage on the Patagonian scallop fishery has dropped to 64% during the last annual period. OBO's presence in all fishing trips is considered recommendable by INIDEP due to the need for information on catch composition from each vessel of the fleet.
- INIDEP reports that a decrease in catch biomass is expected for the following fishing seasons due to the lack of massive recruitment since 2001.
- Meetings of the Follow-up Patagonian scallop Commission have not been as regular as demanded by certain events occurring during this period.

Each of these has been considered by the Surveillance Team in the Fourth Annual Audit.

Methodologies

The Assessment followed the MSC Certification Methodology (FCM), version 6 and the TAB Directive, D-013.

4. Results, conclusions and recommendations

General discussion of findings and statement confirming the status of the Certification

Historical fishery data is presented in the following table. The information has been sourced from INIDEP Technical Report N°8 (14pp) (Campodonico *et al.*, 2009). Four vessels; Miss Tide, Erin Bruce (Wanchese S.A.) 2009, Atlantic Surf I and Atlantic Surf III (Glaciar Pesquera S.A.) fished throughout that year.

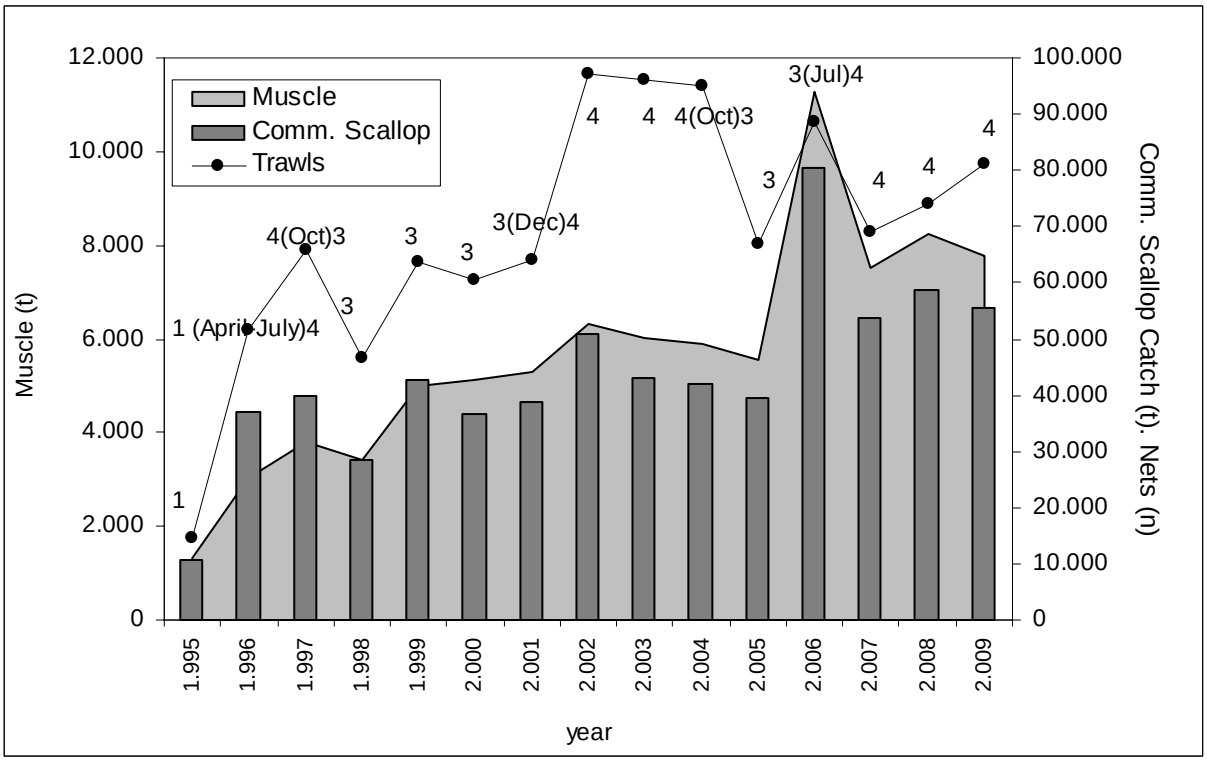

Figure 1. Evolution of muscle production (t), commercial scallop catch (t) and fishing effort (nets). Numbers: vessels in activity

Table 1: Statistics of fishing effort and catches

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total biomass estimates	287.345	-	474839	-	314830	386487	304993	275646	374369	441325	899962	505147
Commercial scallop biomass estimates	148.208	-	277444	-	157708	124058	97584	145777	210300	309086	646345	404441
TACs	-	34000	51200	32521	34234	16045	34357	43218	49124	54910	41398	53850
Vessels(n)	3	3	3	3	4	4	4	3	4	4	4	4
Trips(n)	31	36	33	33	38	37	34	28	54	37	34	37
On Board Observers(%)	22	16.7	36.6	42.2	63.1	59.9	67.8	100	100	100	100	45.9
Muscle landings(t)	3.417	5012	5112	5546	6325	6018	5890	5535	11256	7522	8242	7775
Whole scallop catches(t)	28.441	42700	36513	38961	50967	42969	40065	39522	80400	53726	58867	55538
Days on trip (n% annual)	794(72)	938 (85)	891 (81)	850 (73)	1279 (87)	1198 (83)	1138 (78)	835 (76)	1157 (79)	852 (69)	879 (61)	1214 (83)
Days fishing (n% annual)	652(59)	783 (71)	775 (71)	724 (62)	1075 (73)	968 (66)	901 (62)	652 (59)	912 (62)	660 (53)	723 (41)	991 (67)
Nets(n)	46.704	63787	64392	64056	97292	96256	95049	66873	85591	68407	74025	81090
Muscle yield(%)	12,72	11.74	17.79	14.05	11.49	11.49	12.24	12.66	14.37	14.5	15.33	11.36
Average trawling time(min)	16,36	17.34	15.37	16.69	13.89	13.89	12.61	12.57	11.46	11.6	12.14	12.68

Table 2. Annual fishing activity (fishing days in days, NOT time at sea) for fleet and vessel.

Year	Fleet	Erin Bruce	Miss Tide	Mr. Big	Atlantic Surf I	Atlantic Surf II	Atlantic Surf 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 3. Annual muscle production (kg) for fleet and vessel.

