



Final Report

**Assessment against MSC Principles and Criteria for:
ARGENTINE HOKI BOTTOM AND MID-WATER TRAWL FISHERY
IN ARGENTINE SEA**

(Macruronus magellanicus)

Certificate code: F-OIA-P-0300

15th September 2017

AUTHORS: *Dr. E. M. Morsan (Team Leader), Mr. Italo Campodónico, Lic. Gabriel Sesar and Eng. C. A. Medina Foucher (MSC Program Manager)*

CLIENTS: *San Arawa S.A., Estremar S.A. and Empresa Pesquera de la Patagonia y Antártida S.A. (PESANTAR)*



FINAL REPORT (FR)

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CLIENTS:

San Arawa S.A.

Contact: Eduardo González Lemmi

Address: Av. Perito Moreno 2552, (9410) Ushuaia, Tierra del Fuego Prov., Argentina

Tel: (+54 223) 495 4789

Empresa Pesquera de La Patagonia y Antártida S.A. (PESANTAR)

Contact: Fabian Carrasco

Address: Av. Perito Moreno 3360, (9410) Ushuaia, Tierra del Fuego Prov., Argentina

Tel: (+54 11) 5368 2800

Estremar S.A.

Contact: Alan Mackern

Address: Rivadavia 130 Floor 3 Of. 309, (9410) Ushuaia, Tierra del Fuego Prov., Argentina

Tel: (+54 11) 5218 0178

CERTIFICATION BODY:

Organización Internacional Agropecuaria S.A. (OIA)

Address: Av. Santa Fe 830, Acassuso (B1641ABN), Buenos Aires, Argentina

Tel/Fax: (+54) 11 4793-4340

oia@oia.com.ar | www.oia.com.ar

Contents.

Glossary.....	5
1. Executive summary.....	6
2. Authorship and peer reviewers.....	9
3. Description of the Fishery.....	12
3.1 Unit(s) of Assessment (UoA) and scope of certification sought.....	12
3.1.1 UoA and proposed Unit of Certification (UoC).....	12
3.1.2 Final UoC(s).....	13
3.1.3 Total Allowable Catch (TAC) and catch data.....	14
3.1.4 Scope of assessment in relation to enhanced fisheries.....	15
3.1.5 Scope of Assessment in Relation to Introduced Species Based Fisheries (ISBF).....	15
3.2 Overview of the fishery.....	15
3.2.1 Background of the fishery.....	15
3.3 Principle One: Target Species Background.....	18
3.4 Principle two: ecosystem background.....	22
3.4.1 Primary species.....	27
3.4.2 Secondary species.....	27
3.4.3 ETP species.....	32
3.4.4 Habitat.....	42
3.4.5 Ecosystem.....	46
3.5 Principle Three: Management System Background.....	48
3.5.1 Fishery area of operation.....	48
3.5.2 Consultation and decision-making processes.....	52
3.5.3 Objectives for the fishery.....	53
3.5.4 Monitoring, control and surveillance and enforcement.....	55
4. Evaluation Procedure.....	58
4.1 Harmonised fishery assessment.....	58
4.2 Previous assessments.....	58
4.3 Assessment methodologies.....	65
4.4 Evaluation Processes and Techniques.....	65
4.4.1 Site visits.....	65
4.4.2 Consultations.....	66
4.4.3 Evaluation techniques.....	67
5. Traceability.....	68

5.1 Eligibility date	68
5.2 Traceability within the fishery	68
5.3 Eligibility to Enter Further Chains of Custody.....	72
5.4 Eligibility of Inseparable or Practicably Inseparable (IPI) stock(s) to Enter Further Chains of Custody	72
6. Evaluation Results.....	74
6.1 Principle Level Scores	74
6.2 Summary of PI Level Scores.....	74
6.3 Summary of Conditions	75
6.4 Recommendations.....	75
6.5 Determination, Formal Conclusion and Agreement	75
6.6 Changes in the fishery prior to and since Pre-Assessment	76
7. References.....	77
Appendices.....	81
Appendix 1. Scoring and Rationales.....	81
Appendix 1.1 Performance Indicator Scores and Rationale.....	81
Appendix 1.2 Conditions.....	133
Appendix 2. Peer review reports.....	147
Appendix 3. Stakeholder submissions.....	181
Appendix 4. Surveillance Frequency	197
Appendix 5. Objections Process	198

Glossary.

BRo	Virginal Reproductive Biomass
CFP	Consejo Federal Pesquero
CoC	Chain of Custody
DNPP	Dirección Nacional de Planificación Pesquera
ETPs	Endangered, Threatened, Protected species
FAO	Food and Agriculture Organization
FCRv2.0	Fisheries Certification Requirements v2.0
IBMPAS	Instituto de Biología Marina y Pesquera Almte. Storni
IFOP	Instituto de Fomento Pesquero
INIDEP	Instituto Nacional de Investigación y Desarrollo Pesquero
IPI	Inseparable or Practically Inseparable
ISBF	Introduced Species Based Fisheries
ITQs	Individual Transferable Quotas
LRP	Limit Reference Point
MINCyT	Ministerio de Ciencia, Tecnología e Innovación Productiva
MSC	Marine Stewardship Council
NGOs	Non-Governmental Organization
OIA	Organización Internacional Agropecuaria
OSC	Organizaciones de la Sociedad Civil
PDR	Preliminary Draft Report
RBF	Risk Based Framework
SAyDS	Secretaría de Ambiente y Desarrollo Sustentable de la Nación
SSPyA	Subsecretaría de Pesca y Acuicultura
SUBPESCA	Subsecretaría de Pesca y Acuicultura, Chile
TAC	Total Allowable Catch
TRP	Target Reference Point
UoA	Unit of Assessment
UoC	Unit of Certification
VMEs	Vulnerable Marine Ecosystems
VMS	Vessel Monitoring System

1. Executive summary.

This report provides an integrated view of the Argentine hoki (*Macruronus magellanicus*) mid-water and bottom trawl fishery in Argentine Sea as result of the First Re-Certification Assessment, for the period 2017-2022.

The assessment addresses the following topics: target stock pursued (as nature, distribution and stock status); harvest strategy; primary and secondary species considerations, ETP species, habitats and ecosystems (environmental impact of fishing); management system of the UoA; and, many other variables related with the sustainability of a fishery. These aspects are assessed against MSC Principles and Criteria for Sustainable Fishing.

Macruronus magellanicus is distributed in Pacific and Atlantic waters. In the Southwest Atlantic, it is located from 38° S to 54° S in intermediate platform and Golfos San Jorge and San Matías. Its distribution is related with Malvinas' Current. The fleet is composed by freezer vessels, 'surimeros' and ice-chilled vessels that have fishing permits and are included in the General System of Individual Transferable Quotas (ITQs) (CFP Resolution N° 22/2009). Also, there are foreign vessels that catch the same stock, but its management system is outside the Argentine's Management.

In 2012, CFP established a Fishery Management Plan that includes management measures, specific objectives, harvest strategies and harvest control rules (CFP Resolution N° 22/2012 and CFP Act N° 14/2017). Also, and Advisor Commission was created to monitor fishing activities (CFP Resolution N° 5/2010) and a Total Allowable Catch (TAC) is set annually (CFP Resolution N° 18/2016).

The Argentine hoki fishery has been certified as sustainable (against the MSC Principles and Criteria for Sustainable Fishing) in May 2012, and since then, four annual surveillance audits were conducted (from period 2013-2016), where new available information was reviewed and all conditions and milestones were met. Also, in 2016, it was carried out an expedited audit according to new information related with stock status.

Based on the performance of this fishery during this period, the client group requested to go ahead with a first re-certification assessment process.

Considering the last Public Certification Report, all surveillance reports, outcomes and evaluated progress against certification conditions, OIA decided to proceed with the first re-assessment, which started on August 2016. A series of announcements were posted on the MSC website, reporting all stages being undertaken.

For this process, the assessment team proposed is composed by: Dr. Enrique Morsan (Team Leader and expert on Principle 2), Italo Campodónico (expert on Principle 1) and Lic. Gabriel Sesar (expert on Principle 3). Additionally, Eng. Carolina Medina Foucher has provided technical support regarding MSC Fisheries Certification Requirements. All assessment steps were followed, as the proper 'Stakeholder Notification: Fishery enters full assessments' and the 'Assessment Timeline' were released at the beginning –including the site visit information-, followed by the proposal and subsequent confirmation of the assessment team, proposal and subsequent confirmation of the assessment tree –the use of RBF was not required-; proposal and subsequent confirmation of peer reviewers as required in MSC Fisheries Certification Requirements v2.0.

One of the main steps when assessing a fishery against MSC Principles and Criteria for Sustainable Fishing is stakeholder consultation and information collection, for the assessment team to gather all relevant information and become aware of any potential issue. The site visit was performed on September 29th and 30th, 2016, and all stakeholders with experience and knowledge about the fishery were invited and encouraged to participate in the meetings.

After the site visit, the team discussed and analyzed all data, as well as the technical, written and anecdotal resources collected during the visit; and according to their judgment and expertise, agreed on a final score in line with the MSC Requirements.

The re-assessment has considered all available information, including relevant scientific and technical literature about hoki and other relating species and fisheries, relevant Federal and Provincial legislation and regulations pertinent to this fishery as well as all information provided by stakeholders, according to the requirements of the MSC Principles and Criteria for Sustainable Fisheries. Based on the analysis of such information, suiting the parameters of the assessment tree, the assessment team scored performance indicators using the default assessment methodology.

There are other companies identified catching hoki in the UoA. Interested companies are invited in all times to share the certificate prior to sign an agreement with the client group. The strengths and weaknesses of the fishery, in relation to the Principles and Criteria of the MSC are presented, key stakeholders identified, assessment process discussed, and appendices relevant to material, are all presented on this report. All literature and documents consulted by the assessment team are listed.

The main strengths detected in the re-certification process are regular annual reviews of the stock assessment, including a comprehensive monitoring system. All vessels working in the fishing of Argentine hoki as target species have the obligation to use the satellite monitoring system and to carry an observer and inspector on board. So, there is direct information about the fishery impacts on target species and ecosystem components.

On the other hand, main weaknesses include a great deal of uncertainty regarding the stock structure; appropriate reference points only recently defined; reproductive biomass and catches showing consistent declines over more than a decade; lack of independent abundance index for the last years. All information related to the management of the fishery, such as the results of the Observer On Board Program or the performance of the CITC, is not readily available for any stakeholder.

As a result, the general scores for each Principle are:

Principle	Score	Result
P1 – Target species	82.5	Pass
P2 – Ecosystem	82.0	Pass
P3 – Management system	92.9	Pass

The minimal pass mark is 80 in each principle. Therefore, the assessment team recommends that the fishery should be certified according to the MSC Principles and Criteria for Sustainable Fisheries.

As some performance indicators do not reach 80, 3 conditions have been raised that will require achievement within specified time periods in line with MSC requirements.

Condition number	Associated principle and component	Performance Indicator	Related to previously raised condition? (Y/N/NA)
1	Principle 1 – Management	1.2.2	Yes
2	Principle 1 – Management	1.2.2	No
3	Principle 2 - Outcome	2.2.1	No

Even if the client group elaborated an Action Plan to address satisfactorily the conditions for a period of 5 years during each surveillance process, in the last annual surveillance, the assessment team detected that the condition related with Harvest Control Rules could not be closed, due to time required for relevant research to be funded, undertaken and published by official technical advisor and be adopted by management body (CFP). Therefore, Organización Internacional Agropecuaria (OIA) recommended that the fishery should be certified as MSC Sustainable Fishing and the

condition opened could apply to an exceptional circumstance, including an extension of one year period (*i.e.* first certification period) to close it (see Appendix 1.3).

Therefore, Organización Internacional Agropecuaria (OIA) has concluded that the fishery should be certified as MSC Sustainable Fishing. This Final Report includes scores and weightings, draft determination, conditions, stakeholder submissions, client action plan and peer review process. OIA announces that the objection period is opened for 15 UK working days.

2. Authorship and peer reviewers.

a. Names, qualifications and affiliations of team members

Dr. Enrique M. Morsan – team leader and responsible for principle 2

Dr. Morsan is professor of Fishery Biology, Oceanography and professional researcher member of Directive Council in Instituto de Biología Marina y Pesquera “Almirante Storni” of Universidad Nacional del Comahue. He has 28 years of experience in marine biology, populations dynamics of marine invertebrates, assessment and managements of fishery resources. Dr. Morsan has participated in various MSC assessment processes of fisheries as Southern Red King Crab (*Lithodes santolla*), Mullet (*Mugil platanus*), Patagonian scallop (*Zygochlamys patagonica*) and Argentine Patagonian toothfish (*Dissostichus eleginoides*), and has had training in the use of the Risk Based Framework (RBF).

OIA has being verified that Dr. Morsan meets the fishery team leader qualification and competency criteria specific in Annex PC1 of FCRv2.0:

- has a university degree (Ph. D.) in biology;
- has over 5 years’ experience in the fisheries sector related to the tacks under his responsibility;
- has passed MSC team leader training, meets the competencies specified in section 2 of Table PC1;
- has undertaken 2 MSC fishery assessment or surveillance visits as a team member in the last 5 years; has the experience in applying knowledge of auditing techniques in the gathering of information, the scoring of the fishery and the rationales of the score given.
- has the experience in applying different types of interviewing and facilitation techniques; and the ability to effectively communicate with the client and other stakeholders.

Furthermore, Dr. Morsan has the qualifications and competencies required for serving as an expert on: fishery stock assessment, fish stock biology/ecology, fishery management and operations, current knowledge of the country, language and local fishery context, understanding of the CoC Standard and CoC Certification Requirements.

Dr. Morsan has no conflicts of interest in relation to the Argentine hoki fishery.

Mr. Italo Campodónico – responsible for principle 1

Mr. Campodónico is a marine biologist graduated from the Universidad de Chile with over 40 years of experience in marine resources and fisheries management. For 20 years, he was a full-time researcher at Instituto de la Patagonia and Universidad de Magallanes. Former head the Fisheries Department of Subpesca, Chile, and for many years he was Chile’s representative to the oceans and fisheries related Working Group of APEC as well as the head of the Chilean scientific delegation to the South Pacific Regional Fisheries Management Organization. He is the author of many scientific (crustacean and fish biology, phytoplankton and toxic red tides, oil pollution) as well as technical reports in the field of marine commercial fisheries. Currently he is an independent fisheries consultant working in fisheries certification under MSC Standard. In this position, Mr. Campodónico has served as team member in Chilean anchovy (northern stock) and Antarctic krill pre-assessments; as peer reviewer of the Argentine anchovy (northern stock) and Chilean squat lobsters; as well as team member in the fourth annual audit of the Argentine hoki.

OIA verified that Mr. Campodónico meets the fishery member qualification and competency criteria specific in Annex PC2 of FCRv2.0:

-has a university degree in marine biology and has over 5 years' experience in the fisheries sector related to the tacks under his responsibility;

-has knowledge of a common language spoken by clients and stakeholders, and more than two assignments in the region (Peru, Ecuador and Chile) in which fishery under assessment is based in the last 10 years.

-has passed MSC fishery team leader training, meets the competencies species in section 2 of Table PC2.

Furthermore, Mr. Campodónico has the qualifications and competencies required for serving as an expert on: fish stock assessment, fish stock biology/ecology and fishing impacts on aquatic ecosystems qualifications, and current knowledge of the country, language and local fishery context. Also, he has knowledge in the Risk Based Framework v2.0.

Mr. Campodónico has no conflicts of interest in relation to the Argentine hoki fishery.

Lic. Gabriel Sesar – responsible for principle 3

Lic. Sesar has a degree in economics sciences and has been Consulter in many Argentinean fishery management projects. He has 29 years in fishery managements and operations. He has served as team member in Argentine anchovy (*Engraulis anchoita*) and Argentine hoki (*Macruronus magellanicus*) surveillance processes against Principles and Criteria of the MSC.

OIA has verified that Lic. Sesar meets the fishery team member qualification and competency criteria specific in Annex PC2 of FCRv2.0:

-has a university degree in economic science;

-has over 5 years' experience in the fisheries sector related to the tacks under his responsibility;

-has passed MSC fishery team member training, meets the competencies specified in section 2 of Table PC2;

-has undertaken more than 2 MSC surveillance visits as a team member in the last 5 years;

Furthermore, Lic. Sesar has the qualifications and competencies required for serving as an expert on: fishery management and operations, current knowledge of the country, language and local fishery context, and understanding of the CoC Standard and CoC Certification Requirements.

Lic. Sesar has no conflicts of interest in relation to the Argentine hoki fishery.

b. Names of peer reviewers

Mr. Ian Scott

Mr. Scott is an independent fisheries consultant specialized in project management, project planning and evaluation, sustainability certification, fisheries policy and management, including market, economic and financial appraisals, with over 30 years of experience. In recent years, he has advised Mexico and Morocco fisheries and has been team member in many MSC fishery assessments as Lake Waterhen, NFLD snowcrab, Louisiana blue crab and Chilean crustacean fisheries. Ian has participated as lead auditor and P3 specialist on assessments of Portuguese sardine, Canadian sablefish, Scotia Fund y haddock, BC dogfish, Mexican skipjack and yellowfin, U.S. dogfish, Maldives skipjack, Maldives Yellowfin, Chilean hake, Lake Waterhen Walleye and Northern Pike, Lake Erie Commercial Fisheries. He has completed many pre-assessments in Ecuador, Mexico, the USA, Canada, Portugal, Greenland and Spain. He is an MSC certified Lead Auditor and Chain of Custody Auditor, and is trained in the use of RBF. He was a key member of the MSC field trial RBF evaluation team for

Peruvian and Ecuadorian mahi mahi. He used the RBF in the BC dogfish assessment, the Maldives assessments, Lake Waterhen and Lake Erie.

OIA verified that Mr. Scott meets the fishery member qualification and competency criteria specific in Annex PC2 of FCRv2.0:

-has a university degree (BA and MA) in economic sciences and has over 5 years' experience in the fisheries sector related to the tacks under his responsibility;

-has knowledge of a common language spoken by clients and stakeholders, and more than two assignments in the region (Peru, Ecuador, Chile and Argentina) in which fishery under assessment is based in the last 10 years.

-Mr. Scott complies with fisheries management and operation qualifications.

-has knowledge on the different steps in the fisheries assessment process; scoring the assessment tree for each Performance Indicator; and, how conditions are set and monitored.

Ian has no conflicts of interest in relation to the Argentine hoki fishery.

For more information, it is available Scott' CV in the MSC website.

Mr. Juan Simón Vilata

Mr. Vilata is a zoologist biologist graduated from the University of Valencia with an MSc in Fisheries and Marine Science in the University of Aberdeen. Currently he is a freelance fisheries analyst, for European WWF offices and other NGOs, drafting fishery assessments according to the CAM; which constitute the base for their Sustainable Seafood Consumer Guides. Mr. Vilata has previously done similar assessments in North-western Africa and Portugal. In recent years, he has worked as Southern Cone Alliance Coordinator in WWF's improving the sustainability of the regional fisheries. In previous years he has worked in FIP for the artisanal handline tuna fishery in Philippines achieving the introduction of high quality tuna loins in the European market; mediating between Blueyou Consultancy's headquarters and primary stakeholders. He has served as a fisheries observer monitoring at-sea tuna transshipments from Asian longline fleets and the accomplishment of NAFO regulations concerning demersal fisheries. He is the author of many scientific publications and attended several workshops and conventions.

OIA verified that Mr. Vilata meets the fishery member qualification and competency criteria specific in Annex PC2 of FCRv2.0:

-has a university degree in zoologist biology and has over 5 years' experience in the fisheries sector related to the tacks under his responsibility;

-Mr. Vilata complies with fisheries management, ecosystem-based approach knowledge and operation qualifications;

-has knowledge of a common language spoken by clients and stakeholders, and more than two assignments in the region (Argentina, Chile, Brazil and Peru) in which fishery under assessment is based in the last 10 years;

-Vilata complies with fish stock assessment methodologies, fishery data collection and analysis, stock biology/ecology and fishing impacts on vulnerable marine ecosystems and cascade changes in the marine trophic web;

-has knowledge on the different steps in the fisheries assessment process; scoring the assessment tree for each Performance Indicator; and, how conditions are set and monitored;

-Juan has no conflicts of interest in relation to the Argentine hoki fishery.

For more information, it is available Vilata's CV in the MSC website.