Año	Fleet	Erin Bruce	Miss Tide	Mr. Big	Atlantic Surf I	Atlantic Surf II	Atlantic Surf III
1995	1313.0	1313.0					
1996	2992.9	1147.3		539.8	630.0	675.8	
1997	3760.8	965.3		1267.8	1028.7	499.0	
1998	3413.8	958.2		1395.3	1060.3		
1999	5024.5	1740.2		1606.6	1677.7		
2000	5111.9	2020.8		1372.8	1718.3		
2001	5454.5	2097.5		1173.4	2029.8		153.8
2002	6325.2	1668.4		1617.4	1575.6		1463.8
2003	6027.1	1445.4		1378.3	1733.3		1470.2
2004	5890.4	962.3		1345.8	1750.2		1832.2
2005	5535.2			1986.1	1853.2		1695.9
2006	11256.2		2453.0	2650.0	3128.7		3024.5
2007	7424.9	664.6	1804.1	356.6	2422.2		2177.4
2008	8241.1	1837.1	1774.4		1732.5		2897.1
2009	7771.4	1774.8	1783.1		1910.4		2303.2

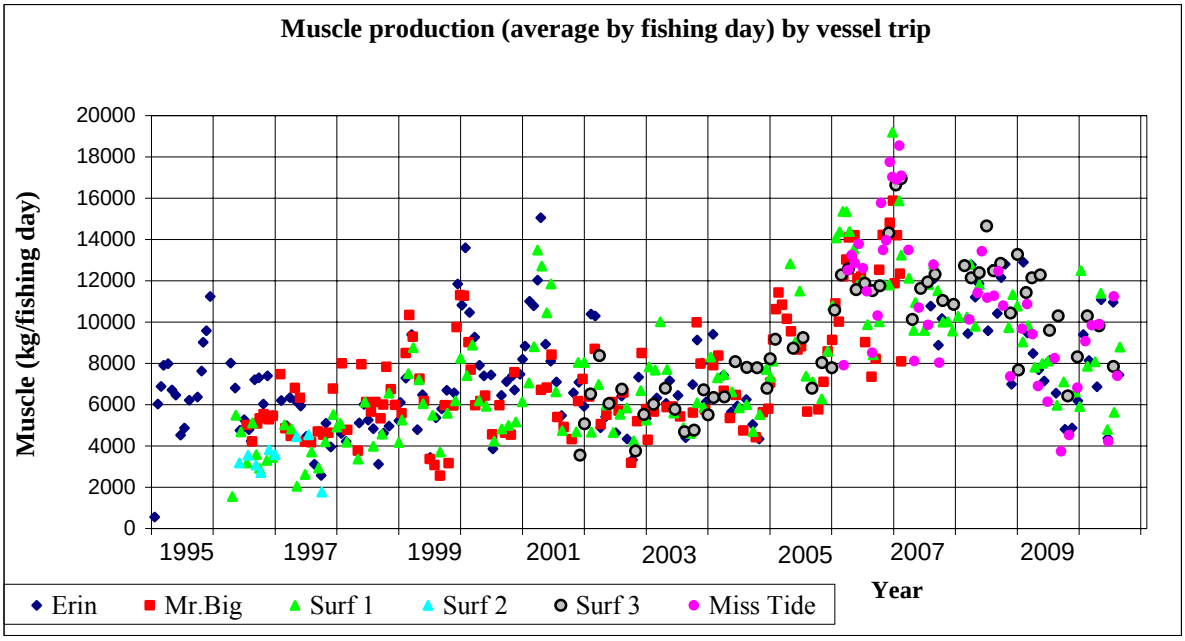

Figure 2. Muscle production by fishing day for vessel trip.

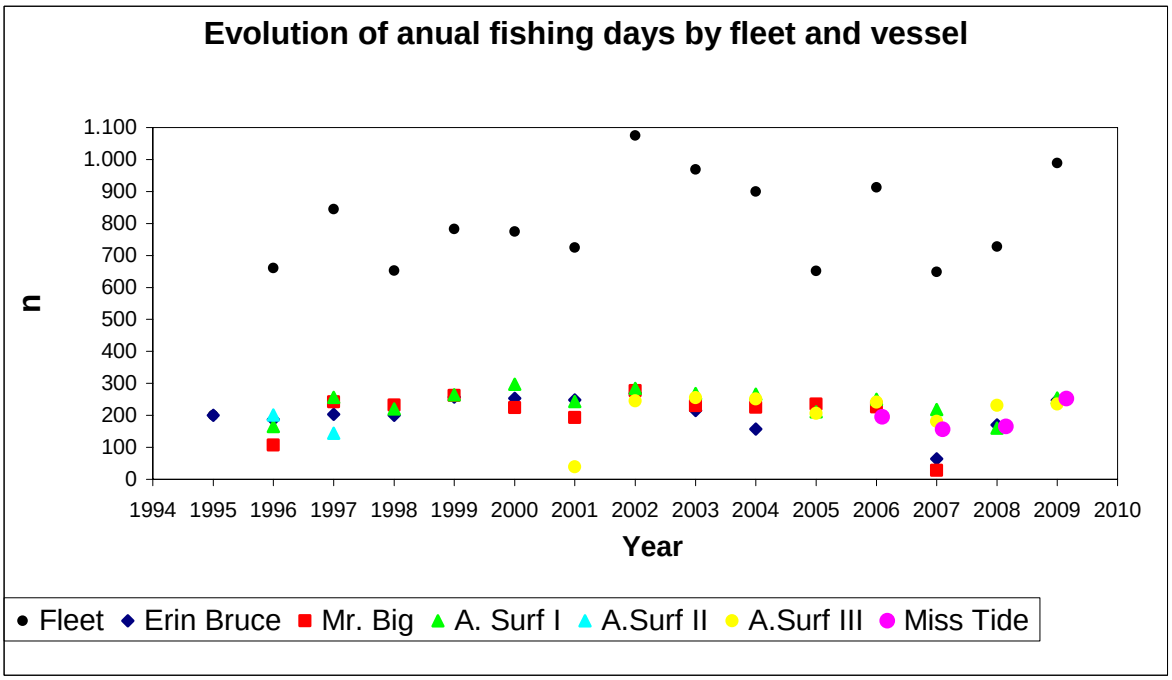

Figure 3. Annual fishing activity (fishing days in days, NOT time at sea) for fleet and vessel

The main features of Patagonian scallop fishery during 2009 were:

- All four vessels fished throughout the year, and on average fished for 247.7 days each (67%), which is an increment related to the previous year (150 days – 41%)
- Commercial biomass estimates for 2009 (404441 t) decreased in relation to 2008 (646845 t), however the number of nets deployed increased from 74025 in 2008 to 81090 in 2009. Other

indicators of fishing effort (days at sea, days fished, average time of each tow) showed the same trend. This is consequence of the main beds remain mostly composed by old year classes which are reducing their abundance. Individual yields have been high during the 2009-2010 period, with high percentage of high-graded pieces (more than 50% of 60-80 and 80-120 pieces per pound when normal is 30%) being obtained.

- Muscle production in 2009 decreased compared to 2008.
- The On Board Observer Program covered 45.9 % of the trips (36), accordingly with the next table:

Table 4: Details of OBO coverage by vessels

Fishing Vessel	Trips 2009		Trips with OBOs	Coverage by FV (%)
	Complete	Partial		
Miss Tide	9	0	3	33.3
Erin Bruce	10	0	2	20
Atlantic Surf I	8	1	6	66.7
Atlantic Surf II	7	2	6	66.7
Total	34	3	17	

- A strong recruitment event was detected during the period 2009-2010, northern Patagonian scallop beds 1-2 have which have been closed to exploitation.

- In 2009 the number of fishing dates increased in comparison to 2008. All four vessels involved in the fishery were able to fish throughout the year.

Conditions and Recommendations

All the conditions apply to Principle 1 and recommendations apply to all three Principles.

Principle 1. The resource.

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.

Comment on Certification
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 fishery and its management.

Statement of progress

The first estimation of natural mortality was obtained using a size-converted catch curve that resulted in an estimate 1.039 y-1 (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 ojive 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 that 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 above-mentioned 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 less than M (Fig 1).

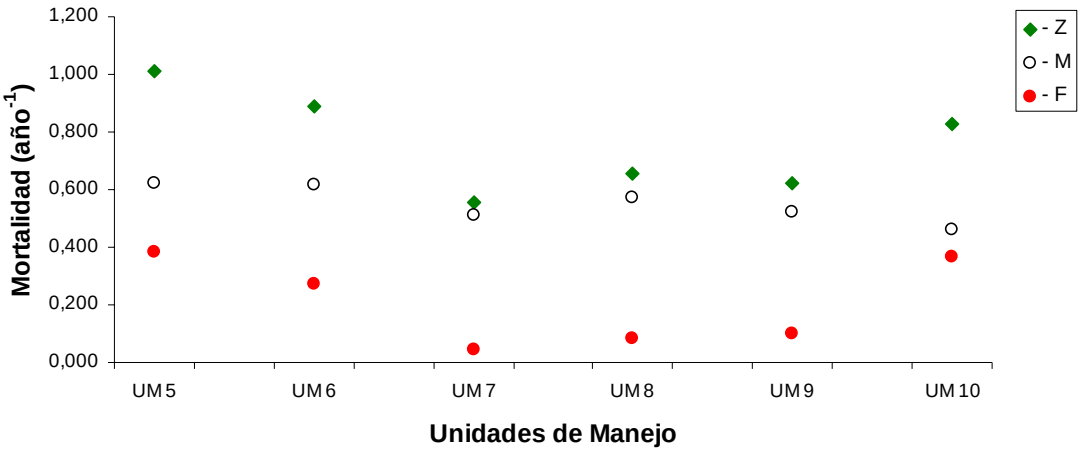

Fig 4: Total (Z) natural (M) and fishing (F) mortality values estimated to management units 5 to 10.

Age and growth were previously studied analyzing external growth rings (Waloszek and Waloszek, 1986, Lasta et al, 2001), but ring overlapping in older individuals promoted the use of internal growth bands. Lomovasky et al. (2007, 2008) used this technique 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. Also, this study 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.

Comment on Surveillance Visit
The population dynamics of the species (including age at maturity, natural mortality, growth, and fecundity) **are well documented**.

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.

Comment on Certification: 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).

Statement of progress

Bogazzi (2008) studied the fishing process and its impact on stocks of the Patagonian scallop (*Zygochlamys 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 whole 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 in the form of time series that were modelled using the Deriso´s Model 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. From this study, the authors suggest that no serious reduction in biomass values are expected if fishing intensities remain constant at their historical average value.

Kittlein (2008), Milessi (2010) and Milessi *et al.* (2010) modelled fishing mortality rate for sectors and management units.

Comment on Surveillance Visit
The target for this condition is to establish reference points for every management unit and manage the fishery so each population is at an appropriate level.

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.

Comment on Certification: 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.

Statement of progress and Comment of the Surveillance Visit

***Stock assessment*.** The Patagonian scallop fishery is strongly dependent on recruitment. Each bed is yearly monitored in order to estimate biomass of commercial scallops, size structure and density spatial pattern. Any year, the TAC is established as 40% of lowest confidence interval of the estimated commercial biomass in each bed under a survey-based scheme, and beds are open to fishing accordingly. Fishery operations are recorded since the beginning of the fishery (1996) and a large database containing historical development of the fishery (fishing effort, size structure, CPUE, density) is available to elaborate a rotational fishing strategy. Kittlein (2009) applied the database to small (5 x 5 nautical miles) statistical boxes. An estimation of biomass density and commercial scallop catches was assembled for each statistical box. The spatially explicit time-series was explored using a surplus production (Scheaffer´s model) to estimate population parameters using Bayesian statistics. During the last year, the analysis was improved integrating all of the information available for three beds that concentrated more than 85% of all fishing tows, and applying a surplus model with delay (Deriso´s model). The main outcome of this work is the biomass level forecast for the next 10 years under different scenarios of fishing intensity (see Condition 1).

***Estimating the total catch*.** Estimation of catch biomass based on a muscle landing biomass conversion coefficient (CC) is a rather inaccurate measure. The muscle yield varies annually, seasonally, by area, by scallop size, and even by processing plant. A linear model fitted the relation between muscle weight and covariates (year, semester, scallop bed, scallop size, and two interaction terms) and explained 42% of the variability (Bogazzi, 2009). Their results showed that the visual estimation of catch may over-estimate or sub-estimate the actual catch depending on the weight of the catch and the treatment applied to the samples, which are taken to know the proportion of commercial scallop in the catch.
However, the presence of On Board Observer could be efficient to estimate the CC and its variation. In 2008, the Sub Secretariat of Fisheries has reduced the On Board Observer coverage of the scallop fishery by about 45.9 %. Observers were replaced by inspectors that do not collect biological information.

The Assessment that the fishery is at appropriate reference levels, that it evaluates the consequences of harvest strategies and evaluates the status of the fishery relevant to reference levels, including assumptions, has been appropriately tested by simulation methods (Kittlein 2008, 2009) and considers uncertainties which are reflected in management advice.

Scallop density on the ground is reduced because the scallops have dispersed over a wider area. Much of the biomass is made up of 9 years-old classes (life expectancy of scallops is 14-20 years), so fishing in the near future will be unsustainable with only average recruitment. The expectation for the next years is a reduction of TAC in the main scallop beds. There is a high risk that increased fishing pressure will spread more widely and reduce settlement habitat in this sector.

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.
Comment of Certification: 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.

Statement of progress

Larval movement.
During the past years, the relevance of high chlorophyll a concentrations in frontal zones as determinant factor influencing 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 maintain 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 3rd 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 no-frontal areas. The results of this study suggest that the Shelf Break Front promotes enriched phytoplankton sedimentation to the seabed, together 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 dynamical processes controlling the interaction between the shelf and the deep-ocean derived of the influence of Brazil and Malvinas current 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.

Sex ratio. Campodonico *et al.* (2009) presented an analysis of sex ratios in relation to the intensity of fishing activity for each MU. Sex was identified by macroscopic or microscopic observation. Sex ratio is slightly skewed towards males. The female index was 45.83 (0.9 females: 1 male). The female index has no relationship with latitude and fishing effort.

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 if a molecular marker could produce good results in assessing genetic variability. Such study showed three main barriers to genetic flow (Trucco & Lasta, 2009). Armany et al (2009) developed a suite of 14 microsatellte loci specific for *Z. patagonica* to be used in a subsequent study 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.

Comment of the Surveillance Visit

The age structure of the population, inferred from size distribution is understood. Studies on the fecundity of scallops in each MU along the Shelf Break have yet to be completed. The gametogenic cycle has been studied.

B. Principle 2. The environment

See **Recommendations**. These are presented here as most of the recommendations made in the Certification Report, belong to this principle.

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.

Recommendation 1
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 modeling of the fishery and its management.

Statement of progress
Some aspects about settlement was studied in previous years (Bremec et al., 2008). Most spat settle on hydroids (Symplectoscyphus subdichotomus), smaller numbers settle on sponges and polychaete tubes encrusting adult scallops. Analysis of species on which spat could settle, show a cluster of species with variable abundance of hydroids (higher in samples with spat), scallops, and predators. Information collected during annual surveys performed in any bed, showed a successful recruitment in the MU1.2 and MU 2 (partially).
Dates on fecundity was reported by Campodonico et al (2010) applying estereometric method. They modeled the Fecundity-Size relationship and the preliminary estimations of potential fecundity ranged between 5,7 x 105 (37 mm de SH) and 1,6 x 107 (60 mm SH). This estimation could vary between grounds depending the environmental conditions and scallop density.
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.
The Patagonian scallop larval period remain also unkonwn.