3. Description of the fishery.

3.1 Unit(s) of Assessment (UoA) and scope of certification sought

The Argentine hoki (*Macruronus magellanicus*) bottom and mid-water trawl fishery in Argentine Sea under Re-Assessment Process meets the scope requirements (FCR 7.4) for MSC fishery assessment (FCR 7.8.3.1), and so, is eligible for certification. The following statements are applicable to the fishery:

- The target species is a native wild fish and so the fishery is not based on any introduced species or enhancement.
- The fishery does not target any out of scope species, namely: amphibians, reptiles, birds or mammals.
- No IPI stocks are caught in the Argentine hoki trawl fishery.
- The fishery takes place within the Economic Exclusive Zone of Argentina and does not operate under a controversial unilateral exemption to an international agreement.
- The fishery has no withdraw from previous assessments and its certificate has not been suspended.
- The fishery does not use poison, explosives neither any other destructive fishing practices.
- The fishery is not overwhelmed by dispute, and there is a mechanism for resolving disputes.
- The fishery does not include an entity that has been successfully prosecuted for violations against forced labour laws.
- At the moment, there is no overlap with other MSC Certified or applicant fishery.

The Argentine hoki bottom and mid-water trawl fishery in Argentine Sea has been assessed as sustainable (against MSC Principles and Criteria for Sustainable Fishing) in May 2012.

3.1.1 UoA and proposed Unit of Certification (UoC)

The Unit of Assessments (UoAs) are defined as the specific aspect of the fishery, based on the gears used (bottom and mid-water trawl nets) and fishing practices (hauls addressed to catch hoki as target species). The UoAs were set at the beginning of the assessment; and anything outside these units or fishing practices are not eligible to enter the certification later, unless a certificate extension is completed.

The UoAs were chosen as encompass with the client's certification requirements. As it stands, only hoki caught by vessels linked to the client group can be sold as MSC (see Table 1, vessels coloured in orange). The remaining vessels are eligible to use the certificate and sell product as certified if they sign a previous agreement with the Client Group (*i.e.* Certificate Sharing Agreement). All vessels are relatively homogeneous insofar as their technical characteristics are concerned. The UoC is defined as Client Group. Vessels within the UoC are included in the hoki fleet census from the Argentine Sea.

The CAB reviewed the data available and concluded that the UoAs are adapted and consistent with MSC Principles. The UoAs for Argentine hoki mid-water and bottom trawl fishery are defined below:

Criteria	UoA 1	UoA 2
Target species	Argentine hoki (<i>Macruronus magellanicus</i>)	Argentine hoki (<i>Macruronus magellanicus</i>)
Stock	Argentinean stock	Argentinean stock
Fishing Area	Western South Atlantic, FAO area 41, in Argentinean Exclusive Economic Zone	Western South Atlantic, FAO area 41, in Argentinean Exclusive Economic Zone

Fishing method	Bottom trawl net, including fishing hauls addressed to catch hoki as target species	Mid-water trawl net, including fishing hauls addressed to catch hoki as target species.
Fleet	Freezers (<i>congeladores</i>), Factories, <i>surimeros</i> and ice-chilled vessels.	Freezers (<i>congeladores</i>), Factories, <i>surimeros</i> and ice-chilled vessels.
Management system	The management is carried out by CFP and SSPyA. CFP establishes the annual TACs in its website.	
Client group	San Arawa S.A., Estremar S.A., Empresa Pesquera de la Patagonia y Antártida S.A. Therefore, hoki caught by vessels linked to the Client Group can be sold as MSC.	
Other eligible fishers	Vessels eligible to enter certification process were identified in the Table 1. Interested companies are invited at all times to share the certificate prior signing an agreement with the client.	

The team members unified the assessment of both UoAs, due the fleet uses both fishing gears indistinctly in a same trip (bottom trawl and mid-water trawl nets), difficulting the determination of the P2 components impact separately. However, the team considered the precautionary approach with available information to determine the effect of both gears in Principle 2.

Table 1. List of vessels of both UoAs included in the CITC's system 2017 (Source: <https://www.boletinoficial.gob.ar/pdf/linkQR/YW1kWjV2TzRza1UrdTVReEh2ZkU0dz09>)

Company/entity	Vessel	Fleet	% CITC
ANTONIO BALDINO E HIJOS S.A.	(0510) Harengus	Factory	0.15
A.P.I. ANTARTIDA PESQUERA INDUSTRIAL S.A.	(2781) Api V	Freezer	1.08
ALTAMARE S.A.	(2630) Puente Mayor	Freezer	2.39
ATUNERA ARGENTINA S.A.	(0476) Ventarrón I	Freezer	0.76
COSTA MARINA S.A.	(0244) Ponte de Rande	Freezer	1.78
EMP. PESQ. DE LA PATAGONIA Y ANTÁRTIDA S.A.	(0326) Echizen Maru	Factory	12.74
ESTRELLA PATAGÓNICA S.A.	(0176) Carolina P	Freezer	0.72
	(0175) Anabella M	Freezer	0.79
	(0538) Pescapuerta Quinto	Factory	0.93
ESTREMAR S.A.	(0237) Centurión del Atlántico	Factory	8.59
FONSECA S.A.	(0920) Fonseca	Freezer	1.47
HISPANO PATAGONICA S.A.	(0927) Itxas Lur	Factory	0.77
IBERCONSA DE ARGENTINA S.A.	(0678) Antartida	Factory	-
IBERMAR S.A.	(0174) Verdel	Freezer	2.30
NIETOS DE ANTONIO BALDINO S.A.	(1842) Beagle I	Factory	1.14
	(0790) Coalsa Segundo	Factory	3.88
PEDRO MOSCUZZA E HIJOS S.A.	(0068) Don Pedro	Factory	0.70
	(1173) María Eugenia	Factory	0.45
	(1174) María Liliana	Factory	0.34
	(0926) Stella Maris I	Factory	0.83
PESCARGEN S.A.	(0021) Pescargen III	Freezer	0.55
	(0150) Pescargen IV	Freezer	2.17
	(0078) Pescargen V	Freezer	-
PESCASOL S.A.	(0546) Luca Mario	Freezer	3.17
PESQUERA CERES S.A.	(1420) Ceres	Freezer	2.41
PESQUERA COMERCIAL S.A.	(0542) Navegantes	Freezer	1.43
PESQUERA GÉMINIS S.A.	(1421) Géminis	Freezer	2.64
SAN ARAWA S.A.*	(2098) San Arawa II	Factory	6.41
	(1530) Tai An	Surimero	7.44
VASGA PESCA S.A.	(0612) Urabain	Freezer	1.56

(*) companies conforming Client Group of MSC Sustainable Fishery for Argentine hoki (*Macrurus magellanicus*), mid-water and bottom trawl fishery (F-OIA-P-0300).

3.1.2 Final UoC(s)

(PCR ONLY)

The PCR shall describe:

- The UoC(s) at the time of certification.
- A rationale for any changes to the proposed UoC(s) in section 3.1(c).
- Description of final other eligible fishers at the time of certification.

(References: FCR 7.4.8-7.4.10)

3.1.3 Total Allowable Catch (TAC) and catch data

The following table represents the TAC and catches data of UoA and certified vessels which are currently covered by the Fishery Certificate (F-OIA-P-0300). Due all vessels use both fishing gears indistinctly in one fishing trip, UoAs are grouped at only one in the re-assessment process.

Table 2. TAC and Catch Data for both UoA.

TAC	Year	2016	Amount	130,000.0 t
	Year	2017	Amount	80,000 t
UoA share of TAC	Year	2016	Amount	34,925.4 t
UoC share of total TAC	Year	2016	Amount	25,287.2 t
Total green weight catches by UoC	Year (most recent)	2016	Amount	25,287.2 t
	Year (second most recent)	2015	Amount	27,619.2 t

Table 3. Total catch data and number of vessels by type of fleet for year 2016.

Year 2016	Catch (t)	Catch (%)	N° of vessels	N° of vessels (%)
Factory and Freezing Vessels	25,503.6	73.02%	22	59.5%
Surimero	9,353.5	26.78%	1	2.7%
High Sea Vessels	46.8	0.13%	6	16.2%
Coastal Sea Vessels	20.9	0.06%	6	16.2%
Rada o Ría Vessel	0.6	0.00%	2	5.4%
TOTAL	34,925.4	100.0%	37	100.0%

Table 4. UoC and other companies with respective catch data for 2016.

Company	Vessel	CITC (%)	TAC (t)	Green weight catch (t)
PESANTAR	Echizen Maru	12.7365	16,557.50	6,541.60
ESTREMAR S.A.	Centurión del Atlántico	8.5900	11,167.00	2,291.50
SAN ARAWA S.A.	Tai An	7.4445	9,677.90	9,353.50
	San Arawa II	6.4072	8,329.40	7,100,50
SUBTOTAL		35.1782	45,731.80	25,287.20
Other with CITC	Other vessels	34.4297	44,758,70	9,569.92
Other without CITC	Other vessels			68.30
TOTAL		69.6079	90,490.50	34,925.40

Table 5. UoA and UoC companies with respective catch data for 2016.

Company	Vessel	CITC (%)	TACs/CITC (t)	TAC Transf + Asig (t)	Green weight catch (t)
PESANTAR	Echizen Maru	12.7365	16,557.5		6,541.60
ESTREMAR S.A.	Centurión del Atlántico	8.5900	11,167.00		2,291.50
SAN ARAWA S.A.	Tai An	7.4445	9,677.9	1,300.0	9,353.50
	San Arawa II	6.4072	8,329.40		7,100.50
SUBTOTAL		35.1782	45,731.80	1,300.0	25,287.20
Other with CITC	Other vessels	34.4297	44,758.70		9,569.92
Other without CITC	Other vessels				68.30
TOTAL		69.6079	90,490.50	1,300.0	34,925.40

3.1.4 Scope of assessment in relation to enhanced fisheries

The assessed fishery is a wild catch fishery and does not correspond to the definition described in the MSC FCRv2.0. The Argentine hoki (*Macruronus magellanicus*) bottom and mid-water trawl fishery in Argentine Sea is not considered enhanced fishery.

3.1.5 Scope of assessment in Relation to Introduced Species Based Fisheries (ISBF)

The assessed fishery does not correspond to the definition described in the MSC FCRv2.0, so the Argentine hoki (*Macruronus magellanicus*) bottom and mid-water trawl fishery in Argentine Sea is not considered and introduced species based fisheries (ISBF).

3.2 Overview of the fishery

3.2.1 Background of the fishery

Hoki is a pelagic-demersal species widely distributed in both the continental platforms and slopes of the Southwestern Atlantic and the Southeastern Pacific. The species extends from approximately 33° to 56° S on both sides of the South American cone.

In the Southwest Atlantic, its distribution includes Golfos San Jorge and San Matias, as well as part of Malvinas area.

Its depth distribution is very broad ranging from 20 m to more than 600 m, with the highest concentrations between 50-200 m. Hoki concentrates in northern deep waters during winter and spreads over shallower waters, mostly in the Patagonian shelf, below 50° S, during the summer and autumn. The species also performs day-night vertical migrations, moving to deeper waters by day, and the opposite by night.

The Argentine Hoki (*Macruronus magellanicus*) industrial bottom and semi-pelagic trawl net fishery operates within the Argentine Economic Exclusive Zone and adjacent waters from 39° to 56° S, in the southwestern Atlantic (FAO, Statistical Area 41). This large area includes the Common Fishing Zone between Argentina and Uruguay, but the fishery is mostly concentrated in the Patagonian area, south of 46° S latitude, where commercial concentrations of the species are distributed more significantly.

Fishing is conducted on the continental shelf and associated slope of the Argentine Sea and adjacent waters, an oceanographic environment characterized by a mixing of water masses, including continental runoff, with the northward-flowing, cold-temperate and nutrient rich Malvinas Current (MC) as the most important component. The coastal branch of the MC carries cool subantarctic water to the wide continental shelf and at approximately 38° S this current confluent with the

warmer and saline south-flowing Brazil Current (subtropical water), producing a sharp and notable gradient in temperature and salinity.

At the beginning, harvest was largely conducted by foreign vessels (*i.e.* Poland and the former Soviet Union fleets) and catches were very low. Hoki was first caught as bycatch mainly in the Southern blue whiting (*Micromesistius australis*) and Southern hake (*Merluccius australis*) fisheries. The species began to be exploited as a target fish during the late 80's and since the early 90's the resource is mainly caught by the Argentinean fleet.

Historical total landing has varied from nearly 20,000 t to 168,000 t (Figure 1). Catches of hoki increased markedly since 1998 and reached historical peaks in 2000 and 2006 with more than 148,000 t harvested by the domestic fleet. A consistent decreasing trend of landings is observed during the last 11 years.

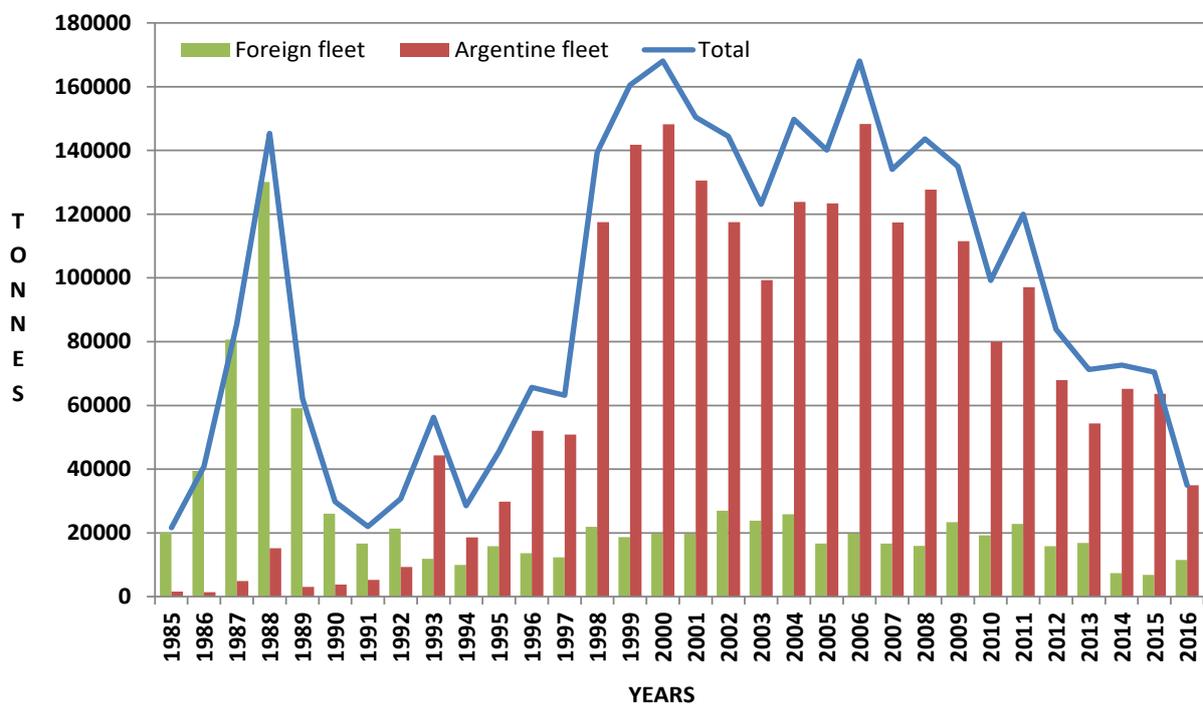


Fig. 1. Historical hoki landings in the southwest Atlantic, 1985-2016 (Source: Giussi et al., 2016 and data provided by DNPP).

Fishing areas in 2016 off the Argentinean coast are shown in Figure 2. Since 2012 a gradual shift of the fleet towards the southern fishing grounds, where the fish is more abundant, has occurred. As a result, when compared with previous years, the total area of the fishery is now more reduced.

Since fishing grounds are far from the coast, the artisanal fleet does not participate in the Argentine hoki fishery.

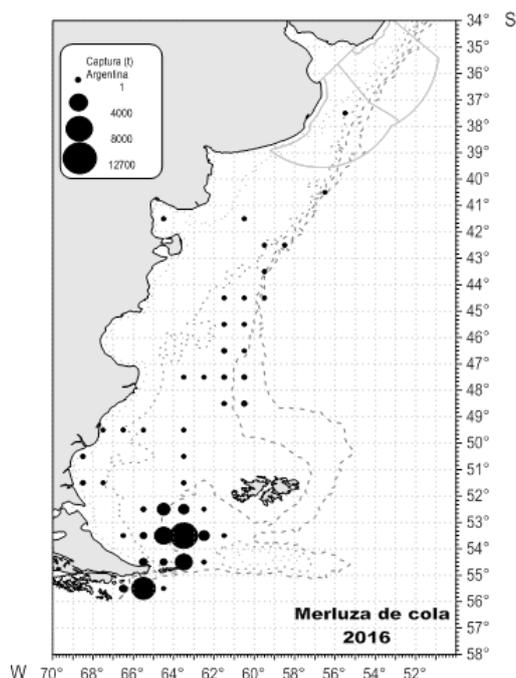


Fig. 2. Fishing locations for Argentine hoki in 2016. Preliminary data (Source: INIDEP).

Hoki fishing is a year-round activity and is mainly carried out by freezer vessels, which produce frozen trunks and fillets, as well as surimeros ships which produce fish paste or *surimi*, which is further processed at land. Ice-chilled vessels have a much minor participation in the harvesting and most of the catch comes from the freezers fleet. In 2015 and 2016, a total of 47 and 37 vessels, respectively, fished hoki as target species, with freezers and surimi vessels accounting for more than 99% of the recorded harvest (Table 6).

Table 6. Argentine hoki fishing fleet in 2015 and 2016, including its contribution to landings (Source: Data provided by DNPP).

Fleet	2015 Landings (tonnes)	Landings (%)	Number of vessels	2016 Landings (tonnes)	Landings (%)	Number of vessels
Freezers	39,480	78.2	23	25,504	73.0	22
Surimeros	10,309	20.4	1	9,354	26.8	1
High sea Ice-chilled	659	1.3	15	47	0.1	6
Coastal Ice-chilled	21	0.0	8	21	0.1	6
Ria Ice-chilled	-	-	-	1	0	2
TOTAL	50,469	100	47	34,925	100	37

A fishing license is required to operate in the hoki fishery but there are many vessels, not granted with these permits, which catch hoki not as a target species but as by catch.

Freezer and factory vessels use predominantly bottom trawl nets while *surimeros* conduct fishing operations both with bottom and midwater (semi-pelagic) trawl nets. In bottom nets, vertical openings may range between 3 to 10 m, while midwater trawls -much larger than the former-have vertical openings of more than 30 m. Trawl nets are built with polyethylene or polyamide and the most common mesh sizes in bottom nets range from 200 to 400 mm in the wings, hood and end, and 120 mm in the cod end. Trawl nets are not equipped with escapement devices.

Hoki products are landed in a few fishing ports (*i.e.* Puerto Madryn, Mar del Plata, Ushuaia and Puerto Deseado), but products are rarely consumed by the domestic market as almost all the production is addressed to exportation (*i.e.* frozen fillets and trunks).

Hoki fishery in Argentinean waters is regulated by Federal Fisheries Law N° 24.922, its regulatory Decree N° 748/1999 and the amendments to this law. Management measures are adopted by the Consejo Federal Pesquero (CFP) with the participation of the Comisión de Análisis y Seguimiento de la Pesquería de Merluza de Cola.

Specific regulations (CFP Resolution N° 22/2012) include minimum mesh size of 120 mm in the cod end of trawls nets; minimum legal size (60 cm length); protection of the juvenile fraction; spatial restriction for the operation of the surimi's fleet; annual Total Allowable Catch (TAC); and Individual Transferable Quotas (ITQ's) which are a percentage of the TAC, granted to holders of fishing permits. ITQ's were instituted from 2010 onwards.

A comprehensive monitoring, control and surveillance system has been implemented in the fishery that includes electronic vessel monitoring systems (VMS) on each vessel, at-sea observations by patrol vessels, dockside monitoring of landings, collection of catch and effort data, Observer On Board Program and mandatory submission of logbooks.

Further details about regulations and management of the Hoki fishery are presented in section 3.5.

3.3 Principle one: target species background

a. Life history parameters

The most updated information concerning growth in-length parameters, mean size and age at sexual maturity, and natural mortality rate, is that of Zavatteri *et al.* (2016) based upon data collected from the commercial fleet in 2014 by observers on board (Table 7). According to these authors, males and females have significant differences in the growth function.