Comment of the Surveillance Visit
At present, the absence of successful recruitment is the main concern. The last massive recruitment was in 2001 and 2002. Since then, annual recruitment was low and spatially reduced. However, the policy was strictly applied (survey-based annual TAC per bed, minimum size, non-

take zone) and the biomass of reproductive stock must to be enough to produce the renewal of the population.
The primary settlement of scallop larvae on hydroids (Bremec *et al.* 2008) has a potential to limit recruitment if the abundance of hydroids is being reduced by fishing (See comment Recommendation 6 in Surveillance Report 3).

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

Recommendation 2
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 modeling of the fishery and its management.

Statement of progress
See Surveillance Report N° 2.

The authorities replaced the On Board Observers by Inspectors reinforcing the control on the fleet operations. This measure halved the observer coverage. During 2009 coverage of OBOs was 45.9 % (17 trips from 37 total trips). This is a clear disadvantage because the fleet increased the fishing effort (number of nets 2008: 74025; number of nets 2009: 81090).

Comment of Surveillance visit
Reduction of quality of fishery information (landings, discards) and other biological or ecological information derived from the reduction of OBOs coverage is undesirable. Uncertainty about the removal estimation of each bed could transform unreliable the simulation models commented above.

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.

Recommendation 3
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.

Statement of progress
See Surveillance Report 3.

Comment of Surveillance visit
See Surveillance Report 3.

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.

Recommendation 4
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 modeled (see Breen and Kendrick, 1997; Hart, 2003). Similarly, the use of predictive models for rotational fishing as it was applied to the *P. magellanicus* fishery (See Hart, 2003) should be investigated.

Statement of progress

The large data base of catch and effort from the beginning of the fishery (1996) was explored using a surplus production model (Schaefer's model) to estimate population parameters using Bayesian statistics (Kittlein, 2009). During the present Surveillance, Kittlein and Lasta (2010) performed a new approach applying a surplus model with delay (Deriso´s model). were inferred by. The posterior distriibution of Bayesian procedures was used to predict the biomass trajectories of commercial scallop in three main beds under different fishing intensity.

Comment of Surveillance visit
The study is well advanced. The results and its potential application must to be presented and discussed in the specific technical commission for Patagonian scallop management.

Performance Indicator 1.3.2
The age/sex/genetic structure of the resource is monitored to detect significant impairment of reproductive capacity.

Recommendation 5
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.

Statement of progress
Form the analysis of scallop samples collected in 16 location along the spatial distribution

(including Ushuaia) a mosaic of genetically distinguishable aggregations coud be described. The research is ongoing and the next step in to add the coastal beds. The age structure is being inferred from the size frequency distribution.

Comment of Surveillance visit
See comments in Condition 4.

Performance Indicator 2.1.1.2
The habitat requirements of the target species, in particular the settlement habitat of juveniles, are known.

Recommendation 6
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 by-catch, many of the echinoid groups present in the by-catch feed on bryozoa in other areas hence bryozoa and hydroids may be more important in the benthos than their representation in the by-catch suggests. Fishing is likely to destroy emergent bushy bryozoa or hydroids more rapidly than other benthos (see Collie et al., 1997; 2000). 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.

Statement of progress
Bremec et al. (2008) showed the firsts evidences on settlement susbtrata of this scallop species. They have established that the primary settlement of larvae occurs mainly on hydroids. The major secondary settlement phase by 3-4 mm bivalves occurs on live and dead shell. However, they pointed that in order to have a comprehensive picture it is needed to perform a larger sampling covering larger areas and different substrata.

Comment of Surveillance visit
As primary settlement appears to be on filamentous substrates, fishing gear should 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. Establishment of reserves of sufficient size regularly located over the fishery to protect settlement on hydroids and reduction of fishing pressure over the same areas could be helpful to the primary settlement process.
The seafloor topography is likely to play a key role in the distribution of this species and need to be studied. Sediment studies were not been performed.
The use of the large data-base collected by OBOs from the beginning of the fishery could be useful to analyze the spatial pattern of hydroids, and other filamentous substrates, and relate it with recruitments.
A large sampling covering spread areas to evaluate substrates availability and sediment types is essential to understand the habitat requirement of the scallop but seems to be difficult to perform

under current conditions.

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

Recommendation 7
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 modeled to develop an understanding of how present fishing is likely to indirectly alter benthic energy flow and dynamics and how management can minimize the effects on the food web and productivity.

Statement of progress
The hypothesis that changes in scallop density can influence the composition and structure of the food web continues to be investigated. During the previous years, trophic relationships and their connection with frontal variability were researched by Mauna *et al.* (2008, 2009). They sampled 10 species of macro-invertebrates in two transects normal to the front. They analyzed C^{13}, N^{15} and C/N ratio in two suspension feeders, one deposit feeder, five intermediate predators and one top predator. Initial analysis found changes up the food web as expected, as well as changes in scallop isotopic signature across the front.
During 2009, Mauna et al (2010a) continued analyzing the influences of coupling between the physical environment and primary production, particularly, the dynamics of frontal systems and how these processes could affect the marine benthic communities. In this work they investigate, by mentioned stable isotope analysis, if the benthic trophic web are influenced by the SW Atlantic Shelf Break Front (SBF).

Comment of Surveillance visit
Botto et al. (2006) work on the trophic position of Patagonian scallop within the food web needs to be continued.

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

Recommendation 8
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 (Cranfield *et al.*, 2001). 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 (Cranfield *et al.*, 2004). 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.

Statement of progress

By-catch sampling performed by On Board Observers from commercial trawls and by research group in annual surveys continues to be monitored and analyzed even when the percentage of coverage was reduced to 45 % by the SubSecretaria de Pesca. Since the beginning of the Experimental Fishing until present several scientific documents han been provided addressed to evaluate the impact of the fishery on the seafloor and benthic associations.

Schejter at al (2008) compare the composition, structure and biomass of the species assemblage in the Patagonian scallop management unit "Reclutas" (39°00′–39°30′S and 55°45′–56°05′W), in areas subjected to fishing effort (FG) and in the exclusion area (REX), between 1998 and 2002. Data obtained during 1995 and previous to the beginning of the scallop fishery were considered as baseline condition. No differences in species richness or species composition were detected between areas in the study period. Patagonian scallop biomass was always higher at REX, but by-catch biomass was similar in both areas. The kind of analysis made during this study only allowed to detect differences in the Patagonian scallop biomass between areas during the study period, while by-catch biomass, as a whole, apparently presented no differences between disturbed and undisturbed areas. Multidimensional analysis suggested a differentiation between FG and REX after 1998. Based on analysis of species (dis)similarities this differentiation could be attributed to an increase in predators biomass (Volutidae) and the detritivore ofiuroid Ophiactis asperula, a decrease in the fragile species (Sterechinus agassizii) and the target species of the fishery, Zygochlamys patagonica, and the founding of Chaetopterus variopedatus and Idanthyrsus armatus tubes in the fishing ground.