Table 7. Growth parameters by sex and total (Source: Zavatteri *et al.*, 2016).

Parameter	Males	Females	Total
L inf	91.3	100.2	97.2
K (year ⁻¹)	0.217	0.177	0.189
t ₀	-0.67	-0.92	-0.85

Mean size and age at sexual maturity were estimated as follows: males of 53 cm total length and 2.7 years; females of 51 cm total length and 2.5 years. These maturity values are significantly lower than those estimated previously (Zavatteri *et al.*, 2014).

Natural mortality estimates, determined by four methods, range between 0.25 and 0.37.

Maximum ages in males and females registered by the authors were 11 and 12 years, respectively, and samples were predominantly comprised (65%) by individuals aged 2 and 3 years.

Based upon the above information (data of 2014) it might be concluded that sampled catches were mainly composed of juvenile specimens or fishes around the age of sexual maturity. Considering a natural mortality of 0.35 (value used in the stock assessment exercises) a reasonable approximation for a generation time in hoki would be 5.5 years.

Regarding growth in weight parameters Abachian *et al.* (2013) based upon data collected in 2012, estimated the values shown in Table 8, with males and females having significant differences.

Table 8. Growth in weight parameters by sex and total (Source: Abachian *et al.*, 2013).

Parameter	Males	Females	Total
W inf	2367.8	2837.3	2955.4
K (year ⁻¹)	0.215	0.206	0.18
t ₀	-1.53	-1.37	-1.74

These authors also modeled the weight-length function which was determined (for both sexes) as $W = 0.004 * L^{2.945}$

The most updated and extensive (1985-2015) age composition of commercial catches is that presented by Giussi *et al.*, (2016) which shows that in the last two decades predominant ages are 2, 3 and 4. At the beginning of the analyzed period the mean annual age was 6 years, while in the most recent period (~2005 – 2015) mean age is estimated as 3.5 years.

b. Feeding and predators

M. magellanicus is not a low trophic level species. Instead, based on the composition of its diet, hoki can be considered a generalist animal and individuals explore different layers of the water column in search of food.

Diet of hoki in the Southwest Atlantic is composed mainly by hyperiid amphipods (*Themisto spp.*), and secondarily by euphausiids (*Euphausia sp.*) and other zooplankton components (*e.g.* fish larvae). Other important items, mainly in the adult phase, include fishes such as Fuegian or Malvinas sprat (*Sprattus fuegensis*) and longtail southern cod (*Patagonotothen ramsayi*). Less frequent preys consumed by hoki are Southern blue whiting (*Micromesistius australis*), southern cod (*Salilota australis*) and cephalopods. The incidence of cannibalism is relatively low.

Most important predators of hoki include southern hake (*M. australis*) dogfish (*Squalus acanthias*), kingclip (*Genypterus blacodes*) and common hake (*M. hubbsi*).

c. Reproduction

Available information suggests that in the south Atlantic area reproduction occurs in winter months or early spring. Hoki larvae has been collected mostly in the Southern area of the West Atlantic (Patagonian zone) in November.

In the early 2000's several surveys were carried out by INIDEP in the Argentine continental slope, aiming to identify spawning areas or reproductive concentrations of hoki in the southwest Atlantic, but they yielded negative results.

Despite the volume of data collected to date, spawning areas for hoki in the Southern Atlantic have not been found; the existence of a spawning ground in the platform of Tierra del Fuego has been postulated, but at present there is no direct evidence of its existence. The available information supports the belief that reproduction areas are in the south Pacific, mainly between 41° - 46° S, off the Chilean coast (Giussi *et al.*, 2016).

d. Stock structure

For several years many studies to determine the existence of one or more hoki stocks in the South Atlantic Ocean have been conducted, including otoliths chemistry, otoliths morphology, genetic, and meristic and morphometric analyses. By using classic morphometric and meristic tools and samples collected in 2013 and 2014, Gorini (2016) concluded that hoki of the Southwest Atlantic would belong to a unique population group (stock) distributed all around the South America cone. Although this conclusion is in line with results of previous studies (*i.e.* Jerez *et al.*, 2013) the author stated that additional research is needed to elucidate the stock structure.

On the other hand, a microchemistry analysis of otoliths is in progress at the Centre for Trace Element Analysis of the University of Otago, New Zealand, which is expected to help clarify the stock differentiation issue. Up to date there is no conclusive evidence about the existence of more than one stock.

e. Stock assessment and current status

The Argentine hoki is assessed annually by INIDEP. A synthesis of the evolution of the stock assessment approaches for hoki is presented in Prenski *et al.* (2012) and Giussi *et al.* (2016). The most recent assessment in the Southwest Atlantic is that conducted by Giussi *et al.* (*op.cit.*) whose results were used to recommend the 2017 TAC.

The current stock assessment model is a statistical catch at age model implemented in the AD Model Builder Platform; parameters of the model were estimated using nonlinear techniques. The model uses a single and constant value of natural mortality (0.35) and two selectivity patterns of the fleet which greatly differ in the age-at-first capture (5.58 years for the period 1985-1992, and 2.28 years for the period 1993-2015). Nominal catches are adjusted to correct for underreporting and discards.

The implementation of the model considers the catch-at-age composition during the period 1985-2015 and includes two abundance indices: one based upon the research surveys conducted by INIDEP (t per mn²) and covering the period 1992-2009, and the other one based upon the catch rate of the commercial fleet (CPUE, expressed as t per hour) extending from 2003-2015. It is worth noting that the suspension of the research assessment surveys (from 2010 onwards) in the area extending from 45° to 55° SL, produced a significant increase in the uncertainty and this triggered an update and re-analysis of the CPUE as an abundance index (Giussi *et al.*, 2016; Zattereri *et al.*, 2016a).

It must be also noted that following the peer review carried out by Paya (2014) a new external review of the stock assessment model was performed in May 2016 (Canales, 2016), which resulted in several recommendations, namely : i) use of a single weight and maturity vector; ii) estimation of the virginial reproductive biomass (BR₀); iii) use of a stock –recruitment relationship (Beverton & Holt); iv) estimation of the fishing mortality rate and biomass corresponding to the MSY; and v) use of the variability of the reproductive biomass as an index to set the Biological Reference Point (BRP). These recommendations were considered in the current assessment model.

As mentioned in the paragraphs above, current age composition of the stock shows a predominance of year classes 2, 3 and 4. Regarding recruitment, following a period with maximum values (1993-2001) the number of recruits (age 1) in the more recent years is somewhat variable, but like those estimated at the beginning of the diagnostic period.

Along with the improvement of the assessment model, new target and limit Biological Reference Points were estimated following international guidelines for similar demersal fisheries. Reference points are based upon the estimated virginial reproductive biomass (BR₀) and the 1985 reproductive biomass (BR₁₉₈₅) formerly considered as the initial condition or virginial stock. With respect to this assumption, analysis of the information showed that there was no evidence to support that BR₁₉₈₅ was the virginial biomass. In fact, there are records of catches at least since the beginning of the 80' and estimation of the BR₀ produced higher values than those corresponding to BR₁₉₈₅.

The following Target and Limit Biological Reference Points were recently established by INIDEP (Giussi *et al.*, 2016):

Target TBRP: $0.4BR_0$ and TBRP: $0.5 BR_{1985}$

Limit LBRP: $0.25BR_0$ and LBRP: $0.3 BR_{1985}$

Where: BR₀ is the virginial reproductive biomass (estimated as 492,240 t) and BR₁₉₈₅ is the reproductive biomass at the beginning of the diagnostic period (*i.e.* 392,360 t).

On the other hand, Canales (2016) estimated that fishing mortality corresponding to MSY was F_{MSY} : 0.3 a value which is higher than the 2015 fishing mortality rate ($F_{2015} = 0.27$), as shown in the Kobe plot presented by this author.

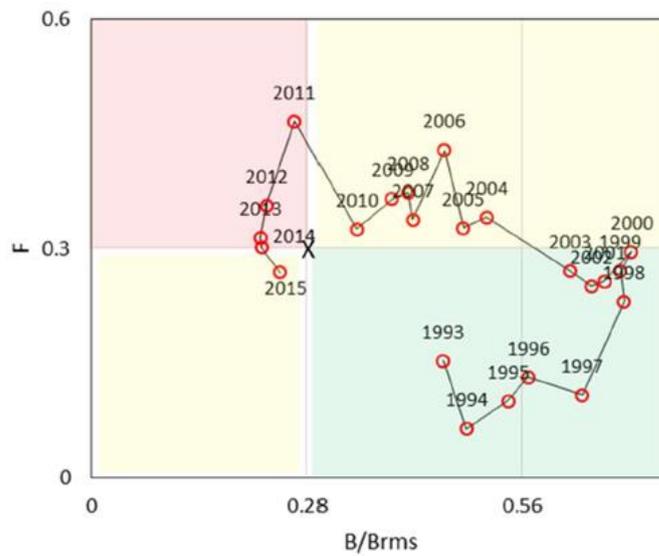


Fig. 3. Kobe plot for the Argentinian Hoki fishery (Source: Canales, 2016)

According to the stock assessment the abundance of hoki (reproductive biomass, BR) in 2015 was 206,312 t (95% confidence limits: 147,250 – 265,370 t) and it was concluded that BR in 2015 was around 42% BR_{1985} and 53% BR_{1985} , which indicates that the stock is close to the target reference points and well above the limit reference points.

The historical trend of the BR is shown in Figure 4 below. A significant and consistent decrease of the BR is observed since 2000, except for 2015 when a light increase occurred.

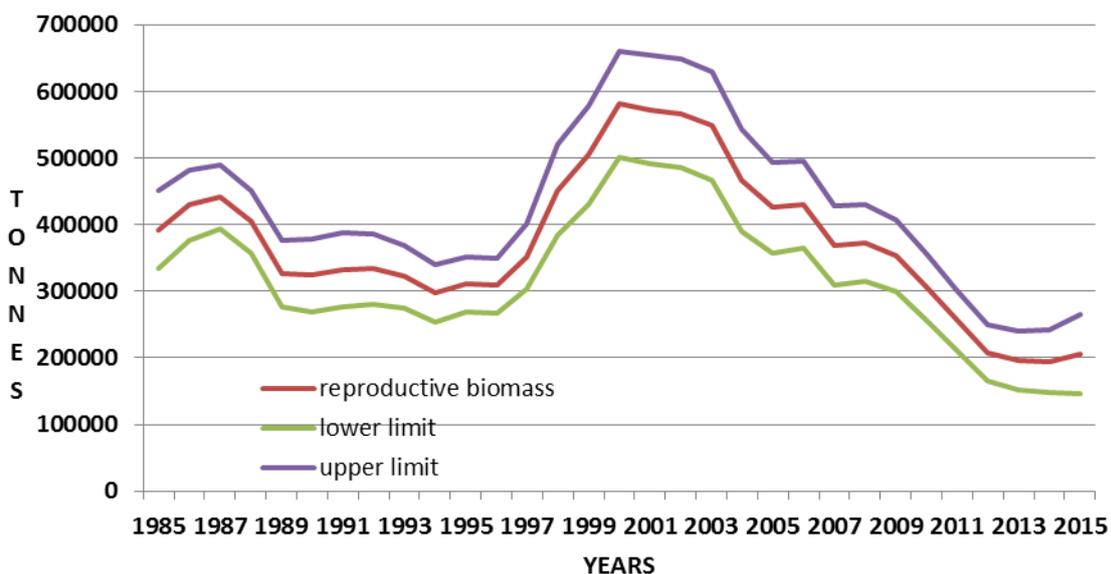


Fig. 4. Historical trend of hoki reproductive biomass (Source: Giussi et al., 2016).

Values of the relative abundance index (t per m^2) and catch per unit effort (t per hour) showed a great interannual variability, but the model predicts a decreasing trend of both indices since the early 2000's.

Based upon the above biomass estimates, the agreed BRP's, different F values (in a 20 years projection) and taking into account two future recruitment scenarios (one considering the entire

time-series and the other considering the most recent years); INIDEP recommended the fishing authority to set a TAC for 2017 in the range of 60,000 to 100,000 t. Giussi *et al.* (2016) explicitly stated that it was expected that the first value would maintain the stock close to the target reference points, while the second would lead the stock closely to the limit levels. The authors also pointed out that catches larger than 80,000 t would cause the reproductive stock to fall below the target BRP's. TAC established by CFP for 2017 was 80,000 t (CFP Resolution N° 18/2016), an intermediate value, which is 40% lower than the one set for 2016 (130,000 t – CFP Resolution N° 13/2015). In the last 18 years (2000-2017) the TAC has steadily diminished from 300,000 to 80,000 t, but the actual catches have been noticeably lower than TAC, not exceeding 84%. Removals carried out by the Argentine fleet over the last 11 years (2005-2015) average 32% (range 26% - 38%) of the estimated annual reproductive biomass (Giussi *et al.*, 2016).

3.4 Principle two: ecosystem background

This section of the report describes the potential impacts of the fishery in the ecosystem. Five key components are considered to describe the complete range of elements in the ecosystem likely to be affected by the UoA. These are:

- Primary species: species where management tools and measures are in place, intended to achieve stock management objectives reflected in either limit or target reference points.
- Secondary species: large variety of species including fish and shellfish that are not managed according to reference points and out-of-scope species (amphibians, reptiles, birds and mammals) that are not ETP species.
- ETP species: endangered, threatened or protected species by national ETP legislation or listing in binding international agreements.
- Habitat: habitats within which the fishery operates.
- Ecosystem: ecosystem elements such as trophic structure and activity, composition of the community, biodiversity.

For each of these components, the assessment team assessed 3 topics:

- Outcome: current status of each component and whether the fishery is posing a risk of serious or irreversible harm to the component or hindering its recovery.
- Management: arrangements in place to manage the impact that the UoA has on the P2 species.
- Information: tracking and data available in terms of information adequacy.

Fishing operations of demersal trawl fleet are based in catch determined by targeting species (*i.e.* hoki, Southern blue whiting and Patagonian toothfish) in a same fishing trip. Fishing practices are different according to each species, including determined fishing area, depth of haul and gear used (*pers. com.* Client Group). Harvesting data are compiled in a database which lists the tonnage of target species caught and the number of bycatch species individuals brought on board during each fishing operation. The Argentine hoki bottom and mid-water trawl fishery takes a variety of species. Commercial species are retained and others are discarded (returned back to sea). These species are registered in logbook reports and are provided to management/scientific authorities.

The specific catch composition in accordance with targeting species hauls of the demersal trawl fishery carried out South 49° S in the Western Atlantic Sea was first reported by Mari *et al.* (2015) and Mari & Giussi (2016). Both reports were based on information collected by Observers on Board upon hauls made by vessels of the Client Group and other vessels conforming CITC's system (Table 1). Nevertheless, during the last years, the analysis included almost only vessels under assessment. A total of 24,788 hauls conducted during 2008, 2010, 2012-2015 were analysed; *Macruronus*

magellanicus was identified as target and accompanying fauna in hauls of other target species, being registered in 76.5% of cases. Fishing operations (hauls) were carried out by mid-water and bottom trawl nets, being the last one the most frequently used (85%).

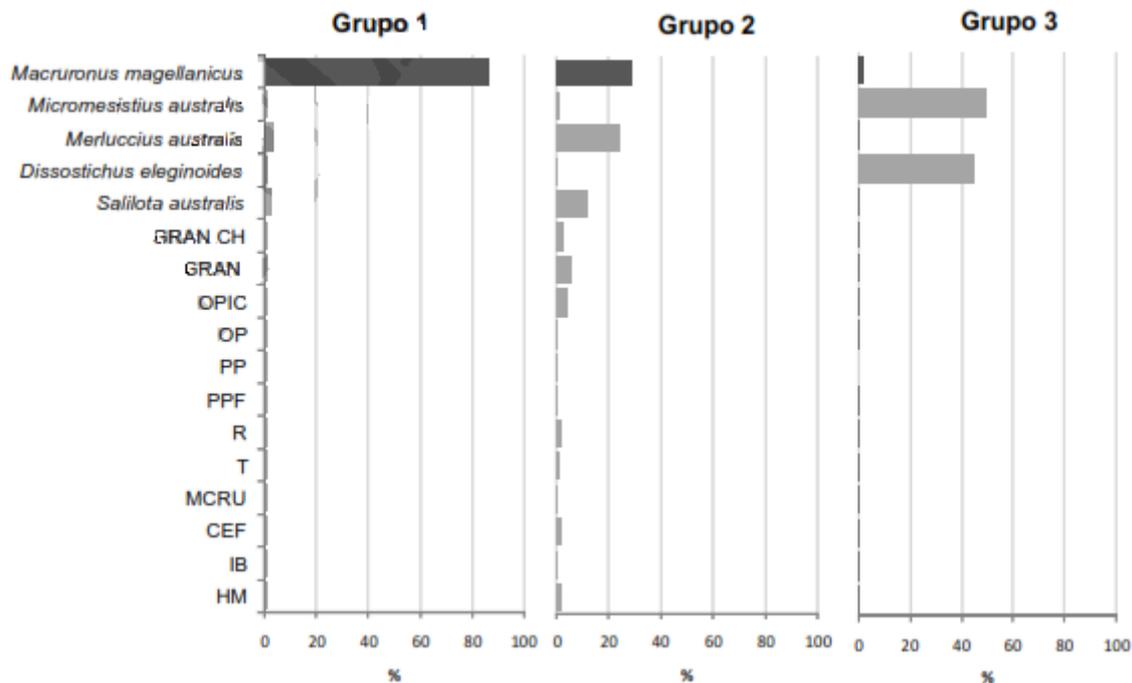


Fig. 5. Taxonomic composition (%) for each survey group. OPIC: Other Fishes of Commercial Importance; PP: Pelagic Fishes; PPF: Rare Fishes; OP: Other Fishes; R: Rays; T: Sharks; CEF: Cephalopod; MCRU: Macro-Crustaceans; OIB: Other Benthic Invertebrates; HM: Hydromedusae (Source: Mari et al., 2015).

According to targeting species and relative predominance of hoki catches, these authors identified two groups of hauls addressed to this species (Figure 5), whose spatial distribution is shown in Figure 6:

GROUP 1 was composed of those hauls in which hoki catch percentage was greater than 50% and fishing practices were addressed to hoki. This group was the most stable through time (in terms of the accompanying fauna) and hoki represented around 80% of the total catch, indicating that this species was the target species. Hoki was accompanied by *Merluccius australis* (less resilient), *Salilota australis* (medium resilience) and *Seriola spp.* (medium resilience) in very low proportions (between 2-4%). The remaining Osteichthyes represented 4%, skates 0.5% and sharks 0.3%. Invertebrates accounted for only 1% of total catch. Fishing operations were carried out mainly with bottom trawl nets (71%) in a wide range of depths (50 to 1,600 m). Mid-water trawls were conducted between 100 to 1,600 m depth.

In GROUP 2, *Macruronus magellanicus* (29%) and *Merluccius australis* (24%) were the main species, followed by *S. australis*, other Osteichthyes, skates and sharks. Invertebrates accounted for 4%. The most frequent fishing gear was bottom trawl net (89%), which was deployed in a wide range of depths.

A third group of hauls were identified in the fishery operations addressed to other species:

GROUP 3 was constituted by hauls addressed to other targeting species, in which hoki was generally very scarce (< 2%), being absent in hauls carried out in 2012 and 2015. This group was initially dominated by Patagonian toothfish (45%) and Southern blue whiting (49%), but since 2012 onwards there was a notable dominance of Patagonian toothfish (91-97%). Mari et al. (2015) determined that

Patagonian toothfish was mostly caught at 800-1,900 m using bottom trawl net; while Southern blue whiting was fished at 200-500 m with mid-water trawl net.

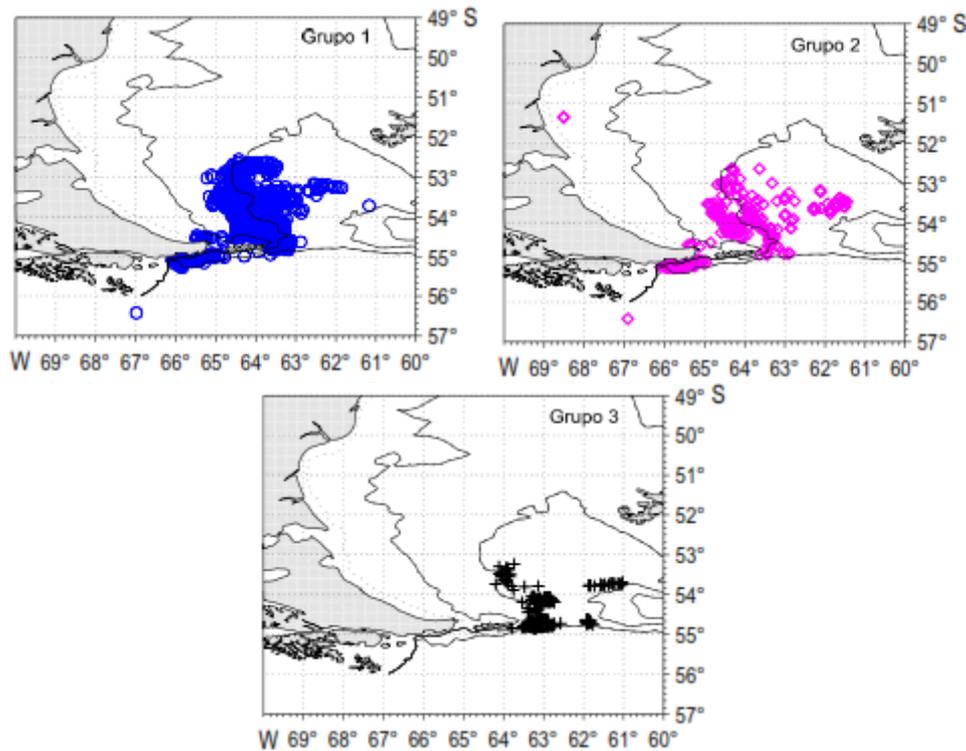


Fig. 6. Fishing operation area during 2013 (Source: Mari et al., 2015).

As stated by Mari & Giussi (2016), since 2012, the fishery related with Group 3 became geographically restricted to a small area located between 54°-55° S, associated with greater depths.

Comparing the relative abundance of hoki (CPUE, in tons/h) between the three studied groups, these authors noted that the estimated mean value in GROUP 3 was much lower than in GROUP 1.

In the context of species grouping, it is important to mention that four vessels of the Client Group have authorization to fish Southern blue whiting and three of them to catch Patagonian toothfish as well. All vessels are managed under Individual Transferable Quotas System. The long-lasting fishing operations performed by the client vessels in the South Western Atlantic may normally shift from one target species to another.

Therefore, the assessment team deems that hauls comprising GROUP 3 do not represent fishing operations targeting hoki and, on the contrary, this species is a minor bycatch of the dominant fishes identified in this group or absent such was recorded during 2012-2015 period. So, GROUP 3 is not assessed according to UoA's definition and occasional hoki caught in this group is separated and not sold as MSC fish.

Unwanted catch (out of scope species) is also registered in the hoki fishery. Researches in Golfo San Jorge and Malvinas' area, have shown that incidental catch of seabirds by trawlers occurs when birds are entangled in the nets (*i.e.* ice-chilled trawlers) and when they collide with probe wires (some ice-chilled trawlers) and trawl wires (ice-chilled trawlers and freezers).

Table 9 summarizes studies carried out to quantify mortality of seabirds by enmeshing and collision in the Argentine hoki fleet.

Unwanted catch rates varied from 3 birds/day in northern Malvinas to 0.04 per fishing haul in the coastal area of Buenos Aires Province. The number of birds caught was estimated annually or in

terms of fishing trip. Diver birds such as *Puffinus griseus* were captured mainly by nets. Although many species collide with wires, not all of them die, but there are some more vulnerable.

It is important to consider that catch rates may be underestimated since not all captured birds are recovered by fishing gear and a large part of them are lost at sea. *Procellariiformes*, the black-browed albatross was the most affected species, although catches of *Diomedea epomophora*, *Macronectes giganteus* and *Macronectes halli* were also observed.

Different operational and environmental factors influenced the contact rate of seabirds with trawlers. For example, the contact rate of *Larus dominicanus* varied in relation with species abundance, while bycatch level, species abundance, wind speed and fishing season influenced the contact rate of black-browed albatross. Also, the number of discards affected the contact rate of other species of seabirds (*i.e.* *Macronectes spp.*).

Regarding marine mammals, Mandiola & Rodriguez (2013) provided a preliminary report indicating that the interaction of this group of species with the fishery is insignificant. Therefore, the assessment team considers that the hoki fishery does not affect marine mammals.



Table 9. Estimation of mortality rate of seabirds related with Argentine hoki trawler fishery (Source: CFP Resolution N° 15/2010).

Fleet	Fishing area	Causes of mortality		Species involved	Associated species	Mortality rates	Estimated number of individual caught
		Capture by net	Collision with wires				
Demersal trawlers	Malvinas Islands	X	X	ACN, PGS, PBB, ARS, PD	ACN, PGS, PGN	0.47-3 birds/day	630-1,529 birds per year
Ice-chilled trawlers	Mid platform	X	X	ACN, PGS, PGN, PBB	-	0.06-0.18 birds/hour	-
Freezer demersal trawlers	Platform South of 42° S	X	X	ACN, PGS, PD, PGN, PBB	PBB, ACN, AE, ARS, PGS, PGN, PD, PO, PC, GC	0.014 birds/fishing haul in net 0.10 birds/fishing haul with wires Birds recovered 0.57 (birds/hour in observed wires*)	-

ACN: Albatros de Ceja Negra; AE: Albatros Errante; ARS: Albatros Real del Sur; GC: Gaviota Cocinera; PBB: Petrel Barba Blanca; PC: Paiño Común; PD: Petrel Damero; PGN: Petrel Gigante del Norte; PGS: Petrel Gigante del Sur; PO: Pardela OscuraMar

(*) It includes birds observed as death, potentially dead and damaged (with no possibility of survival). Actual observations per instructor, derived from 90 days of fishing trips (2 different vessels).

3.4.1 Primary species

Based on the definition described above and the Decision Tree to assist teams in the designation of P2 species components (GSA 3 of FCRv2.0) it is concluded that there are no primary species in the Argentine hoki fishery.

According to the results previously described (Mari *et al.*, 2015; Mari & Giussi, 2016) *Merluccius australis* is an important non-target component of the hoki fishery, but does not meet the requirements to be classified as a primary species. In fact, no limit or target reference points have been defined for this fishery and the only management measure in place is the annual TAC, which is not based upon an analytical stock assessment but on historical landings.

3.4.2 Secondary species

a. Main secondary species

Southern hake or Merluza austral (*Merluccius australis*)

No limit or target reference points have been defined for the fishery of *M. australis* and the assessment team considers that the only measure currently in place (*i.e.* TAC) does not have the merits to state that the fishery is managed. On the other hand, *M. australis* is classified as “less resilient” (fishbase.org) and the catch of this species by the UoA’s comprises $\geq 2\%$ by weight of the total catch. Therefore, *M. australis* meets the requirements to be classified as main secondary species.

The species is distributed in the Southern hemisphere, including waters of Argentina, Chile and New Zealand. In the Western South Atlantic Ocean, it is located south of 50° S between 50 and 600 m depth. This species is characterized by demersal habits and is related, in the Argentine Sea, with cold waters of the Malvinas’ Current, with highest concentrations located between 50°- 55° S.

Otoliths analysis has permitted to estimate an average maximum age of 14 years for males and 18 years for females. Considering the individuals captured in Argentine waters, sexual maturity would be reached at 4 years and at a total length near 60 cm.

Their main preys are hoki and Southern blue whiting (*Micromesistius australis*). Occasionally, it ingests other fish available in the area; with less frequency, it can also consume cephalopods, crustaceans and *Ihlea magellanica*.

A reproductive area for this species has not been detected in the South West Atlantic. Some histological studies suggest that spawning could occur between July and September on the continental shelf, or in waters near Malvinas Island in the spring (Giussi *et al.*, 2014). Based on studies of distribution and abundance of postlarval stages, it is known with certainty that the species reproduces massively in Chilean waters (47° S).

The stock status for *M. australis* was estimated by using an age-structured production model (AD ModelBuilder), which includes observed ages in commercial catches; abundance rate (CPUE); two different values of natural mortality; and biomass data series from 1986 onwards. The stock assessment uses data provided by INIDEP Observer On Board Program, but no research surveys have been conducted in the last years to support it.

Using $M=0.33$ the total abundance would be around 59,000 t and spawning biomass has been estimated at 33,600 t; if $M=0.21$, the total biomass would be around 35,000 t and spawning biomass would reach 21.785 t (Figure 7) (Giussi & Zavatteri, 2016). As previously said, there are no biological reference points calculated for this species.

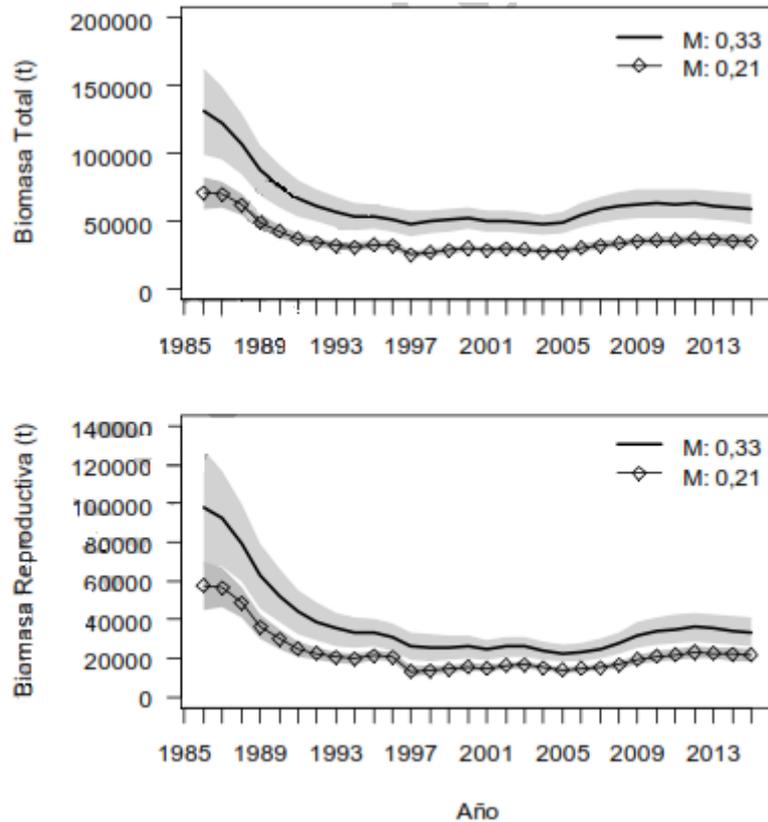


Fig. 7. Time series of total biomass (upper) and spawning biomass (lower) for *Merluccius australis* (Source: Giussi & Zavatteri, 2016).

The latest stock assessment concluded that the biomasses have remained relatively stable since 1992. Catches were composed of individuals older than 3 years, and mostly integrated by the age groups 5 to 7.

Only a few vessels operate directly on this species and, in most cases, southern hake is an accompanying fauna of other relevant fisheries such as Argentine hoki.

Catch levels would seem to have not affected the stock biomass and age structure in Atlantic waters. Because of this, and the absence of warning signs in the abundance index (CPUE) it has been recommended to maintain catches at the same levels of those obtained in recent years, that is 5,000 t (Figure 8).

According to CFP Resolution N° 4/2016, a TAC of 5,000 t was set for 2016 which was based on historical landings. At present, there are no other specific management measures in place for *M. australis*. Since 2014, landings made by Argentinean and foreign fleets that operate in Atlantic waters have been somewhat above the established TAC. There is also, a limited access of foreign fleet information.

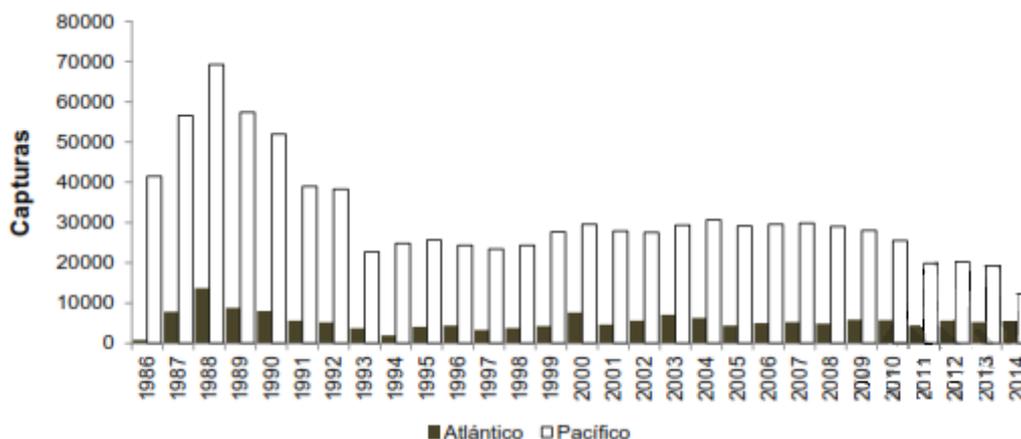


Fig. 8. Landings of *Merluccius australis* in Atlantic and Pacific waters, 1896 to 2014. (Source: Giussi & Zavatteri, 2016)

Other main secondary species

As stated in SA 3.1.4.2 (FCR v 2.0) species that are out of scope (*i.e.* amphibians, reptiles, birds and mammals) but where the definition of ETP species is not applicable, must be assigned as secondary species (and as main species). In addition, when scoring PI 2.2.2 (Management strategy) these species must be assessed as unwanted catch (see SA 3.8.3)

Seabirds

There are a few non-ETP seabird species that are caught incidentally by the Argentine hoki mid-water and bottom trawl fishery. The following species (Table 10) are the most frequent regarding interactions with the fishery, but the weight of their incidental catches does not exceed 1% of total weight.

Table 10. Classification at national and international level of seabirds recorded in Argentine hoki trawler fishery.

Common name	Scientific name	IUCN status	National status by SAyDS Res. N° 348/2010	Convention / Agreement	MSC category
Black-browed albatross	<i>Thalassarche melanophrys</i>	Not T	VU	CMS II & ACAP I	ETP
Kelp gull	<i>Larus dominicanus</i>	LC	Not T	-	MSS
Wilson's Storm petrel	<i>Oceanites oceanicus</i>	LC	Not T	-	MSS
Cape Petrel	<i>Daption capense</i>	LC	Not T	-	MSS
Southern Giant Petrel	<i>Macronectes giganteus</i>	LC	VU	CMS II & ACAP I	ETP
Northern Giant Petrel	<i>Macronectes halli</i>	LC	VU	CMS II & ACAP I	ETP
Sooty shearwater	<i>Puffinus griseus</i>	NT	Not T	-	MSS
Wandering albatross	<i>Diomedea exulans</i>	VU	T	CMS II & ACAP I	ETP
Southern royal albatross	<i>Diomedea epomophora</i>	VU	T	CMS II & ACAP I	ETP
White-chinned petrel	<i>Procellaria aequinoctialis</i>	VU	VU	CMS II & ACAP I	ETP

MSS: Main secondary species; **ETP:** Endangered, threatened or protected species; **LC:** Least Concern; **NT:** Near Threatened; **Not T:** Not Threatened; **T:** Threatened; **VU:** Vulnerable.

Secondary species included in this section are identified in a conservation status of Least Concern (LC). The global population trends of these species are unknown but it is suggested that population declines have not reached threshold levels to categorize these species as threatened (*i.e.* decreases of more than 30% in 10 years or 3 generations, according to criteria of IUCN Redlist). These species have a wide spatial distribution with global breeding populations occupying areas from 50,000 to 1,000,000 km².

The CFP Resolution N° 3/2010 approved the final version of the National Plan of Action to reduce the interactions of seabirds with Argentine fisheries (PAN-Aves) (see Table 13 in section 3.4.3). This PAN includes several measures and actions to protect and minimize the impacts of fishing activities on seabirds.

A review of alternative measures, management and information components concerning seabirds are detailed in section 3.4.3 (ETP species).

b) Minor secondary species

As previously said (Mari *et al.*, op.cit) *Salilota australis* (medium resilience) and *Seriola spp.* (medium resilience) have been identified as accompanying fauna of *Macruronus magellanicus*, but their catches represent a very low proportion of the total harvest (<5%). Therefore, both species are designated as minors.

Patagonian cod or Bacalao austral (*Salilota australis*)

S. australis is distributed in the Southwest Atlantic from 38° S to 55° S, from the coast to the continental slope (Wöhler *et al.*, 2001). In Argentina, there is no target fishery for *S. australis* but it is a retained species of the hoki and kingclip (*Genypterus blacodes*) fisheries.

The maximum size observed is around 80 cm, while maximum age is 16 years. The species reaches the first maturity at 4 years with an average size of 38 cm TL.

S. australis changes its distribution throughout the year. During winter and spring, fishes are most frequent at the northwest area of Islas Malvinas and Tierra del Fuego-Patagonian shelf at depths between 100 and 300 m. In summer and autumn, the species disperses over large areas of the southern Patagonian shelf. Apparently, the migration would be associated with the spawning that occurs during October and November in this area. Its feeding is based mainly on large isopods as well as amphipods and euphausiids.

The most recent biomass estimation is that conducted by Di Marco & Giussi (2014) applying a Global Production Model (Schaefer). The model was calibrated with an abundance index obtained from the Argentine commercial fleet (CPUE in t/hr) between 1998 and 2012. Results of the assessment show that total biomass has continuously diminished since the beginning of the time series reaching a value of 65,577 t in 2013, which represents 57% of the biomass estimated for 2003 (app. 114,800 t). The authors concluded that the stock should be considered at risk of overexploitation.

According to CFP Resolution N° 3/2005, a TAC of 5,000 t was established for 2005. However, this TAC was never renewed or updated. Therefore, at present there is no management measures set for the Patagonian cod. Total landings reported by the Argentinean fleet over the last decade have varied between 8,000 to 2,000 t.

During the last years, catches of *S. australis* made by Argentinean and foreign fleets that operate in Atlantic waters have been significantly above 5,000 t. and even though catches have decreased since 2013, there are no new studies to determine if total biomass has remained stable or is in a process of recovery. Given the incidental catch of the species, it is difficult to establish adequate management measures aimed to the stabilization or recovery of the population.

Silver warehou or Savorín (*Seriola spp.*)

This species is in Southwest Atlantic waters between 35° and 52° S. Silver warehou is described as a pelagic species with gregarious habits in the neritic region and with no relation to the bottom. Although it is an essentially coastal fish (rarely found at depths greater than 100 m) in the northern part of its distribution it is only found near the slope. This arrangement away from the coast may be

related to a reduced capacity to live in waters of high temperature and low salinity as those present in the Front of Rio de la Plata's area.

The maximum size observed is 55 cm in females and 47 cm in males. A maximum age of 10 years has been registered for males and females (Perier & Di Giacomo, 2002).

Seriolella spp. feeds primarily of zooplankton organisms such as euphausiids and amphipods, occasionally small fishes and cephalopods are also eaten.

Seriolella is not a target species of the Argentine fishing fleet, and there are no updated studies on the stock status (latest studies were conducted in 2002). Abundance, stock structure and biological information were obtained from research surveys carried out in 1996 and 1997, landing samplings and fishing activity records.

At present, there are no measures or management rules for *Seriolella spp.*

Other minor secondary species

Osteichthyes

This is a group integrated by 34 species and -taken as a whole- represents 4% in weight of the total catch. However, the assessment team decided not to assess this group since the weight of each species is negligible with respect to the weight of the total catch. The same decision was made regarding invertebrate species.

Chondrichthyes

At national level, statistical information is available on landed volumes of sharks and skates. This data shows the relative insignificance of this group in the total number of landings made by the commercial fleet during the last decades. Catches are performed as bycatch in some important demersal resources such as *Merluccius hubbsi*. Table 11 below shows the species caught during the operation of the Argentine hoki fishery.

Table 11. List of chondrichthyes identified as unwanted catch in Argentine hoki fishery (Source: Mari et al., 2015).