Bremec *et al.* (2009) analyzed the by-catch of the dredge surveys estimating biomass in 2006 and 2007. 90 epibenthic taxa were identified and numbers compared between years. The authors concluded there had been no loss of species between Management Units over the two years but a decrease in number of taxa per individual sample was apparent in all Management Units.

Sanchez *et al.* (2009) used a Picard dredge to sample benthos at 3 pairs of sites between 39°S and 44°S, 3 heavily fished and 3 relatively unfisahed in 2005 and 2006. They compared their catch with by-catch of commercial trawls at the same sites in the same years. The dredge caught a wider range of species than the trawl, which exclusively caught some of the rare species because of the much greater area it swept. Analysis showed great internal similarity and heterogeneous composition in the no-fishing samples compared to samples from the fished areas. The much wider range of species caught by the dredge suggest dredge investigations could be a very productive method of exploring changes in the benthos caused by fishing.

Escolar (2010) studied spatial and temporal variations, during the period 2002-2005, of the benthic invertebrates assemblage dominated by *Z. patagonica* in shelf-break frontal areas subjected to commercial fishery in its Doctoral Thesis. She found that the phylum Echinodermata was one of the most diverse and dominant as part of the by-catch in the whole study area and period. The distribution, biomass and size structure of several echinoderm species closely related with the Patagonian scallop assemblage were studied. They showed a latitudinal distribution pattern. The sea urchins and ophiuroids also showed a spatial separation according to depth. The *Pseudoechinus magellanicus* and *Opjioplocus vivipara* biomass decreased in the study area during the period 2002-2005. Biomass and abundance of echinoderms are also studied in relation

with areas with and without commercial fishing. Although detritivores and/or omnivores were benefited by an increase in food availability due to fishery discards, the largest species resulted vulnerable to impact. This thesis showed the first populational studies of benthic invertebrates collected as conspicuous components of the by-catch in a trawling fishery, echinoderms in this case, and gives novel information about the ecology of the group in continental shelf areas associated to the shelf-break front.

In its Bachelor Thesis Souto (2010) analyzed changes in the structure and production of benthic community of the Reclutas bed during the 1995 – 2006 period. She estimates the biomass of each species throughout the years. The Bray-Curtis index, univariate (Diversity index) and multivariate methods and was applied to analyze similarity between species and describe the community. Its results are consistent with the observations done by Escolar (2010).

Comment of Surveillance visit

Previous visits recommended the 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 but was focused mora than in echinoderms than in other groups. Some phyla, like hydroids or bryzoans (which use the scallop surface to settlement , Lopez Gappa & Landoni 2009) could complete the picture.

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.

Recommendation 9

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 by-catch of non-target species so benthic habitat is less modified, trophic webs preserved and the productivity of the fishery maintained (see Cranfield *et al.,* 2001). Discarded by-catch 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 by-catch, mechanisms of their capture and their subsequent mortality need to be measured so improvements can be measured in investigations of methods of reducing by-catch and by-catch mortality.

Statement of progress

See Comment of Recommnedation 8.

Comment of Surveillance visit
Survivability of by-catch returned to the sea after sorting might be tested experimentally.

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.

Recommendation 10
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.

Statement of progress
There has been no progress reported in the area to the Surveillance Team.

Comment of Surveillance visit
The reduction to 45 % coverage of all fishing trips with On Board Observers could seriously limit the development of indicators for recruitment through settlement on hydroids and possibly other filamentous substrates.

Performance Indicator 2.1.5.2
The impacts on ecosystem structure and function from removal of target stock(s) are known.

Recommendation 11
Study the consequence of removal of target species on ecosystem structure by modeling the energy flow. This recommendation is linked to recommendation 7.

Statement of progress
See Recommendation 7.

Comment of Surveillance visit
See Recommendation 7.

Performance Indicator 2.1.5.3
The impacts on ecosystem structure and function from removal of non-target stocks are known.

Recommendation 12
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.

Statement of progress
This has been reported in by Schetjer *et al.* (2008). See Recommendation 8.

Comment of Surveillance visit
See Recommendation 8.

Performance Indicator 2.1.5.4
Fishery impacts on habitat structure are known.

Recommendation 13
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.

Comment of Surveillance visit
There has been no progress reported in the area to the Surveillance Team.

Performance Indicator 3.1.7.1
Adequate funding is provided for management.
Performance Indicator 3.1.7.2
Adequate funding is provided for research.

Recommendation 14
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.

Comment of Surveillance visit
See Surveillance Report 2008.

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

Recommendation 15
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.

Statement of progress
Schejter *et al.* (2008) have investigated the usefulness of no-take zones relative to fished areas by analyzing the effect of dredging on density of scallops and benthic organisms.

Comment of Surveillance visit
The non-take zones operate as witness of pre-harvest conditions and can be successfully used to experimental purposes rather than reproductive enhancement. There is a need to further study the effectiveness of these "no-take" zones and their incidence on the reproductive capacity of the population.

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.

Recommendation 16
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.

Statement of progress
See Recommendation 3.

Comment of Surveillance visit
See Recommendation3.

Principle 3. The management

The management system of the Argentine Patagonian Scallop Fishery (Vieira Patagonica, *Zygochlamys patagonica*) is evolving in response to the certification of this Fishery under the MSC Principles and Criteria. These changes have been positive and will improve the management, yield/performance and sustainability of the fishery in the long term.
The Surveillance Team has identified two main areas where changes have occurred since evaluation of the fishery.

1) Changes in the Research System.

Dr. Otto Wöhler continues to be the National Director of Research, and has been appointed as the Acting Director of INIDEP.

The financial support from Glaciar Pesquera S.A. continues formalized with the University of Mar del Plata through an agreement. Funding is directed to the University of Mar del Plata science team. Operational costs of the research are paid by Glaciar Pesquera S.A., including external services like genetic analysis.

INIDEP continues with operational problems related to negotiation with workers union of research vessel crew. Surveys were done with commercial vessels.

The CFP and INIDEP, financed by the Federal Government guarantee the financial support for the stock assessment for all Argentine fishery resources, including the Patagonian scallop fishery. This policy encourages industry to fund research in the Universities and other Institutes. The new management plan established by CFP Resolution N° 04/2008, however requires that every vessel in the Scallop Fishery will be available to undertake up to 20 days of investigation on the resource each year, or pay for the equivalent effort by INIDEP research vessels. The Sub-Secretariat of Fisheries has reduced the % converge of trips by On Board Observers to 45% and substituted Fisheries Inspectors.

2) Changes in the Administrative System.

Implementation of a precautionary management approach has resulted in changes in the Administrative System of the Fishery.

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 Nº 4/2008).

The minimum size limit for capture remains at a 55 mm height. When the size frequency of landings has more than 50% undersized scallops for two consecutive days, the vessel must move to another fishing area (Art. 14 of Resolution CFP Nº 04/2008).

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 1.

The production of muscle and the management unit fished, must be reported daily to the National Direction of Fishing Coordination daily. It is communicated by e-mail. Vessels are also required to

present a detailed capture report after each fishing trip.

The Satellite monitoring system of the fleet allows more accurate enumeration of the weight of scallops landed from each management unit. Catch data are compared with the final trip report of each vessel and electronic track records. When fishing straddles the boundary between two management units, the CFP proportionally allocates catch by analyzing the track of the vessel.

The Dirección Nacional de Coordinación Pesquera (National Direction of Fishing Coordination) monitors fishing activities and capture in each management unit continuously. They advise both INIDEP and fishing vessels when 90% of the CMP has been caught. When the catch exceeds 70%, a precautionary approach is applied to prevent overfishing of the CMP. Catch is tracked electronically with color markers: between 70 and 90% green; from 90 to 99.9% yellow; and more than 100% red. Vessels are ordered to cease fishing before catches reach 100% in any management unit. Special attention is given to monitoring small beds as a daily catch is more likely to surpass the established CMP.

The authority notifies the Coastguard. The Coastguard informs all captains who must then stop fishing that unit. The Coastguard controls the closure and the fishing. The fishing companies also notify their captains.

Resolution CFP 04/2008 established the Scallop Commission. The commission includes 2 members of INIDEP, 2 members of the Management Authority and 1 representative from each of the fishing companies. Meetings of the Scallop commission provide a mechanism for fishing companies to present their ideas on management of the resource. The commission meets quarterly.

Meetings of the Patagonian scallop Commission have not been as regular as demanded by certain events occurring during this period. This audit has reveled many areas of common interest that merit consideration at these meetings (new recruitment in NS, decreasing trend in biomass estimation, and harvest strategy for the next years.

The CFP have established an IQ (individual quota) for each vessel (39% to each company) and each management unit. (CFP Resolution 14/08). The quotas assigned for the period 01/07/08 to 30/06/09 one given in Disposicion 29/2009 (North Sector) and Disposicion 101/2009 (South Sector). During 2009, CFP have established the IQ in 50 % to each company.

Exclusion areas and their location, establishes as Reproductive Reserves within the Managements Units are presented in CFP Resolution 05/09 (See Appendix IV).

INIDEP completed biomass evaluations for both the North and South Sectors, for which the results and statistics of the fishery for 2009, have been published in:

- INIDEP's Survey report: "Evaluación de vieira patagonica Zygochlamys patagonica) 2010. Sector Norte (Unidades de Manejo 1.1, 1.2, 2) y Sector Sur (Unidad de Manejo 3)" (Authors: Marecos A., M. Schartz & S. Herrera; 25Pp).
- INIDEP's Survey report: "Evaluación de Biomasa de vieira patagonica Sector Sur: Unidades de Manejo 5, 6 y 7) AS III 1-2010-Marzo 2010" (Authors: Marecos A., S. Campodónico, M. Schartz & S. Herrera; 21Pp).
- INIDEP's Survey report MT 01-2010 "Evaluación de Biomasa de Vieira Patagónica Unidades de Manejo 8, 9 y 10" (Authors: Marecos A. & S. Campodónico, 22Pp).

- INIDEP's Official Technical Report 007-2010 "Vieira Patagónica (*Zygochlamys patagonica*): Estadísticas de la pesquería durante el año 2009" (Authors: Campodónico, S, M. Lasta & S. Herrera, 13Pp).
- INIDEP's Official Technical Report 10-2010 "Vieira Patagónica Sector Sur: Evaluación de biomasa año 2010, Unidades de Manejo 5, 6 y 7" (Authors: Lasta, M, D. Hernández & S. Campodónico; 21Pp).
- INIDEP's Consulting and Transference Report 10-2010 "Actividad de Observadores a bordo en la pesquería de vieira patagónica (*Zygochlamys patagonica*)" (Authors: Campodónico, S., S. Herrera, M. Schwartz, Á. Marecos & M. Lasta; 5Pp)
- INIDEP's Official Technical Report 11-2010 "Vieira Patagónica Sector Sur. Evaluación de biomasa año 2010. Unidades de Manejo 8, 9 y 10" (Authors: Lasta, M, D. Hernández & S. Campodónico; 19Pp).
- INIDEP's Official Technical Report 27-2010 "Vieira Patagónica-Sector Norte y UM 3. Evaluación de biomasa año 2010" (Authors: Lasta, M, D. Hernández, S. Campodónico & C. Mauna; 17Pp).

The CFP established new exclusion areas to protect the reproductive stock. The extension of these areas varies amongst MUs but as a whole they cover 5.4 % of the total area with scallops.

Critical issues identified

Interactions with the Client and the scientific teams involved in the research have been cordial and productive. The scientists have been responsive to suggestions by the Surveillance Team.
In any Surveillance visits the Scientific Team investigating the fishery reported progress of the research in relation to the original conditions established by the OIA Assessment Team during Certification. The critical issues were discussed within this framework..

- Repeated years of null recruitment to the fishery may threat its long-term sustainability. However, recent recruitment to the northern beds should be taken as an opportunity to take advantage from. Such recruitment is spatially restricted to 1-2 fishing beds.
- The fishery client has assisted change in management and research planning by grants for research in University of Mar del Plata, nationally (Conicet) and internationally (Dalhousie University); thus enhancing collaboration of these investigations with INIDEP scientists. But the fishery client does not have control over internal factors associated with the fishery, apart from operative control of Glaciar Pesquera S.A. vessels. Some of them are cited below:
    - INIDEP has many operational problems due to the lack of an effective strategy to negotiate with the workers unions (e.g. SIMAPE) of personnel involved in fisheries research (crew, inspector, some OBO). Research vessels remain on port since the origin of the conflict (2008). The problem was solved using the fishing vessels of both companies, equipped with otter nets, and the commercial biomass was estimated and TAC was established.
    - The SSP take the decision to replace the OBO by inspectors. The OBO coverage decreased during the last year (after 4 year with 100% coverage it was reduced to 45.9% in 2009), and that OBO coverage was unevenly distributed between fishing vessels and companies involved (See Table 4).
    - Estimation of exploited biomass is indirect, and based on a conversion factor varying between beds, seasons and vessels (i.e., volume of exploited scallops is calculated as the volume of muscle pieces multiplied by the conversion factor). In this way, the conversion factor ignores the variability of the muscle yield which varies annually, seasonally, by area, by scallop size, and even by processing plant. Even when the Authorities accept the

conversion factor as a measure to estimate the total catch, this issue remains open and could be improved in the future.

As a result the fishery has accomplished the Action Plan in relation to the Conditions set. The client has encouraged research on many of the recommendations made. No breach of any of the certification conditions has been observed and the fishery appears well set to meet the standards set by the MSC's Principles and Criteria for Sustainable Fishing.

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Resolution 2/2009
Resolution 3/2009
Resolution 5/2009
Resolution 11/2009
Resolution 1/2010
Resolution 6/2010
Resolution 16/2010

Appendix I. Stakeholder Interview Schedule and Stakeholders consulted.

MAR DEL PLATA

Tuesday 28th September

- 22.00 Assembly of the Assessment Team in Mar del Plata.

Wednesday 29th September

- 11.00 Glaciar Pesquera S.A. Client Company. Meeting with CNP Eduardo González Lemmi (President of the company) and Dany Jabbour (Clearwater Seafood fleet Operations Manager for Argentine Scallop)
- 14.00 Meeting with Dr. Oscar Iribarne (National University of Mar del Plata) and Lic. Mario Lasta (INIDEP). Scientific presentations and discussion of new activities occurring on the fishery that could affect the sustainability status of it.