Scientific name	Common name	IUCN status	CITES status	CMS status	MSC category
<i>Rhinoraja magellanica</i>	Magellan skate	DD	-	-	MSS
<i>Bathyraja meridionalis</i>	Darkbelly skate	DD	-	-	MSS
<i>Psammobatis spp.</i>	Sand skate	DD	-	-	MSS
<i>Schroederichthys bivius</i>	Narrowmouth catshark	DD	-	-	MSS
<i>Bathyraja griseocauda</i>	Graytail skate	EN	-	-	MSS
<i>Amblyraja doellojuradoi</i>	Southern thorny skate	LC	-	-	MSS
<i>Bathyraja brachyorps</i>	Broadnose skate	LC	-	-	MSS
<i>Bathyraja cousseauae</i>	Joined-fins skate	NT	-	-	MSS
<i>Rhinoraja macloviana</i>	Patagonian skate	NT	-	-	MSS
<i>Bathyraja scaphiops</i>	Cuphead skate	NT	-	-	MSS
<i>Rhinoraja multispinis</i>	Multispine skate	NT	-	-	MSS
<i>Rhinoraja albomaculata</i>	Whitedotted skate	VU	-	-	MSS
<i>Zearaja chilensis</i>	Yellownose	VU	-	-	MSS
<i>Lamna nasus</i>	Porbeagle	VU	Cited in Appendix II	Cited in Appendix II	ETP
<i>Squalus acanthias</i>	Spiny dogfish	VU	Proposed for Appendix II	Northern stocks cited Appendix II	MSS

MSS: Minor secondary species; ETP: Endangered, threatened or protected species; DD: Data Deficient; LC: Least Concern; NT: Near Threatened

The industrial fishing of these species is made largely by bottom trawling, particularly since 1980 onwards.

Researches carried out in the last 10 years by INIDEP and IBMPAS have advanced in the study and estimation of basic population parameters (*i.e.* growth rate, age at first maturity, fecundity, survival, etc.) of some of the main chondrichthyes species. These parameters applied to demographic models have yielded preliminary results on the stock status and capture recommendations. However, the lack of monitoring these species -classified as bycatch or as part of the varied coastal resources that are subsequently discarded- make it difficult to determine the consequences of this extraction.

The CFP Resolution N° 6/2009 approved the National Action Plan for Sharks (PAN-Tiburones) which includes several recommendations and measures aimed to the protection and conservation of this group of fishes (Table 12 in section 3.4.3).

Management measures

Since 2003, the following specific management measures were established by CFP (CFP Resolutions N° 13/2003, N° 13/2009 and N° 4/2013 and N° 7/2013):

- It is forbidden the chondrichthyan fishery as target species.
- It is forbidden the shark finning practice.
- It is mandatory to return live individuals that exceed the size of 160 cm.
- It is forbidden the use of '*bicheros*' or hooks in discarding process.
- All individual dead by fishing process shall be recorded.
- In case that an individual dead exceeds the size of 160 cm, shall be frozen on board and provided to scientific authorities, except the following species: *Galeorhinus galeus*, *Mustelus schmitti*, *Squatina spp.*, *Squalus spp.* and *Schroederichthys biviuis*.
- It is established a 50% as total landing catch of skates, sharks and *Callorhynchus callorhynchus* per fishing trip.
- It is established a 30% as maximum limit of landing for sharks and skates per fishing trip.
- In case detecting that fishing haul exceeds the limits mentioned above, the vessel shall change the fishing operation area.
- Skates caught in Bonaerense coasts are considered as "coastal skates".
- An observer on board shall be provided by INIDEP to monitor thus vessels that register frequent catches of chondrichthyans (skates, shark and elephant fish).

3.4.3 ETP species

a. Chondrichthyes

As it is described in Table 11, the Argentine hoki bottom and mid-water trawl fishery in Argentine Sea interacts with chondrichthyes that are classified as ETP species by National Legislation (PAN-Tiburones – CFP Resolution N° 6/2009) and binding international agreements. Also, *Lamna nasus* is included in the list of Conservation on Migratory Species (CMS).

i) Outcome

Porbeagle (*Lamna nasus*) presents a wide world distribution covering temperate water of the Southern Ocean and North Atlantic. It is a big species with biological characteristics that make its populations particularly venerable to overexploitation.

This species was categorized by IUCN as “vulnerable” at the global level. It is also included in the Appendix II of CITES and CMS, both approved by Argentina through Laws N° 22.344 and 23.918, respectively. Also, it is currently listed on Annex I of UNCLOS and Annex I of the CMS Migratory Shark Memorandum of Understanding.

Waessle & Cortés (2011) found that most individuals captured incidentally correspond to those between 150/160 cm and 180/190 cm, with a higher percentage of females (predominance during summer, autumn and winter) than male (spring).

The CFP Resolution N° 4/2013 states that sharks greater than 160 cm must be returned to the sea. This measure considers that chondrichthyans, in general, and big sharks as *L. nasus*, present high post-capture survival.

Moreover, Cortés & Waessle (2014) determined that the bycatch of this species has a high seasonality that is related to different operational (depth <500 m and increase in trawling speed) and environmental variables, including availability of prey. Between 2006 and 2012, the catch trend remains stable allowing spatially delimiting critical areas for bycatch. The critical catch areas were located between 61°36'-63°48' W and 54°12'-55°12' S; and between 66°48'-67°24' W and 56°24'-56°48' S. It was estimated that from 2013, the incidental catches by ‘surimeros’ will have decreased, due to being only one vessel operating.

Review of alternative measures

In Argentine waters, chondrichthyes are caught incidentally, mainly by the freezer fleet and factories operating in the southern region of the continental shelf, aimed at catching of hoki (*Macruronus magellanicus*), Southern blue whiting (*Micromesistius australis*) and Patagonian toothfish (*Dissostichus eleginoides*) fisheries. Data provided by observers on board, realize that many sharks captured by these fleets are discarded with low capacity of survival. Pulifiato & Massa (2016) reviewed an alternative measure in the manipulation of the catch that maximizes the possibility of post-capture survival of the great sharks. During two fishing trips carried out in 2014 by austral vessels, it was observed how the crew manipulates the sharks once they arrive on board. In addition, it was assessed with crew members the feasibility of using instruments, such as grids or chains, to avoid the arrival of sharks at the hole and enable their return to the sea, avoiding their mistreatment and death, complying with measures established for the conservation of chondrichthyans. Also, workshops were carried out with crews to spread the problems of these species and good fishing practices (Massa *et al.*, 2015).

ii) Management

The CFP Resolution N° 6/2009 approved the National Plan for skates and sharks, whose overall objective is to contribute at ecosystem management of Fisheries in the Argentine Sea, assess interactions and reduce harmful impacts.

International conventions and treaties

- United Nations Convention on the Law of the Sea (UNCLOS).
- Convention on Migratory Species or Bonn Convention (CMS).
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).
- Convention on Biological Diversity (CBD).

The general objective of PAN-Tiburones is described in Table 12.

iii) Information

The monitoring of incidental catch has been performed since 2004. In Comisión de Seguimiento de la Pesquería de Variado Costero, it is requested at CFP to have observers on board and to coordinate their shipment in the coastal fleet to obtain reliable and continuous information of chondrichthyes (CFP Resolution N° 4/2013). INIDEP instructed at OBO Program to carry out actions and methodologies required for proper quantification of bycatch species and implement them during fishing tasks. CFP requested at SAYS to sign agreements with research institutions to ensure the analysis of data obtained by OBOs (CFP Resolution N° 6/2009).

As it is described in sections 3.4.1 and 3.4.2, identification and quantification of ETP species are systematically carried out by INIDEP OBO Program and SSPyA authorities in the landing process.

In the last workshop carried out in May 2015, it was analysed the progress of PAN-Tiburones objectives Information about objectives is provided in www.agroindustria.gob.ar.



Table 12. Specific objectives related with PAN-Tiburones (Source: http://www.cfp.gob.ar/prensa/Apendice_PAN-TIBURONES-Revision_2015.pdf).

Action	Institutions involved / responsible
To deepen the knowledge of chondrichthyans and other fisheries those affect these species, within the framework of ecosystem approach.	
To deepen the knowledge of biological and population aspects of chondrichthyans.	Research and academic entities
To assign priority of these species in scientific research plans, through promotion by Ministerio de Ciencia y Tecnología (MINCYT), universities and scientific research institutions, incorporating studies of marine and freshwater chondrichthyans, in order to ensure the corresponding fees.	CFP, SSPyA, SAyDS, provincial managements, research and academic entities
Coordinate scientific researchs developed in Argentina between different institutions, in order to optimize human resources and the equipment available to cover vacancy areas avoiding duplication efforts.	CFP, research and academic entities, SAyDS and MINCYT
Promote research campaigns aimed at chondrichthyans and intensify data collection on those species in all jurisdictions, adjacent areas and commercial fishing trips conducted to other species.	CFP, research entities and MINCYT
Incorporate and/or maintain a chondrichthyan expert in research surveys.	Research entities and MINCYT
Evaluate population status of chondrichthyan species subject to fishing exploitation and identify and develop performance indicators for this purpose.	Research and academic entities
To promote the generation of information on those species for which international concern exists of their conservation and/or measures regulating their international trade (<i>i.e. Lamna nasus, Isurus spp.</i> and others).	Research entities and SSPyA
To promote the obtaining of information on the chondrichthyan exploitations in the adjacent area to EEZ.	SSPyA
To maintain up-to-date information on the global exploitation and its possible impact on the Argentinean fisheries.	SSPyA
Promote the analysis and characterization of economic (market, trade measures, economic valuation of resources, etc.) and social (employment, way of life, etc.) aspects	SSPyA, research and academic entities and provincial managements
Expand the information base on artisanal and recreational fishing for chondrichthyans. Create and maintain records and incorporate this information into fishing statistics.	Provincial managements, NGOs and OSC
Promote research lines for the diagnosis and evaluation of recreational of chondrichthyan fishing.	SAyDS, provincial managements, NGOs and OSC
Improve information on catches, effort, landings and trade by species.	SSPyA, research and academic entities, provincial managements, NGOs and OSC
Strengthen information and exchange of methodologies among Observer On Board Program of different jurisdictions through professional, systematic and standardized work with emphasis on catches and manipulation of chondrichthyans.	SSPyA, research and academic entities, provincial managements, NGOs and OSC
Facilitate access to information on the use and biology of chondrichthyans.	CFP, SSPyA, SAyDS, research and academic entities, NGOs and OSC
Promote the implementation of the sampling protocol for minimum coastal data.	Research and academic entities, provincial managements, NGOs,



	OSC, CFP, SSPyA and SAyDS
Contribute to the protection and conservation of biological diversity and the structure and function of the ecosystem.	
Promote scientific studies to establish the community structures and the role of chondrichthyes in the ecosystem, including the development of indicators.	SAyDS, research and academic entities, and provincial managements
Identify and analyse threats (natural and anthropogenic) to chondrichthyan populations and the risk associated with fishing activity.	SSPyA, SAyDS, research and academic entities, provincial managements, NGOs and OSC
Identify sensitive areas as a tool to implement chondrichthyan management measures.	SSPyA, provincial managements, research and academic entities, NGOs and OSC
Establish criteria to categorize the conservation status of the different species of chondrichthyan in the Argentine Sea.	CFP, SSPyA, SAyDS, research and academic entities, NGOs and OSC
Categorize chondrichthyan following the criteria established in the previous action, giving priority to species with commercial value.	SSPyA, SAyDS, research and academic entities, NGOs and OSC
Implement management measures to ensure the conservation, recovery and/or sustainable use of these resources.	
Generate technical information to establish management measures.	SSPyA, provincial managements and research and academic entities
Define the biological reference points, limits and/or target, for sustainable management.	Research entities
Harmonize the management measures and other regulations of industrial, artisanal and recreational fisheries between different jurisdictions.	Provincial managements, CFP and SSPyA
Generate participatory spaces, including fishing sector and other stakeholders, to promote Good Fishing Practices activities and facilitate the implementation of management measures in industrial, artisanal and recreational fisheries.	CFP, SSPyA, provincial managements, research entities, NGOs and OSC
Strengthen the monitoring and fishing activity control in the extraction and marketing phases, promoting the implementation of traceability systems.	SSPyA and provincial managements
Raise awareness of the importance of chondrichthyan in the ecosystem and their vulnerability to exploitation and climate change.	
Promote programs and/or outreach, sensitization, education and training campaigns on the biology, conservation and sustainable use of chondrichthyan for society in general and fishing community.	CFP, SAyDS, provincial managements, research and academic entities, NGOs and OSC
Work from environmental education, formal and non-formal, in the dissemination of Good Practices in the fishing of chondrichthyan.	SAyDS, provincial managements, NGOs, OSC, research and academic entities
Carry out training workshops on Good Fishing Practices with fishermen.	Secretaría de Turismo, provincial managements, NGOs, OSC, research and academic entities
Carry out campaigns of dissemination of good behavior of the fisherman in mass media and in specific businesses for recreational fishing.	NGOs, OSC, provincial managements and research and academic entities
Strengthen programs of observers on board and inspectors through ongoing training programs and awareness-raising on aspects related to conservation and good fishing practices for chondrichthyan.	Research and academic entities, SSPyA, provincial managements, NGOs and OSC.

b. Seabirds

The categorization of seabirds in Argentina, conducted between Secretaría de Ambiente y Desarrollo Sustentable and Aves Argentinas, considers the distribution, degree of protection of species, seasonality, trophic range, reproductive potential, sensitivity, abundance, taxonomy, stocks and body size. The categories considered are: Critically Endangered (CE), Endangered (EN), Threatened (T), Vulnerable (VU), No Threatened (Not T) and Insufficiently Known (IK). According to Table 10, there are ETP species that interact with Argentine hoki fishery.

i) Outcome

Thalassarche melanophrys (Black-browed albatross)

This species is the most abundant in the world, with a total estimated population between 1,000,000 and 2,500,000 individuals. *T. melanophrys* reproduces in 12 different areas; in Islas Malvinas, Georgias del Sur and Sandwich del Sur, Islas Diego Ramírez, Ildefonso, Diego de Almagro and Evangelistas (Chile), Crozet and Kerguelen (France), Heard, McDonald and Macquarie (Australia), and Campbell, Antipodes and Snares (New Zealand). The total reproductive population is estimated in about 530,000 couples, 60% of which reproduce in Malvinas, 20% in Georgias del Sur and the 20% remaining in Chile. Generally, since 1970, these populations have declined significantly with recent rates estimated in some islands of 5% a year. It is estimated for Malvinas' population that during the last two decades has decreased from about 500,000 to less than 400,000 couples. Black-browed albatross feeds mainly on crustaceans, fish, squid and carrion. Population declines have generally been attributed to increased fishing effort of longliners in the South Atlantic. In fact, black-browed albatross is the species most frequently caught by such fishing gear. There are also reports of fatal interactions with trawlers.

Diomedea exulans (Wandering albatross)

The species reproduces in Georgias del Sur (Argentina), Prince Edward (South Africa), Crozet Islands, Kerguelen (France) and Macquarie (Australia). The annual reproductive population is estimated at 8,500 couples, equivalent to 28,000 breeding individuals with biannual reproduction. It is widely distributed in all southern seas. Although most populations are stable or recovering, two colonies show an estimated decline of more than 50%. In general, populations are projected to decline by more than 30% over a 70-year period and are therefore considered vulnerable. Longline fisheries appear to be the main cause of decline in these stocks. *D. exulans* is strongly associated with fishing vessels, highly susceptible to hooking. The population of Georgias del Sur is more associated with fisheries in the South and Indo-Pacific, while Crozet and Prince Edward populations are more vulnerable to pelagic fisheries in the Indian and Australian regions.

Diomedea epomophora (Southern royal albatross)

It reproduces biannually on islands around New Zealand. The population of Campbell Island is estimated between 8,200 and 8,600 breeding couples, equivalent to 17,000 individuals. The species may navigate austral seas although they are most frequently observed in New Zealand and South American waters. It feeds primarily on squid and fish. During 19th century, several populations were affected by the introduction of terrestrial predators. At present, they are frequently caught by Japanese longline vessels. A few individuals die from fisheries in New Zealand, Australia and Tasmania.

Procellaria aequinoctialis (White-chinned petrel)

This species is in vulnerable conservation status since a strong population decline has been observed. However, there is not enough data on population size and few monitoring studies have been done to detect possible changes. Given the massive mortality observed in longline vessels, including vulnerability of species to predation and loss of breeding habitat, the probability of this species exhibiting quickly and substantial population decline is practically imminent. It nests in the Islas Malvinas and Georgias del Sur (Argentina), Prince Edward (South Africa), Crozet, Kerguelen (France), Auckland, Campbell and Antipodas (New Zealand), and possibly Macquarie Island (Australia).

The population was estimated at 2,000,000 couples in Georgias del Sur, several tens of thousands in Crozet, 100,000 to 300,000 couples in Kerguelen and at least 100,000 in Island Disappointment and Antipodes. In Bird Island (Georgias del Sur), there was a decrease of 28% in the last 20 years. Individuals nesting on Crozet Islands feed on both subtropical and southern waters at the ice pack limit in Antarctica. For the population of Georgias del Sur, both during the reproductive and non-breeding period, birds are distributed in waters bordering the nesting sites and widely use the Argentine Continental Shelf. White-chinned petrel feeds on cephalopods, crustaceans and fish. It is one of the most frequently observed species during the winter, associated with longline vessels and trawlers in southeastern Brazil and Argentina, and was practically the only species incidentally caught in the South African hake fishery. In the Atlantic and Indian Oceans, several hundred birds die annually in toothfish (*Dissostichus eleginoides*) fishery. In Australia, more than 800 individuals are caught annually, and in New Zealand is the second petrel more commonly caught by longliners. Among the threats present in some breeding sites (Crozet and Georgias del Sur), rats are one of the main terrestrial predators. In addition, in these sites colonies are degraded due to the erosion generated by populations of *Arctocephalus gazella*.

Puffinus griseus (Sooty shearwater)

A very abundant species, that breeds in islands of New Zealand, Australia, Chile and Islas Malvinas (Argentina). In Australia, there are colonies on 17 islands, all with less than 1,000 couples, in southern Chile there are colonies with more than 200,000 couples and in Malvinas between 10,000 and 20,000 couples. In New Zealand, there are over 80 colonies with a total of about five million couples. The global population is estimated at 20 million birds. Although, this is an extremely large species, there are persistent signs of population decline. In New Zealand, declines of 37% have been reported between 1969-1971 and 1996-2000. The continental colonies of New Zealand are declining and some coastal colonies did not respond to the control of predators. In the Mike Danzenbaker Current 110 California, the abundance of sooty shearwater decreased by 90% in the last 20 years. However, it is unknown whether this is the result of a population decline or changes in the distribution at sea.

Review of alternative measures

Tamini *et al.* (2016) analysed the incidental mortality level on a freezer trawler fleet and the efficacy of mitigation measures aimed at reducing such mortality level. Observations carried out by instructors of Albatross Task Force Argentina between 2012 and 2014 determined a mortality rate of 0.25 birds per tow, including four ETP species: *Thalassarche melanophris*, *Diomedea epomophora*, *Macronectes giganteus* and *Macronectes halli*. Impacts were significantly reduced when using the Streamer Lines (LEPs).

ii) Management

The conservation of seabirds at the national level is regulated by Law N° 22.421 that includes the conservation of wildlife. Secretaría de Ambiente y Desarrollo Sustentable de la Nación (SAyDS) is the implementing authority thereof. In its Article 4°, SAyDS has the competence to categorize wildlife according to the following order: endangered, threatened, vulnerable and non-threatened and insufficiently known species. In concordance with CFP's policies, the fishery management is subject to restrictions set and based on resource conservation to avoid excessive exploitation and to prevent harmful effects on the environment and ecological system unit.

Argentina approved the Agreement on the Conservation of Albatross and Petrels in 2006 by Law N° 26.107 and in 2010 presented the PAN-Aves. There are other international instruments that relate directly to the conservation of seabirds among which include:

- Convention Migratory Species also known as CMS or Bonn Convention.
- Convention on International Trade in Endangered Species of Wild Fauna and Flowers (CITES).
- Convention on Biological Diversity.
- Convention United Nations of Law of the Sea (UNCLOS).
- Convention International to Prevent Pollution from Vessels.
- Convention on wetland of international importance.
- Agreement to promote compliance with International Conservation and Management Measures by Fishing Vessels of High Seas (Compliance Agreement).

The general objective of PAN-Aves is to reduce the interaction between seabirds and fisheries in Argentina (Table 13).

Management measures

In the first workshop aimed to follow PAN-Aves objectives (2012), it is suggested the use of Streamer Lines (LEPs) in the trawl wires of freezer vessels to reduce the unwanted catch of seabirds.