Thursday 30th September

- 09.00 Meeting at the INIDEP with researchers of the Patagonian Scallop research group and related: Mario Lasta, Claudia Bremec (Benthic Scientist), M. Inés Trucco (Genetic Scientist), Susana Herrera, Angel Marecos, Matías Schwartz and Ronaldo Díaz.
- 12.00 Meeting with Lic. Gabriel Blanco, INIDEP, On Board Observer Representative.
- 17.00 Meeting with Dr. Marcelo Kittlein (National University of Mar del Plata) and Lic. Mario Lasta (at the HOTEL).

Friday 1st October

- 11.00 Meeting with Lic. Guillermo Cañete, FVSA (HOTEL).
- 14.00 Team discussion (HOTEL).

Saturday 2nd October

- 09.00 Team discussion (HOTEL).
- 14.00 Report writing (HOTEL).

Sunday 3rd October

- 09.00 Report writing (HOTEL).
- 14.00 Report writing (HOTEL).

Monday 4th October

- 10.00 Meeting with Prefectura Naval Argentina: Ayudante Mayor Julio A. Bibbo and Cabo Primero Eduardo Barrios (HOTEL).
- 14.00 Report writing (HOTEL).

Tuesday 5th October

- 10.00 Meeting with Dr. Otto Wöhler, National Director for Fisheries Research and Acting

Director of INIDEP.
- 14.00 Report writing (HOTEL).

Wednesday 6th October

- 09.00 Report writing (HOTEL).
- 14.00 Ending of report writing (HOTEL).

Thursday 7th October

- 08.00 Return of the Assessment Team

Appendix II. List of Stakeholders contacted by e-mail in regard to the Patagonian Scallop Fishery 4th Annual Surveillance Visit 2010.

Glaciar Pesquera S.A.
Wanchese Argentina S.A.
FFC (Federal Fishery Council)
PNA (Argentine Prefecture)
INIDEP (National Institute of Fisheries Research and Development)
CENPAT – National Patagonian Research Institute
UNMdP (National University of Mar del Plata)
CONICET - Technical and Scientific Federal Council
FVSA (Argentina Wildlife Foundation)
CEDEPESCA Center for Defense of Fishing
CAIPA Fishing Industry Chamber
Custom's Agent - "Shepherd and Associates"

Appendix III. Client Action Plan 4th Year.

ACTION PLAN 4th YEAR

BY GLACIAR PESQUERA S.A.

DATE: 22 September, 2009

GLACIAR PESQUERA S.A.: CONTADOR EDUARDO GONZALEZ LEMMI

This action plan follows the conceptual considerations of the previous action plan (2008), with only minor modifications in order to ensure continuity with the Conditions set by the Assessment Team, within the capability of the research resources available.

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, **Status: Completed.** b) Identify 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^2) 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 three management units (1.2, 2 and 3). 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, will be established within a year.** b) Sex ratio in relation to intensity of fishing activity, will be estimated, which will also allow: i) Growth studies to establish age-size relationship in each of the remaining beds along the shelf break front. ii) Studies of relative fecundity per size or weight (samples have already been taken) within the shelf break ecological zones. **Status: b i) Have been completed. ii) Is still in progress. There is a need to incorporate data from the Southern ecological zone MUs (5, 6, 7, 8, 9 and 10) in relation to fecundity and age-size relationship. The resources available were insufficient for the magnitude of this task.** c) Documentation of all information obtained into a scientifically acceptable standard. **Status: It is ongoing. Considerable scientific publication has been achieved for this fishery. See References.**
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: In progress.**

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) Calculate variation in the parameters for the following key biological reference points.

a. size/age at first maturity

Status: Completed for three management units.

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 of the Surveillance Team.

Year 4 - ∞ (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: On target 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: Achieved.

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)	Development of methodology without production of definitive results in order to prepare an Oceanographic Model which will estimate a) larval drift. **Status: In progress.** 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. **Status: On target.**
Year 4- ∞ (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.**

Signed: CNP Eduardo Gonzalez Lemmi
Date:

APPENDIX IV.

Consejo Federal Pesquero

PESCA

Resolución 6/2010

Establécese la Captura Máxima Permisible de vieira patagónica.

Bs. As., 6/5/2010

VISTO lo dispuesto por el inciso c) del artículo 9º de la Ley Nº 24.922, Y

CONSIDERANDO:

Que a los fines de la conservación, protección y administración de los recursos vivos marinos debe establecerse anualmente la Captura Máxima Permisible para las distintas especies de conformidad con lo establecido en los artículos 9º inciso c) y 18 de la Ley 24.922, a fin de evitar excesos de explotación y asegurar su conservación a largo plazo.

Que el INSTITUTO NACIONAL DE INVESTIGACION Y DESARROLLO PESQUERO (INIDEP) ha remitido el Informe Técnico Oficial Nº 11/2010 referido a la evaluación de la biomasa de vieira patagónica (Zygochlamys patagonica) correspondiente a Unidades de Manejo del Sector Sur.

Que en dicho informe el INIDEP recomienda habilitar a la pesca las Unidades de Manejo 8, 9, y 10 en su conjunto, en los niveles de biomasa de vieira patagónica (Zygochlamys patagonica) entera de talla comercial correspondientes al CUARENTA POR CIENTO (40%) del límite inferior de las biomasas estimadas.

Que asimismo el Instituto propone mantener habilitadas a la pesca las Unidades de Manejo 11, 12 y 13, estableciendo en cada una de ellas una captura precautoria de UN MIL (1000) toneladas de vieira patagónica (Zygochlamys patagonica) entera de talla comercial.

Que por la Resolución Nº 2, de fecha 12 de febrero de 2009, del Registro del CONSEJO FEDERAL PESQUERO, se estableció la Unidad de Manejo 14 de vieira patagónica (Zygochlamys patagonica) en el Sector Sur.

Que bajo un enfoque precautorio se debe establecer la Captura Máxima Permisible de esta Unidad de Manejo.

Que en el plano temporal el INIDEP sugiere aplicar la medida considerando un lapso anual del 1º de julio de 2010 al 30 de junio de 2011 inclusive.

Que el CONSEJO FEDERAL PESQUERO es competente para el dictado de la presente de conformidad con el artículo 9º incisos c) y f) y artículo 18 de la Ley Nº 24.922 y el artículo 9º del Decreto Nº 748 de fecha 14 de julio de 1999.

Por ello,

EL CONSEJO FEDERAL PESQUERO

RESUELVE:

Artículo 1º — Establécese la Captura Máxima Permisible de vieira patagónica (Zygochlamys patagonica) entera y de talla comercial correspondiente al Sector Sur, por el lapso de UN (1) año contado del día 1º de julio de 2010 al día 30 de junio de 2011, en las siguientes cantidades y áreas:

a) CINCO MIL (5000) toneladas para la Unidad de Manejo 8.

b) CUATRO MIL NOVECIENTOS SESENTA Y SEIS (4966) toneladas para la Unidad de Manejo 9.

c) CUATRO MIL NOVECIENTOS OCHENTA Y CUATRO (4984) toneladas para la Unidad de Manejo 10.

d) UN MIL (1000) toneladas para cada una de las Unidades de Manejo 11, 12 y 13.

e) DOS MIL (2000) toneladas para la Unidad de Manejo 14.

Art. 2º — Las Unidades de Manejo mencionadas en el artículo anterior se encuentran definidas en el Anexo I de la Resolución del CONSEJO FEDERAL PESQUERO Nº 4, de fecha 22 de mayo de 2008.

Art. 3º — La presente resolución entrará en vigencia a partir del día de su publicación en el Boletín Oficial.

Art. 4º — La presente resolución podrá ser revisada por el CONSEJO FEDERAL PESQUERO y, de ser necesario, complementada o modificada, a partir de la información y las recomendaciones del INSTITUTO NACIONAL DE INVESTIGACION Y DESARROLLO PESQUERO.

Art. 5º — Comuníquese, publíquese, dése a la Dirección Nacional del Registro Oficial y archívese. — Omar M. Rapoport. — Eduardo Bauducco. — Carlos A. Cantú. — María S. Giangiobbe. — Rodolfo M. Beroiz. — Miguel Alcalde. — Héctor M. Santos.

Dirección Nacional de Coordinación Pesquera

PESCA

Disposición 101/2009

Determínanse las Autorizaciones de Captura de la especie vieira patagónica para el Sector Sur.

Bs. As., 8/7/2009

VISTO el Expediente Nº S01:0256948/2009 del Registro del MINISTERIO DE PRODUCCION, la Ley Nº 24.922, las Resoluciones Nros. 14 de fecha 2 de octubre de 2008 y 1 de fecha 5 de febrero de 2009, 2 y 3 ambas de fecha 12 de febrero de 2009 y el Acta Nº 26 de fecha 17 de junio de 2009, todas ellas del CONSEJO FEDERAL PESQUERO, y

CONSIDERANDO:

Que por la citada Resolución Nº 14 de fecha 2 de octubre de 2008, el CONSEJO FEDERAL PESQUERO dispone implementar las Autorizaciones de Captura para la especie vieira patagónica (Zygochlamys patagonica) por un plazo de cinco años contados a partir del 1 de enero de 2009, establece los porcentajes requeridos en la historia de captura, detalla los factores de ponderación y criterios para el cálculo de las asignaciones, fija el porcentaje máximo de concentración por empresa o grupo y determina la reserva de administración en el QUINCE POR CIENTO (15%) de la Captura Máxima Permisible al que se adicionarán los excedentes del porcentaje máximo de concentración y de la detracción resultante de la aplicación del ítem sanciones.

Que la misma norma instruye a la Autoridad de Aplicación para que, a través de la Dirección Nacional de Coordinación Pesquera calcule anualmente, sobre la base de la Captura Máxima Permisible de cada unidad de manejo, la cantidad de cada Autorización de Captura.

Que por la Resolución Nº 2 de fecha 12 de febrero de 2009 el citado Consejo decide establecer la Unidad de Manejo Nº 14 de vieira patagónica y en esa misma fecha, mediante la Resolución Nº 3 determina el valor de la Captura Máxima Permisible para la Unidad de Manejo 14 recientemente establecida.

Que a través del Acta Nº 26 de fecha 17 de junio de 2009, según consta en el punto "3. VIEIRA PATAGONICA" el CONSEJO FEDERAL PESQUERO ha resuelto fijar la Captura Máxima Permisible de la especie vieira patagónica en las unidades de manejo del Sector Sur, por el lapso de SEIS (6) meses contados a partir del día 1º de julio de 2009, en el CINCUENTA POR CIENTO (50%) de la Captura Máxima Permisible establecida para la temporada que finaliza el 30 de junio del mismo año.

Que mediante el Memorando DNCP Nº 118/09, la Dirección Nacional de Coordinación Pesquera solicita a la Dirección Nacional de Planificación Pesquera que se proceda a recalcular las toneladas correspondientes de la especie vieira patagónica de acuerdo con lo resuelto en el punto "3. VIERA PATAGONICA" del Acta Nº 26 de fecha 17 de junio de 2009.

Que la Coordinación de Gestión de Pesquerías ha elaborado el cuadro de valores correspondientes a las autorizaciones de captura remitido por nota GP N56/2009 a la Dirección Nacional de

Planificación Pesquera con el resultado de los cálculos realizados por esa Coordinación sobre la base de lo dispuesto por el mencionado Consejo.

Que la Dirección de Legales del Area de Agricultura, Ganadería, Pesca y Alimentos dependiente de la Dirección General de Asuntos Jurídicos del MINISTERIO DE ECONOMIA Y FINANZAS PUBLICAS ha tomado la intervención que le compete, conforme a lo establecido por el Artículo 11 del Decreto Nº 2102 de fecha 4 de diciembre de 2008.

Que la presente medida se dicta en ejercicio de las facultades establecidas por el 2102 de fecha 4 de diciembre de 2008 y en cumplimiento de lo dispuesto por la Resolución Nº 14 de fecha 2 de octubre de 2008 del CONSEJO FEDERAL PESQUERO.

Por ello,

EL DIRECTOR NACIONAL DE COORDINACION PESQUERA

DISPONE:

Artículo 1º — Determínanse las Autorizaciones de Captura de la especie vieira patagónica (Zygochlamys patagonica), para el Sector Sur, por el lapso de SEIS (6) meses calendario contados a partir del día 1º de julio de 2009, calculadas conforme lo dispuesto por la Resolución Nº 14 de fecha 2 de octubre de 2008, del CONSEJO FEDERAL PESQUERO sobre la base de las Capturas Máximas Permisibles establecidas por el citado Consejo mediante el Acta Nº 26 de fecha 17 de junio de 2009, por las cantidades especificadas en cada caso para los buques que se detallan en el Anexo que es parte integrante de la presente disposición.

Art. 2º — Lo establecido en la presente medida no implicará antecedente alguno para la asignación de Cuotas Individuales Transferibles de Captura establecida por el Artículo 27 de la Ley Nº 24.922.

Art. 3º — Comuníquese, publíquese, dése a la Dirección Nacional del Registro Oficial y archívese. — Héctor M. Santos.

ANEXO

VIEIRA PATAGONICA

CANTIDADES DE ASIGNACION DE AUTORIZACIONES DE CAPTURA

Toneladas del 01/07/2009 al 31/01/2010

BUQUE: ATLANTIC SURF I

MATRICULA: 0350

PORCENTAJE: 23,26%

U. de Manejo	3	4	5	6	7	8	9	10	11	12	13	14
Toneladas	115	116	899	254	486	1.178	1.364	271	116	116	116	233

BUQUE: ATLANTIC SURF III

MATRICULA: 02030

PORCENTAJE: 15,78%

U. de Manejo	3	4	5	6	7	8	9	10	11	12	13	14
Toneladas	78	79	610	173	330	799	925	184	79	79	79	158

BUQUE: ERIN BRUCE

MATRICULA: 0537

PORCENTAJE: 20,97%

U. de Manejo	3	4	5	6	7	8	9	10	11	12	13	14
Toneladas	104	105	811	229	438	1.062	1.230	245	105	105	105	210

BUQUE: MISS TIDE

MATRICULA: 02439

PORCENTAJE: 18,08%

U. de Manejo	3	4	5	6	7	8	9	10	11	12	13	14
Toneladas	90	90	699	198	378	916	1.060	211	90	90	90	181