According to CFP Resolution N° 3/2017, the following specific management measures were established:

- All freezer vessels with bottom trawl net shall implement two streamer lines (*i.e.* one in port and other one in starboard).
- Streamer lines (LEPs) shall be used in the moment when otter boards are submerged until the beginning of the overtuning of the net in each fishing haul.
- Technical specifications are described in Annex I, II and III of CFP Resolution N° 3/2017.

This resolution will come effective on May 1st, 2017, it will be applied voluntarily until April 30th, 2018, and mandatory from this date.

iii) Information

The monitoring of incidental catch has been performed since 2001. According to the CFP Resolution N° 3/2001, INIDEP instructed OBO Program to carry out actions and methodologies required for proper quantification of bycatch of reptiles, birds and marine mammals and implement them during fishing tasks. Also, provincial jurisdictions have in place a registration system of bycatch. CFP requested at SAyDS to sign agreements with research institutions to ensure the analysis of data obtained by OBOs (CFP Act N° 22/2001).

As it is described in the section 3.4.2 Secondary Species, identification and quantification of ETP species are systematically carried out by INIDEP OBO Program and SSPyA authorities in the landing process. Since certification (2012), the monitoring of interactions of the fishery with seabirds and marine mammals is temporally compiled.



Table 13. Specific objectives related with PAN-Aves (Source: <http://www.cfp.qob.ar/prensa/PANAVES.pdf>).

Action	Institutions involved / responsible	Deadlines
Collect reliable data by observers on fishing vessels or through other methods to determine the nature and extent of seabird interactions with fisheries.		
Maintain and/or increase the existing level of coverage on incidental catch and other interactions including other fisheries not studied yet.	INIDEP, CONICET, UNMDP, UNPA and provincial managements	Medium
Improve and standardize protocols to evaluate incidental catch taking into account fishing effort and fishing gears.	INIDEP, SSPyA, SAyDS, provincial managements, CONICET, UNMDP, UNPA and OSC	Short
Implementation of protocols.	CFP	Medium
Ensure financing of OBOs Program.	CFP, SSPyA and provincial managements	Short
Minimize injuries of bycatch of seabirds using technical advances and current fishing gears, considering economical implications of mitigation measures to be adopted.		
Technical assistance to Management Authority to make possible the implementation of mitigation measures and monitoring.	CONICET, UNMDP, UNPA, INIDEP and OSC	Short
Implementation of measures in accordance with the techniques developed and tested.	CFP, SSPyA and provincial managements	Medium
Promote the best fishing practices considering the use and management of fishing waste and bycatch.	SAyDS and provincial managements	Medium
Training of OBOs and fishery staff. Raise awareness in fishing communities and general public about conservation status of seabirds and threats looming over them.		
Promote and coordinate educational programs related to species identification, samples, mortality rates and bird abundance.	INIDEP, SAyDS, CFP, SSPyA and OSC	Short
Training of fishery staff in accordance with needed operations to use mitigation measures.	INIDEP and OSC	Short
Organize educational and outreach campaigns in the media, developing outreach brochures addressed to community and special groups (authorities, educational community, etc.).	OSC, Government and private organizations	Medium
Strengthen scientific research and its coordination with community		
Promote with Ministerio de Ciencia y Tecnología, universities and other research institutions, research ways related to the interaction of seabirds and fisheries, monitoring marine stocks and other needed studies to implement this plan, ensuring credit lines.	SAyDS, CFP and SSPyA	Medium and long
Promote project developments for the design of feasible mitigation measures applied by fisheries and effectiveness analysis.	SAyDS, CFP and SSPyA	Medium and long
Contribute with updating use maps (birds and human activities), risk maps (interaction), area maps for conservation and pelagic and coastal marine environment management.	CONICET, UNMDP, UNPA and OSC	Medium
Contribute with maximum acceptable levels of bycatch for each fleet. Including: i. population trends versus time series; ii. fishing effort into various strata (time series); and iii. stock models.	CONICET, CENPAT, UNMDP, UNPA and other scientific institutions	Long
Ensure the transfer of scientific information to areas of government decision and fishing sector.	SAyDS and scientific institutions	Continuous

3.4.4 Habitat

The Argentine Sea integrates a big oceanic ecosystem comprising a part of the continental margin of southwestern Atlantic exposed to the ecological effects of fronts generated by currents of Brazil and Malvinas. This environment has as main components: an extensive geological continental shelf, slope and abyssal plain.

Argentinean continental shelf has an exceptional environment. It has an underwater plateau of 1,000,000 km², which makes it the largest in the southern hemisphere. The platform will gradually extend from north to south, reaching 850 km wide south of 50° S and forms a large ecosystem that is distinguished from other similar by its bathymetric features and hydrography.

Hoki has a distribution associated with cold waters of Malvinas' Current and occupy a trophic position like the common hake. The exploitation of Argentine hoki (*Macruronus magellanicus*), mid-water and bottom otter trawl fishery takes place in the Argentinean Exclusive Economic Zone. This region is composed by water bodies of Sub-Antartic (Malvinas' Current - cold and nutrient-rich waters) and Sub-Tropical (Brazil's Current - warm and high salinity waters) origin diluted by continental effluents. Bathymetry and changes in coastline, due to continental contributions and high salinity, give the region an oceanographic and biological complexity.

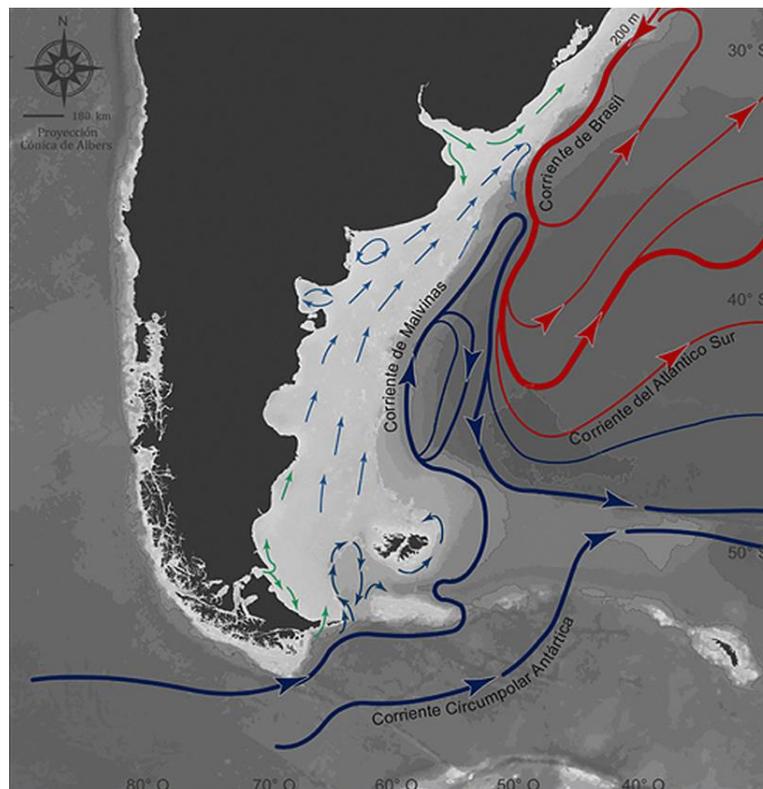


Fig. 9. Malvinas and Brasil Currents in the Argentine Platform (Source: www.alestuariodelplata.com.ar).

Around Islas Malvinas, conditions that allow a very high productivity are associated with an important upwelling of Antarctic waters. The topography of the bottom defines fronts and upwellings, and generates local circulations around Islas Malvinas and Banco de Burdwood. The direct consequence is a high concentration and saturation of nutrients and oxygen.

In the south area of the continental shelf, the entry of cold and nutrient-rich waters from Malvinas' Current occurs during throughout the year. In this area, the main growth factor of phytoplankton is the light penetration, associated with the water column stability. The maximum concentration of chlorophyll is usually observed in spring and summer (Figure 10).

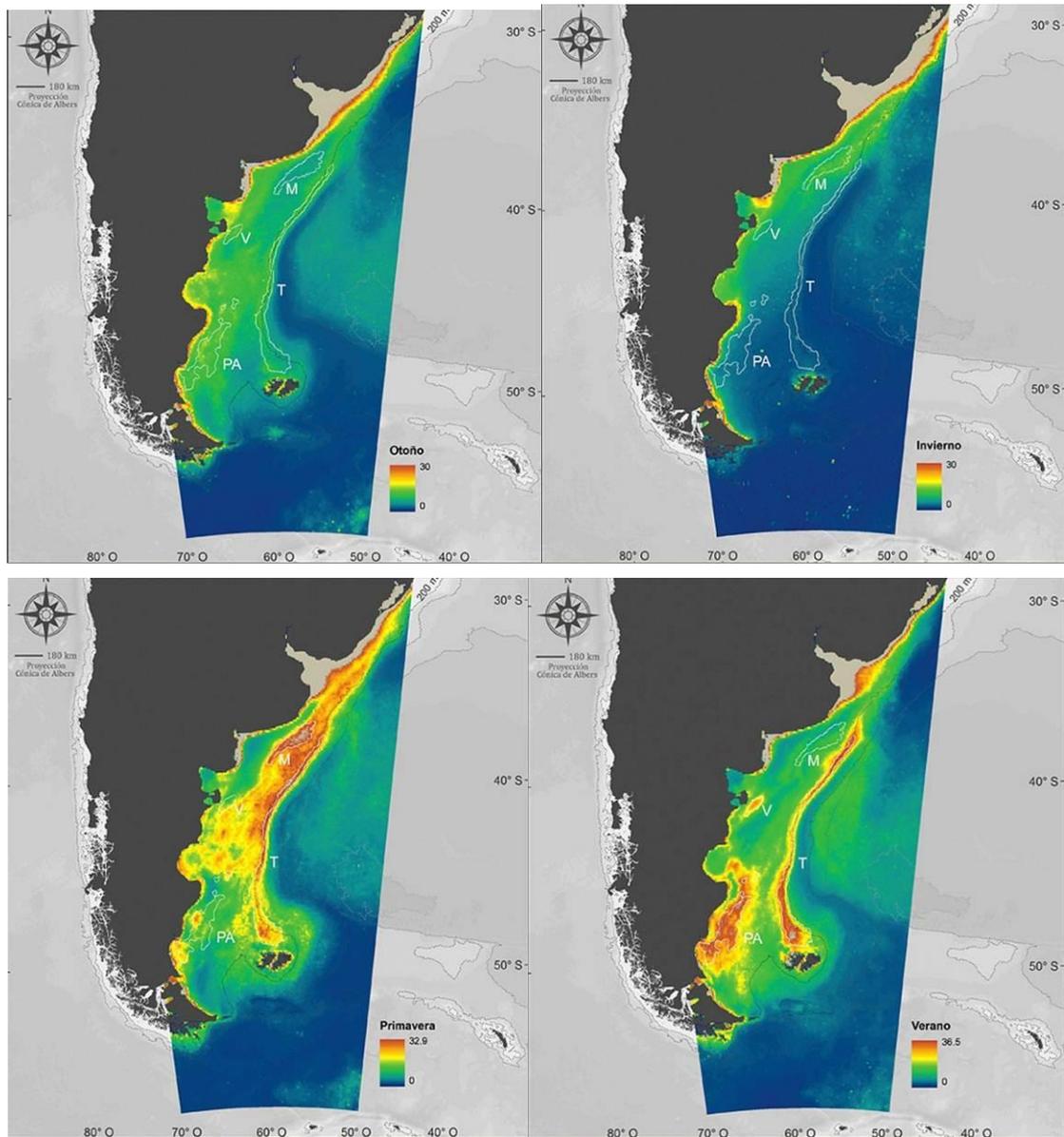


Fig. 10. Chlorophyll concentration in autumn, winter, spring and summer (Source: www.alestuariodelplata.com.ar).

According to species distribution, fronts are a dispersal barrier and define biogeographic patterns of marine organisms. In warm waters near to fronts, phytoplankton is dominated by flagellates and few diatoms. Brazil/Malvinas confluence waters are dominated by diatoms as *Leptocylindrus*, *Pseudonitzschia*, *Rhizosolenia*, *Fragilariopsis*, small *Chaetoceros* and *Odontella*. The dinoflagellates population in this zone is conformed by a mixture of heterotrophic species of cold and subtropical waters. There are also a few autotrophic forms that contribute to the maximum chlorophyll concentration. In surface waters (between 38° and 40° S), it is observed foraminifera as particular species of cold water (i.e. *Globigerina bulloides* and *Neogloboquadrina pachyderma*). The diatom flora of Malvinas' Current (at south of confluence area) is more diverse and it is dominated by cold water species as *Pseudonitzschia*, *Rhizosolenia*, *Fragilariopsis* and *Thalassiosira*, among others.

Gaitan *et al.* (2014) presented a map of main benthic invertebrate groups associated with the UoA between 34° and 56° S. A trend with greater richness per quadrant was observed for bryozoos, benthic amphipods and polychaetes. The highest concentrations of species (>50) were identified in Islas Malvinas and around Tierra del Fuego (Figure 11).

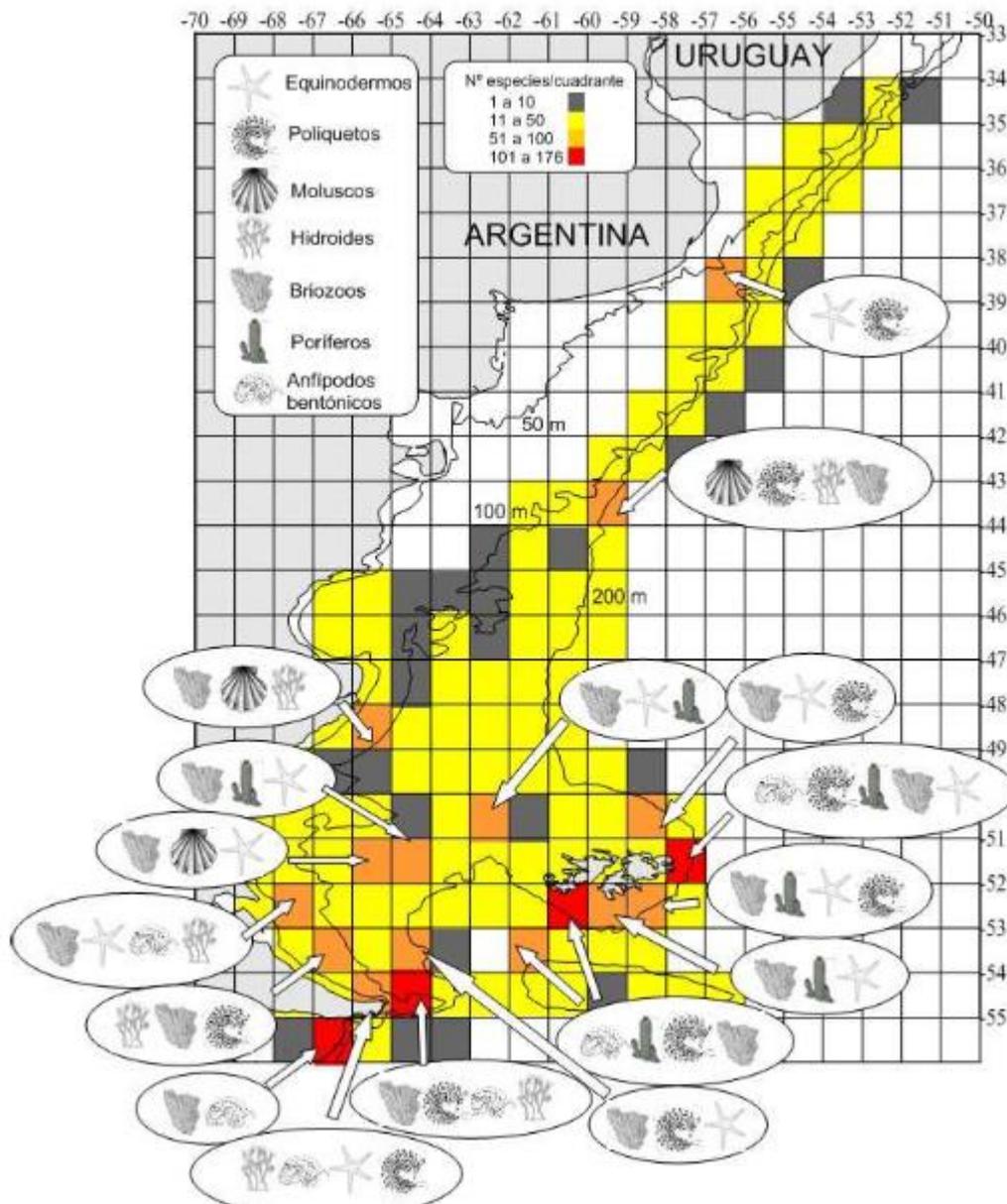


Fig. 11. Total number of species per quadrant throughout the analyzed area. The composition is shown by representative groups in those quadrants with a total number of >50 species (Source: Gaitan et al., 2014).

Gaitan & Escolar (2015) described the benthic invertebrate fauna composition (*i.e.* biota) that comprises the bottom sea in trawling areas (Figure 12). Main samplings are obtained in areas where 87% of fishing hauls were carried out, representing two statistical quadrants (*i.e.* 54°63' and 55°65'). Species richness found in these quadrants is higher than that obtained in a recent compilation of historical information about richness of invertebrates in the sector.



Fig. 12. Contribution (%) (number of species over total) for each phylum (Source: Gaitan & Escolar, 2015).

Even if the number of samplings analyzed has been low and the biomass recorded in samples was low, it determined the presence of different species of *Cnidarians*, *Poriferans*, *Brachiopods*, *Briozoos* and *Ascideaceos*, as well as Chilean basket star (*Gorgonocephalus chilensis*). All these organisms are considered as Vulnerable Marine Ecosystem Indicators (VMEs). Therefore, the effect of trawls where there are significant concentrations of *Z. patagonica* should also consider a possible effect on this associated fauna. This fact, including the presence of the different VME indicators (such as corals, anemones, sponges and Chilean basket star) stresses the need to assess with greater detail the composition of the benthic community in the sector.

The Argentine hoki trawling fishery uses two fishing gears designed to operate in water column and bottom sea. In the case of mid-water trawl net, it is likely to have negligible impact on benthic habitats. The mid-water trawl net described in the previous section rarely encounters the sea bottom as it can be damaged by it, incurring in significant costs to fishers. Furthermore, the fishery operates usually over the same fishing grounds, over bottoms and in offshore areas (Figure 6), minimizing possible impacts in benthic communities.

In the case of bottom trawl fishery, there is considerable debate about its impact on marine ecosystems. The Patagonian Shelf Large Marine Ecosystem (PSLME) is an important fishing area in the Southwest Atlantic where bottom trawling is the dominant fishing method. Two studies highlight aspects related on the nature of fishing effort distribution in general and trawling.

Marine fronts are zones with high primary and secondary production and represent important fishing areas for demersal resources. Consequently, the distribution of fishing fleets and fishing effort are positively associated to frontal zones. Alemany *et al.* (2014) evaluated the relationship between spatial distribution of fishing effort and oceanographic fronts, analyzing three of the most important frontal systems located in the Argentine Sea: the shelf-break front, the southern Patagonia front and the mid-shelf front. They analyzed the spatial distribution of fishing events per type of fleet and the area of oceanographic fronts (defined by satellite system). They found a positive association between fronts and fishing activities of the different fleets (ice trawlers, freezer-trawlers and squid jigger vessels).

Alemany *et al.* (2015) investigated the distribution of bottom trawl fishing within the PSLME, defining the areas of highest trawling intensity (hotspots) and evaluating their relationship with marine fronts. They used vessel satellite monitoring system data from 2006 to 2012. They determined that the spatial distribution of trawling activity is patchy and trawling hotspots were small, comprising annually <5% of the shelf extension or <7% of the total trawlable area. These findings suggest that over the PSLME the magnitude of habitat effects as result of bottom trawling is relatively small.

Finally, VMS data from the fishing fleet is available to the management authorities and there is no evidence that fishing occurred in protected areas.

Argentine fishing management has been establishing the following closed systems to protect living resources and vulnerable marine ecosystems (Figure 13):

- An extensive system of closed permanent and temporal areas for the protection of reproductive process and breeding areas (hake, coastal demersal species).
- An area of permanent closed area in high seas for the protection of vulnerable marine ecosystem (i.e. cold-water corals).
- A system of opening and closing areas using an adaptive management approach for squid, shrimp, scallops and red king crabs.

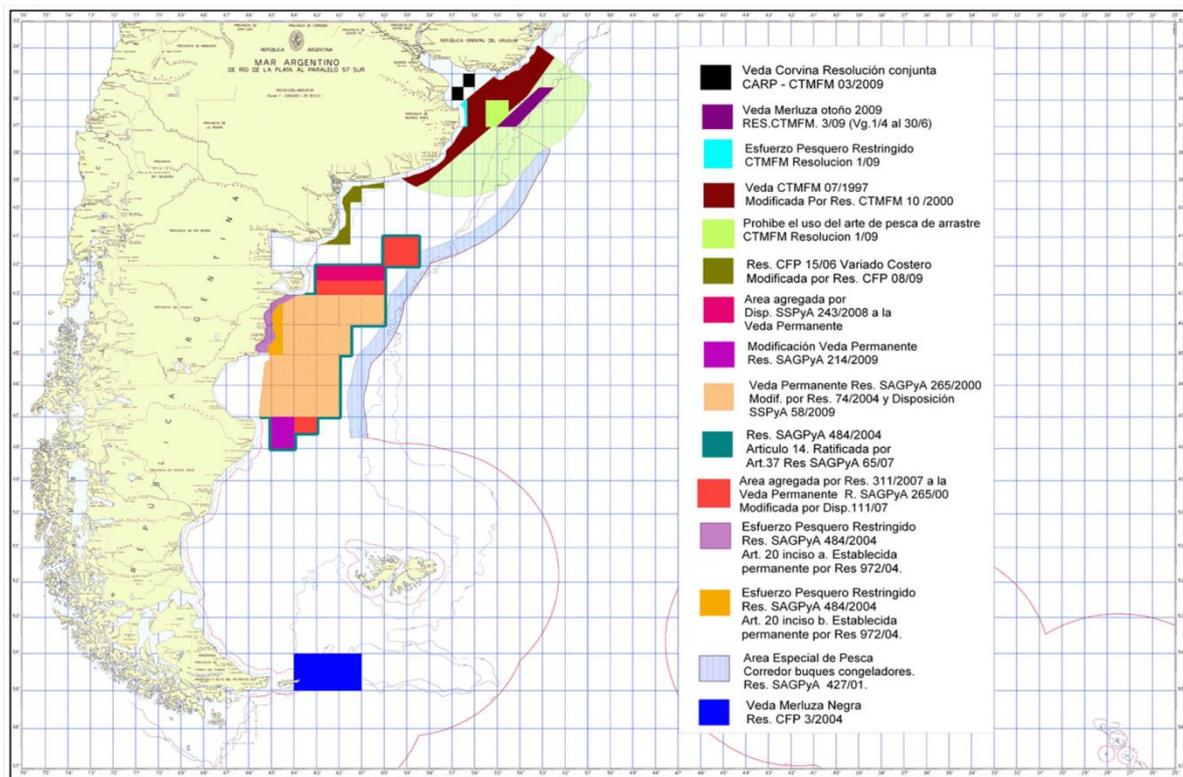


Fig. 13. Closed system areas in the Argentine sea (Source: http://obio.ambiente.gob.ar/multimedia/files/GTRA_Marino.pdf).

3.4.5 Ecosystem

Five fishery ecosystems have been identified (Figure 14) in the Argentine Sea. All of them show latitudinal, bathymetry and amplitude variations as well as different seasonal oceanographic and biological characteristics. It is important to mention that among the geographical areas of these groups, there is no topographic delimitation, due to the presence of species that vary with environmental conditions.

Group N° 2, which hoki conforms is represented by 38 species of resident fish and squid groups, mostly belonging to the benthic (68%) and demersal (21%) assemblages with few pelagic species (11%). The common hake is the quantitatively dominant species in the demersal assemblage. This species is the main predator of hoki. A feature of ecological importance is that species of the demersal assemblage are linked as trophic relationship with the pelagic community. This is evident by a vertical migration of species such as hake, squid and hoki. The most frequently identified species by community are:

- Benthic community: skates and flounder
- Benthic-demersal community: sharks, Southern blue whiting, wreckfish, hawkefish, Patagonian cod and humped.
- Demersal-pelagic community: common hake, Southern hake, hoki, halibut and silver warehou.
- Pelagic community: anchovy.

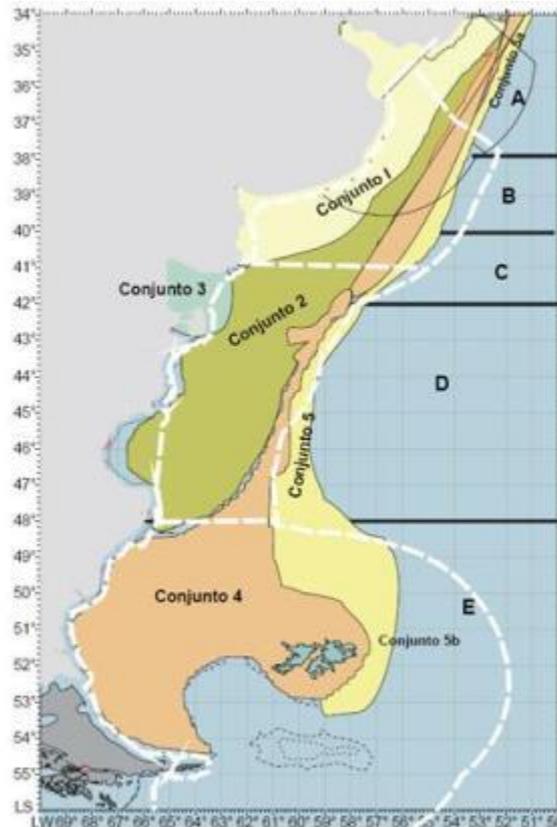


Fig. 14. Fishery ecosystems identified in the Argentine Sea (Source: Sánchez & Mari, 2005)

Group N° 4 placed in the platform from Tierra del Fuego and Patagonia-Malvinas' area, is composed mainly by demersal species such as Southern blue whiting, hoki, hake, Southern common haddock, and Patagonian cod, followed in lower proportions by Patagonian toothfish, grenadier and squid. Hoki becomes a competitive species, being dominant with the Southern blue whiting, while toothfish and Patagonian cod are in second place. This should be considered typical of sub-Antarctic water dominated by species of Gadidae, Macrouridae and Moridae.

Prenski & Angelescu (1993) analysed the possible consequences of intensive fishing on different resources, considering the formation of guilds and their interspecific competition. This analysis highlights that hoki has a remarkable development in trophic as well as in habitat niche, indicating that it has the potential to both feed at different levels and live in different environments. It is probable that allows them to develop large biomass.

Sánchez & Mari (2005) analyzed trophic subsample data from two research campaigns conducted in 1994 in the Southwest Atlantic between 45° and 54° S. The fish community was strongly supported by zooplanktonic crustaceans (amphipods, hyperhidrosis and euphausiids). These are the main food of the species most abundant in the area, *Macruronus magellanicus*, as well as *Micromesistius australis* and *Merluccius hubbsi*. Other major dams in the region were cephalopods (*Illex argentinus*

and *Loligo gahi*), *Patagonothoten ramsayi* and *Sprattus fueguensis*. Benthic macrocrustaceans (decapods, mollusks, isopods, etc.) and polychaetes were major prey for cartilaginous fish.

3.5 Principle three: management system background

3.5.1 Fishery area of operation

The area of operation of Argentine hoki (*Macruronus magellanicus*) bottom and mid-water trawl fishery in Argentine Sea operates within the Argentine Economic Exclusive Zone and adjacent waters from 39° to 56° S (from Tierra del Fuego, Isla de los Estados, Banco de Burdwood and Islas Malvinas to the Common Fishing Zone between Argentina and Uruguay, delimited by Río de la Plata and Maritime Front (FAO statistical area 41)).

As it is described by FAO (<http://www.fao.org/docrep/003/t3740e/T3740E03.htm#ch3.10>), UNCLOS does not use the term "straddling stocks", but Article 63, clause 2 refers to: "the same stock or stocks of associated species [which] occur both within the exclusive economic zone and in an area beyond and adjacent to the zone", and this will be taken as a working definition of the concept of straddling stock in this document. The Fish Stock Agreement, while using the term extensively, does not specifically define it, however, the above definition ("stocks occurring both within and beyond the exclusive economic zone") is used in explaining the meaning of straddling stocks when using some of the other official languages of the Organization.

The concept of straddling fish stock can cover a continuum from most of the fish being inside the areas of the EEZs under national jurisdiction to most of the fish being in an area beyond and adjacent to it, that is outside EEZs (in the high seas). No minimum portion outside or inside has been defined, but usage seems to indicate that if there is some directed fishing effort at catching the stock on either side of the EEZ line, it is straddling.

All fishing operations are in AEEZ, the Argentine hoki (*Macruronus magellanicus*) bottom and mid-water trawl fishery could be defined as straddling stock.

The Ministerio de Agroindustria through Consejo Federal Pesquero is responsible for managing fishing activities in Argentina. The last one is responsible for carrying out this task.

a. National management in Argentine Sea

The Ministerio de Agroindustria organization chart is shown below:



Fig. 14. Updated of organizational chart of Ministerio de Agroindustria (Source: www.agroindustria.gob.ar)

Ministerio de Agroindustria (MA)

Ministerio de Agroindustria (MA) is the national fishing agency of Argentine Government and is responsible for the implementation of the national fishing legislation and resolutions emitted by Consejo Federal Pesquero (CFP). Some of its responsibilities are specified in the Law N° 24.922 and are:

- Conduct and execute the national fishing policy, regulating exploitation, control and research;
- Conduct and execute objectives respecting technical and scientific investigation of fishing resources;
- Control the maximum licensed catch established by CFP and issue annual quotas of catch per vessel, species, fishing zone and fleet;
- Issue fishing licenses, prior approval of CFP;
- Calculate the available surplus and establish, prior approval of CFP, restrictions for closed areas or seasons;
- Establish, prior approval of CFP, requirements or conditions that vessels and fishing companies must fulfil to conduct the fishing activity;
- Establish catch methods and techniques, and specification of prohibited equipment and nets, etc., with the advice of INIDEP and in concordance by CFP policies;
- Impose sanctions in conformance with rules, record them and inform to CFP;
- Develop statistical systems for the fishing activity;
- Intervene in bilateral or multilateral international negotiations related to the fishing activity in conformance with the national fishing policy;
- Establish regulations of the fishing record;
- Coordinate payment of catch fees established by CFP;
- Intervene in benefit grantings for fishing sector;
- Intervene in investment plans that require or count on specific international/national financing entities;
- Establish and implement necessary and sufficient control systems to monitor the catch in the territorial sea and EEZ and check the fulfilment and truthfulness of the affidavits of catching.

Secretaría de Agricultura, Ganadería y Pesca (SAGyP)

SAGyP, through its Subsecretaría de Pesca y Acuicultura (SSPyA), is responsible for conducting and executing national fisheries policy established by CFP. SAGyP conducts and executes scientific and technical research objectives and needs, controls total allowable catches (TAC) by species, issues quotas according to the guidelines set by the Council, collects royalties, establishes and implement control systems to determine catches in the territorial sea (AEEZ), monitors landings in authorized ports, carries out sanction regime, checks the accuracy of fishing reports and promotes the consumption of national seafood products both domestically and internationally.

Subsecretaría de Pesca y Acuicultura (SSPyA)

Main objectives of SSPyA are:

- Propose and implement, within the Law N° 24.922 frameworks, its amendments and supplementary national policies for the effective protection of national interests related to wild capture and the fishing sustainability against the rational use of living marine resources.
- Propose and implement policies to manage continental fisheries.
- Coordinate management actions for protection and cultivation of living aquatic resources, aimed at their conservation in the long term with national and provincial authorities.
- Assist in benefit provisions from sectorial promotion or grant awarded to fisheries and aquaculture.
- Intervene in all fish health matters.

- Participate in negotiations on setting the tax and customs policies and foreign trade linked to the fisheries sector, in coordination with relevant agencies.
- Coordinate work relating to fishery records.
- Attend in granting fishery allocation prior approval of CFP and assist in approval transferring licenses for fishing vessels.
- Provide, as appropriate, the immediate suspension of fishing permits when the vessel arrives to port and any other needed action, when there is a serious violation and penalty, resulting from infringement of current regulations.
- Propose closed areas, fishing seasons and/or reservations and delimitation of fishing areas based on specific technical reports, prior approval of CFP.
- Propose requirements and conditions to develop marine fisheries, including capture methods and forbidden and permitted techniques with the advice of INIDEP.
- Control TACs and the issuing of annual catch quotas per vessels, prior approval of CFP.
- Attend SAGyP in international negotiations, working on efforts related to the expansion of activity areas for the national fishing fleet and improve management of species.
- Propose measures to regulate the exploitation activities, culture, monitoring and research in areas under national jurisdiction and in adjacent waters to EEZ.
- Review industrial development in accordance with environment.
- Propose and implement measures to regulate transportation of fish products.
- Review the policy requirements on fisheries and aquaculture.
- Approve scientific and technical information dissemination through means deemed appropriate.
- Support relationships between Ministerio de Agroindustria, INIDEP and federal administration.

Dirección Nacional de Coordinación Pesquera

Its primary responsibility is to understand the control and management of fishing activities within the framework of current legislation.

Dirección Nacional de Planificación Pesquera

Its responsibility is to integrate scientific and technical information to facilitate decision-making for management measures, management and expansion of the sector, implement in the short, medium and long term, developing permanent fishing statistical systems.

Consejo Federal Pesquero (CFP)

CFP is composed of representatives of the Nation and Provinces seaboard. Its main functions are: national fisheries development plan and establish its national fisheries policy and research; set the Total Allowable Catch (TAC) by species; approve fishing permits; establish mining rights; set fees for the exercise of fishing as well as to regulate and set the rules for the system of resource management by catch quotas. CFP minutes and its decisions (through resolutions and proceedings) are published on its website (www.cfp.gob.ar).

Responsibilities are described in the Law N° 24.922 – Article 9°:

- Establish national fishing policies and fishery research.
- Set TACs by species, considering maximum sustainable yield according data provided by INIDEP. Also, establish annual catch quotas per vessel and species, fishing area and fleet, empowering in

Article 27°, CFP regulates and dictates the necessary rules to establish the regime of administration by quotas of catch.

- Approve permits to carry out experimental and commercial fishing.
- Advise to Application Authority in international negotiations.
- Plan national fisheries development.
- Establish guidelines of co-participation in Fondo Nacional Pesquero (FO.NA.PE).
- Develop rules on experimental fishing.
- Establish exploitation rights and set fees for fishing activities.
- Regulate artisanal fishing activities, establishing a reserve fishing quota for species.
- Establish issues considered by CFP requiring qualified voting of members.
- Establish own operational rules with approval of members.

INIDEP

Its missions and functions are to formulate, implement and monitor research projects in exploration, assessment and development of fisheries, aquaculture technologies, fishing gears, processes and economy, according guidelines and priorities established by enforcement authority.

Is the scientific institution that advises CFP in determining TACs per species, experimental fishing, stock status, plan design or application of management measures and coordinate scientific and technical activities in the assessment and conservation of national marine living resources. Institutional activity and technical documentation produced serve as a basis for decisions of the enforcement authority. Technical reports are provided in the website (www.inidep.edu.ar).

It is implemented the Observers On Board Program, whose general objective is the coverage of fishing activities on board vessels in order to obtain scientific data to assess for ecological system in operation to assist the development of sustainable fishing.

According SSPyA Regulation N° 9/2008, INIDEP provides technical accreditation to individuals who meet the qualification and training necessary to perform the following tasks:

- Monitoring and measurement of fishing gears.
- Collect sample data and observations during fishing operations.
- Any additional task that INIDEP can determine to improve fishing activities.

Ministerio de Relaciones Exteriores y Culto

It is responsible of foreign policy aspects in fisheries and environmental issues related with this activity and represents Argentina in international forums. It also understands the negotiation, interpretation and implementation of international instruments regulating fishing activities and those related to environmental issues. Moreover, promotes in international trade of fish products and exportations linked to the national fisheries.

Secretaría de Ambiente y Desarrollo Sustentable (SAyDS)

In relation to environmental issues, Secretaría de Ambiente y Desarrollo Sustentable (SAyDS) de la Nación is the enforcement authority of the General Environmental Law N° 25.675, whose objectives are: to ensure the preservation, conservation, recovery and improvement of the quality natural and cultural of environmental resources; promote balance and dynamics of ecological systems; ensure the conservation of biological diversity; and establish a federal system of interjurisdictional

coordination for the implementation of environmental policies at national and regional level. This law provides a framework for the preservation and conservation of natural resources and involves society in activities of prevention of deterioration, preservation and restoration of the environment.

Servicio Nacional de Sanidad y Calidad Agroalimentaria (SENASA)

SENASA is a health agency whose main objective is the inspection and certification of products and by-products of animal and vegetable origin. Also, performs tasks of prevention, control and eradication of animal diseases, including those transmissible to humans. Develops standards and compliance controls, ensuring the implementation of the Argentine Food Code, within the international standards required. SENASA carries out the monitoring of factory vessels and processing plants and packaging, transport and marketing of fishery and aquaculture products. Additionally, controls the federal traffic, imports and exports of products, by-products and derivatives of fishing origin or culture. Regulation of product, by-product and derivative of animal origin products are approved by Federal Decree N° 4238/68.

Prefectura Naval Argentina (PNA)

The national fishing authority coordinates with Prefectura Naval Argentina (PNA), under Ministerio del Interior, the adoption of all needed measures to ensure control and surveillance of fisheries. In line with current legislation, PNA exerts patrol tasks related to fishing activity as auxiliary police. It is also the agency responsible for granting the registration number assigned to fishing vessels that have national flag and controls technical aspects related to the safety of human life at sea, safety and pollution prevention caused by the activity.

3.5.2 Consultation and decision-making processes

The Management System includes consultation processes to obtain decision-making and regularly seeks and accepts relevant information, from the main affected parties, including local knowledge, to inform the Management System by Comisión de Análisis y Seguimiento de la Pesquería de Merluza de Cola (*Macrurus magellanicus*), created in April 2010 through the CFP Resolution N° 5/2010. The Management System demonstrates consideration of the information and explains how it is used or not used.

Comisión de Análisis y Seguimiento de la Pesquería de Merluza de Cola (*Macrurus magellanicus*) is integrated by one representative of the application authority, one of INIDEP, one member for each company having ITQ of the species and two representatives of the ice-chilled vessels that have capture authorization for this species. This Commission shall be an advisory body and shall meet at least twice a year (CFP Resolution N° 21/2014). In addition, it shall submit to CFP its summary meetings with the issues and respective conclusions.

The consultation process provides the opportunity to all interested and affected parties to be involved, and facilitates their effective engagement. The opinions and proposals of the Comisión de Análisis y Seguimiento de la Pesquería de Merluza de Cola (*Macrurus magellanicus*), are often considered by the CFP prior to taking any decision on the fishery. Any stakeholder may request a hearing with the administration bodies and is heard prior the decision is taken.

Explanations are provided for any actions (or lack of actions) associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activities. These are released in INIDEP's Technical Reports. These reports are referred to CFP and its reception published in its meetings' records.

The maximum allowable catch (TAC) of the species is determined annually by CFP, according to the reference values suggested by INIDEP. Likewise, capture controls will be performed by species. Once the TAC has been reached, the fishery will be closed to fishing.

The CFP Resolution N° 22/2012 establishes the measures that make up the Management Plan of the species specified below in point 3.5.3.

Catches shall be made with bottom and mid-water trawl.

Furthermore, CFP establishes the penalties for non-compliance, according to Law N° 24.922.

3.5.3 Objectives for the fishery

The Federal Fishing Law N° 24.922 (Article 1°) establishes that Argentina will foment the practice of maritime fishing in function of a maximum development compatible with the rational exploitation of living marine resources, will promote the effective protection of national interests related with fishing and the sustainability of the fishing activities, the long-term conservation of the resources, the development of industrial processes environmentally appropriate to reach the maximum added value and the maximum Argentinean employment. These minimal premises must be complied by all fisheries in Argentine waters, due to mandatory statement for the whole fishery system, and particularly, for the administration system, which task is to design management policies to achieve the Law objectives.

The concept of Maximum Sustainable Yield (MSY) included in the mentioned Law is expressed in its Article 8° of its Regulatory Federal Decree N° 748/99: 'It must be understood as Maximum Sustainable Yield (MSY) of a desired species, the maximum biomass that can be captured annually without affecting its conservation.

Additionally, other sections of the Federal Fisheries are related with preventing excesses on exploitation and the sustainable utilization fishery resources:

-Article 17°, by prescribing that fishing in the whole Argentine maritime jurisdiction will be subjected to restrictions established with the objective of avoiding exploitation excesses.

-Article 21°, by banning every method, technique, equipment and fishing gear that may cause damage on the live aquatic resources.

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

-Article 37°, related to the access of fishing activities in the maritime areas under Argentine jurisdiction to fishing vessels of foreign flag. This article indicates that determination of the capture fishing capacity by the Argentine fleet to estimate the available biomass for foreign fleets, could only be done considering biologic features of the exploited resource, and not considering normal cyclic reductions on fleet common in fishing activity nor due to specific situations or extraordinary events that could have affected the operation of a fleet.

Incorporating an adaptive criterion, both operational and long-term measures were implemented in the AEEZ. In 2012, it was established the Management Plan for Argentine hoki fishery (CFP Resolution N° 22/2012).

-Article 3°, the TAC of the Argentine hoki species (*Macruronus magellanicus*) will be established annually.

-Article 4°, vessels entitled to catching Argentine hoki (*Macruronus magellanicus*), which have a surimi processing plant may do so only operating in 49° S.

-Article 5°, trawl nets shall have a mesh of 120 mm.

-Article 7°, the minimum catch size of the species is set to 60 cm of total length.

-Article 9°, it is mandatory to incorporate one scientific observer on board (provided by INIDEP) in fishing operations.

-Article 10°, it is mandatory to incorporate an inspector on board or the monitoring and control instruments that the Enforcement Authority establishes for this purpose.

-Article 12°, vessel crews must carry out training activities established by CFP, within the framework of “Plan de Acción Nacional para reducir la interacción de aves con pesquerías en la República Argentina” (PAN-Aves) and “Plan de Acción Nacional para la conservación y el manejo de conductos (tiburones, rayas y quimeras) en la República Argentina” (PAN-Tiburones).

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

The precautionary approach is established by the Argentine fisheries legislation by means of the prescriptions present in Article 17° of the Federal Fisheries Law N° 24.922, which establishes that “Fishing activity throughout all maritime areas under Argentine jurisdiction, will be subjected to restrictions set by CFP for the conservation of resources, in order to avoid excesses of exploitation and prevent damages over the environment and the ecological system unit”. Issues related with the conservation of fisheries resources can be also found in Articles 1°, 21° and 27° of the Federal Fisheries Law 24.922 and in Articles 1° and 12° of its Regulatory Decree N° 748/99.

The precautionary approach is also present in the stock assessment models and in the technical recommendations of biologically acceptable capture, as result of the uncertainty surrounding recruitment of new individuals. TACs are established considering biomass and reproductive biomass recovery in the long term.

CFP Act N° 49/2009 and CFP Resolution N° 22/2009 dated on December 12th, 2009, determined the application of Individual Transferable Quota System (ITQ's) in the Argentine hoki fishery, established for a period of 15 years as it is indicated by the General Regime of Quotas (Article 8° of Annex I of CFP Resolution N° 10/2009) and sanctioned in the specific regime of administration, after updated and ordered in the Annex to CFP Resolution N° 2/2013.

-Article 3°, it is set the maximum percentage of CITC (ITQ) per fishing company or business group of 15% of TAC.

-Article 4°, it is established a conservation rate of 10% of the TAC and management reserve of 8% of TAC.

-Article 8°, it is empowered the Enforcement Authority, through the Dirección Nacional de Coordinación Pesquera (DNCP), to calculate annually, based on the TAC, the volume in t of each Individual Transferable Quotas (ITQ).

-Article 9°, it is established different percentages of extinction of the ITQ for lack of exploitation. Through CFP Resolution N° 1/2017, the percentage of use of the ITQ was lowered from 90% to 55% for 2016, as specified in paragraph b) of this article.

-Article 10°, it is established that the receptor of the initial allocation or the ITQ Reassignment Fund, or the annual allocation of the Administration Reserve, shall pay a fee for the allocation.

-Article 11°, it is established the basis of calculating the fee by allocation of the Reassignment Fund or the Reserve of Administration.

-Article 12°, the ice-chilled fleet that has fishing authorization granted by CFP and without ITQ assignment, will maintain the authorization as an objective species. Such catches shall be deducted from the Administration Reserve and shall be exempt from the payment of the fee established in Article 10°.

Data collection of environmental aspects of the fishery during fishing operations is charged of Observers On Board Program. The data analysis and conclusions are charged of Programa Ambiente Marino of INIDEP, which states research objectives.

Objectives for marine bird's protection are established in the National Action Plan for birds (CFP Resolution N° 15/2010).

Objectives for chondrichthyes protection are established in the National Action Plan for chondrichthyes (CFP Resolutions N° 6/2009 and N° 4/2013 and Annex I of Act CFP N° 42/2015).

Objectives for marine mammal protection are established in the National Action Plan for mammals (CFP Resolution N° 11/2015).

Objectives for sea turtles protection are established in the National Action Program for sea turtles (CFP Act N° 37/2016).

The Federal Law N° 25.577 protects cetaceans from any kind of intentional catch. Federal Law N° 25.052 and its complementary Decree N° 598/2003 prohibit catch and commercialization of killer whale (*Orcinus orca*).

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

3.5.4 Monitoring, control and surveillance and enforcement

With regard to the control of the operation on the fleet, SSPyA has implemented the Sistema Integrado de Control de Actividades Pesqueras (SICAP), consisting of: a) Satellite Positioning System of the National Fishing Fleet; b) satellite information of the whole area where foreign fishing vessels outside the AEEZ by Comisión Nacional de Actividades Espaciales; and c) activity monitoring and surveillance by PNA, Navy and Air Force which have surface units (coast guard and corvettes) and air units (aircraft and helicopters) to control illegal fishing. This information is supplemented with control from downloads and on board information. It also features the incorporation of electronic fish and control of activity by cameras on board, not still being implemented yet.

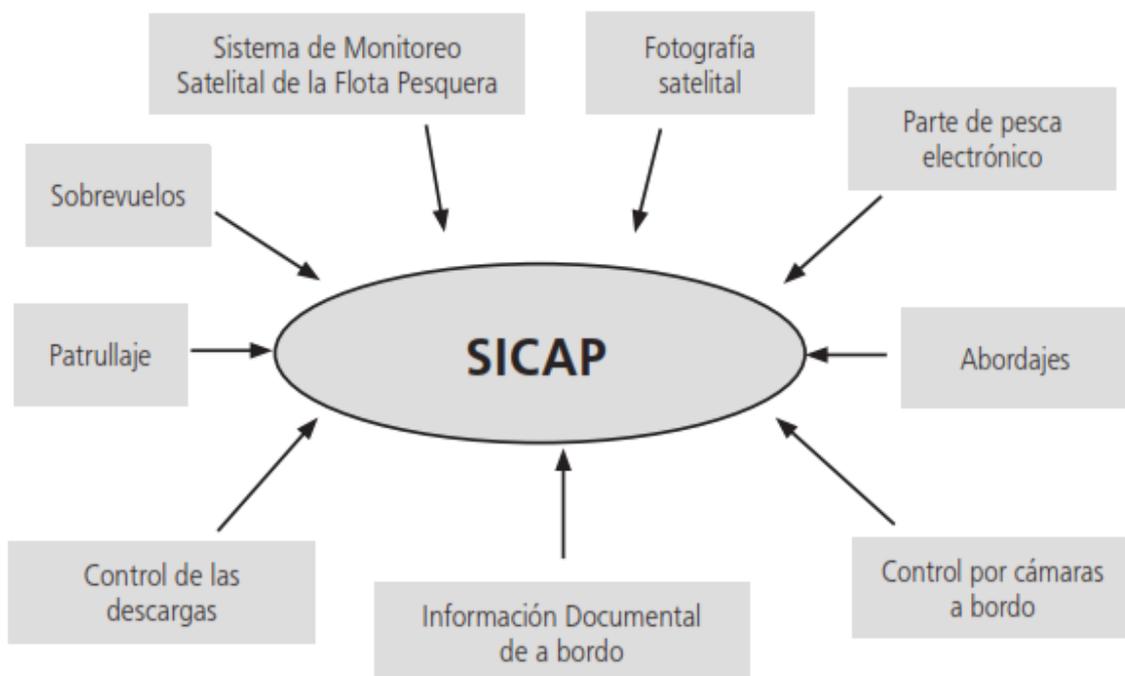


Fig. 15. Sistema Integrado de Control de Actividades Pesqueras (Source: PAN-Tiburones)

The organizations responsible for the control and monitoring of international trade in food products in Argentina are SENASA and Dirección General de Aduanas (DGA).

SENASA is responsible for the inspection and certification of products and by-products of animal and plant health agency, monitoring, controlling processors vessels, processing plants, on land conditioning, transport and marketing of fishery products and aquaculture, besides controlling the federal traffic as well as imports and exports of products, fisheries products and derivatives of origin or culture.

DGA is an organ that is part of Administración Federal de Ingresos Públicos (AFIP) and is responsible for implementing the legislation on the import and export of goods, as well as the traffic control goods entering or leaving in the customs territory. Its main function is to assess, classify, monitor and control the entry and exit of goods, as well as media that are transported, ensuring compliance with regulations.

This institutional framework and tools generated, allow to set the following control in relation to the extracting and marketing of fishery products:

a) Prior to leaving boat:

1. Release for fishing: control of the leaving boat by PNA, through the document entitled “Declaración de Salida”, which contains date and time the vessel is leaving, certificates validity, the crew’s role, whether the vessel does not count with impediments to set sail, has the corresponding fishing permit and target species, the satellite monitoring equipment is in good working order and the inspector is enabled to meet this function by the competent authority.

b) During the fishing trip:

2. Satellite monitoring during trip: as set out in the SSPyA Regulation N° 2/2003, all fishing vessels must have equipment on board satellite monitoring, in perfect working order. The system must inform the ship’s position every hour. If the ship stops emitting its signal for more than two hours space, is immediately ordered to return to port. Regardless, SSPyA office control can perform special individual queries (“polling”) at any time with any questions regarding the position of the vessel. Currently all commercial fleet of more than 13 m length, operating in national waters, has satellite monitoring system. This makes a total of 570 fishing vessels with equipment on board, with an average daily operation of between 225 and 300 ships in about navigation. Twice a day the system information on the SAGyP website is updated.

3. Inspections on board: the inspector prepares “Informe de Control de Marea” and “Actas” if applicable.

4. Fishing acts: the system consists of several affidavits of catches by species and fishing area signed by the master of the vessel. Moreover, the captain prepares a statement with the summary information (“Parte de Pesca Final”), in which the catch is declared by fishing zone across the tide. This portion is scanned by accessing the database and this information is considered for the control of tariffs and quotas. In addition, the captain makes a statement with the information for each set (“Parte de Pesca Lance por Lance”). All documents are delivered in the delegations of Dirección Nacional de Pesca operating in the port where the discharge process is carried out.

c) During the trip:

5. Declaration input: control of port entrance documented by PNA.

6. Monitoring and verification act of discharge: made by dock inspectors in permission by SSPyA.

7. Audit of books plant: each plant recorded in “libros foliados” income and expenses of goods to be processed. Plant books are audited by a veterinarian of the Municipalidad or SENASA as appropriate.

8. Exit control plant: for plant outflow of goods should prepare a “Guía de Tránsito” which according to the destination will have restricted or federal character. It should also be authorized by SENASA drawing up a detailed guide to the origin and destination of goods between authorized institutions (“Permiso de Tránsito Restringido”).

9. Export control: export goods must be accompanied by “Certificado Sanitario de Exportación” issued by SENASA and a “Manifiesto de Exportación (Permiso de Embarque)” issued by AFIP. According SSPyA Disposition N° 174/2015, Sistema de Control de Carga was implemented, also known as Legal Capture Certificate, which is mandatory before DNCP’s request, prior to export requirement (*i.e.* export certificate for hake, toothfish, hoki, Southern blue whiting, scallops, haddock and skates). The issuance of the Legal Capture Certificate linked to the Boarding Permit is subject to the legality of the capture of each fishing trip.

4. Evaluation Procedure.

4.1 Harmonised fishery assessment

At moment, harmonisation process is not required for this UoA.

4.2 Previous assessments

a. A summary of any previous assessments of the client operations and conclusions reached from previous assessments

The Argentine hoki (*Macrurus magellanicus*) bottom and mid-water trawl fishery in Argentine Sea, was certified in May 2012 for the first time as sustainable against Principles and Criteria of MSC by Organización Internacional Agropecuaria (OIA), therefore it is well managed and a sustainable fishery.

The full-assessment was conducted following the Default Assessment Tree of Fisheries Assessment Methodology v2.1 (without adjustments), including Guidance MSC Certification Requirements v1.0. Risk Based Framework methodology was undertaken for the Performance Indicators: 1.1.1 (Stock Status), 2.1.1 (Retained Species Outcome), 2.2.1 (Bycatch Species Outcome), 2.4.1 (Habitat Outcome) and 2.5.1 (Ecosystem Outcome). PIs were scored using Scale Intensity Consequence Analysis (SICA) and Productivity Susceptibility Analysis (PSA), when applicable.

Actions were examined as part of four surveillances that were completed in July 2013, September 2014, August 2015 and November 2016, respectively.

In the first surveillance audit, progress of milestones related with PIs 1.2.2, 2.3.2 and 2.4.3 were identified by the assessment team as BEHIND TARGET. In the second surveillance audit, all conditions came back to ON TARGET. However, in the third surveillance audit, conditions related with 2.2.2, 2.3.1 and 2.3.2 were detected as BEHIND TARGET. The remaining conditions maintained their status as ON TARGET. In the last surveillance, the progresses of conditions established in the certification process were sufficient to comply with the action plan proposed, except condition related with PI 1.2.2. Consequently, the assessment team classified these progresses as adequate and it was concluded that conditions were CLOSED. No non-conformities were found.

Even if the client group elaborated an Action Plan to address satisfactorily the conditions for a period of 5 years during each surveillance process, in the last annual surveillance, the assessment team detected that the condition related with Harvest Control Rules could not be closed, due to time required for relevant research to be funded, undertaken and published by official technical advisor and be adopted by management body (CFP). So, OIA decided that this condition could apply to an exceptional circumstance and extended a period of one year (*i.e.* first certification period) to close it (see Appendix 1.3).

Since the fourth surveillance, there are no other companies interested in sharing the MSC Sustainable Fishery certificate. Only 3 companies decided to continue with the certification process.



b. Details of any conditions that were closed at or between the previous surveillance audits

Condition	PI(s)	Year closed	Justification
Condition 1: the client group must provide evidence that the selection of the harvest control rules takes into account the main uncertainties.	1.2.2	Not yet closed	<p><u>Target and limit reference points are computed and the stock is assessed against them</u></p> <p>The following Target and Limit Biological Reference Points have been recently established (Giussi <i>et al.</i>, 2016b):</p> <p>Target TBRP: 0.4BRo and TBRP: 0.5 BR₁₉₈₅</p> <p>Limit LBRP: 0.25BRo and LBRP: 0.3 BR₁₉₈₅,</p> <p>Where: BRo is the virginal reproductive biomass and BR₁₉₈₅ is the reproductive biomass at the beginning of the diagnostic period.</p> <p>The Argentine hoki was assessed against these reference points (Giussi <i>et al.</i>, 2016b) and it was concluded that the reproductive biomass in 2015 was around 42% BRo and 53% BR₁₉₈₅), which indicates that the stock is close to the target reference points and well above the limit reference points.</p> <p>On the other hand, Canales (2016) estimated that fishing mortality corresponding to MSY was F_{MSY}: 0.3 a value which is higher than the 2015 fishing mortality rate.</p> <p><u>The Biological Acceptable Maximum Catch calculation takes into consideration strictly the reproductive biomass limit and the goal to achieve in a medium-term a target reproductive biomass of 450,000 t, as outlined in the INIDEP Technical Report N° 25/2014</u></p> <p>This issue is no longer valid in its present wording, since Biological Reference Points have changed. TAC established by Consejo Federal Pesquero (CFP) for 2016 (130,000 t) was based upon the technical advice of INIDEP (Giussi <i>et al.</i>, 2015), but this global quota is much higher than the effective catches reported by the Argentine and foreign fleets.</p> <p>It must be noted that changes in the limit reference point that took place in 2016 did not lead to a modification of the TAC (CFP Act N° 8/2016).</p> <p>According to the most recent stock assessment (Giussi <i>et al.</i>, 2016b) the abundance of hoki (reproductive biomass, BR) in 2015 was 206,312 t (95% confidence limits: 147,250 – 265,370 t). Based upon the above information, the agreed BRPs, and considering two future recruitment scenarios, INIDEP recommended the fishing authority to establish a TAC for 2017 in the range of 60,000 to 100,000 t. It is expected that the first value would maintain the stock close to the target reference points, while the second would lead the stock</p>



			<p>close to the limit levels.</p> <p><u>Discussion about rules that will ensure that the exploitation rate is reduced as limit reference points are approached; are performed.</u></p> <p><u>There are discussions of potential harvest control rules towards precaution in years when productivity can be low.</u></p> <p>Even though in the last 15 years the TAC diminished from 300,000 to 130,000 t, there is no explicit evidence that this occurred as result of the limit reference points been approached.</p> <p>INIDEP scientists informed the assessment team during the site visit that no formal discussion had been performed regarding precautionary Harvest Control Rules (HCRs) in years of low productivity, nor about rules that will ensure that the exploitation rate is reduced as limit reference points are approached.</p> <p>Therefore, up to date, no rules or HCRs have been defined or agreed upon.</p> <p>Nevertheless, INIDEP provided the assessment team with a provisional agenda for a training course on stock assessment and fishery management, indicating the main topics to be considered. HCRs and references points are explicitly addressed in the agenda.</p> <p>This training course would be held on 12-16 December 2016 (Mar del Plata) and will be given by two foreign experts.</p>
<p>Condition 2: the client group must provide sufficient relevant information related to the stock structure, stock productivity, fleet composition and other data available to support the harvest strategy.</p>	<p>1.2.3</p>	<p>Year 4 (2016)</p>	<p><u>Estimate of the degree of stock mixing between the South Pacific and South Atlantic distributions.</u></p> <p><u>Estimation on how representative is the South Atlantic distribution stock structure respect to the whole distribution stock structure.</u></p> <p>Studies to determine the existence of one or more hoki stocks in the South Atlantic Ocean continued in 2015 and 2016. By using classic morphometric and meristic tools and samples collected in 2013 and 2014, Gorini (2016) concluded that hoki of the Southwest Atlantic would belong to a unique population group (stock) distributed all around the South America cone. A total of 248 specimens, distributed in three spatially-distinct groups (north, center and south) were analyzed in this study. Although the conclusion is in line with results of previous studies (Jerez <i>et al.</i>, 2013) the author stated that additional research is needed to elucidate the stock structure.</p> <p>On the other hand, the assessment team was informed during the site visit that microchemistry analysis of otoliths is in progress at the Centre for Trace Element Analysis of the University of Otago, New Zealand. This study would help clarify the stock differentiation issue.</p>



			<p>Up to date there is no evidence on the existence of spawning areas in the Southwest Atlantic Ocean and, as stated by Giussi <i>et al.</i> (2016), the available information would support the belief that the reproduction area is in the South Pacific (41° - 46° SL).</p> <p>With the aim to characterize the Argentine population of hoki, Zavatteri <i>et al.</i> (2016a) estimated/updated some important parameters of the species. Based upon samples collected in 2014 during commercial operations, the authors calculated the growth-in length parameters for male and female; mean age at sexual maturity was estimated to be 2.7 and 2.5 years for male and female, respectively and the calculated (total) natural mortality values varied from 0.25 to 0.37, a range which includes the value used in stock assessment modeling (M= 0.35).</p> <p><u>Classification of all fleets operating on the hoki stock by fishing gears, practices and net selectivity in order to allow measuring the respective impacts on hoki and other species.</u></p> <p>To meet this specific condition Mari & Giussi (2016) analyzed the species composition registered by observers on board in commercial catches of hoki obtained by the Argentine fleet in the area south of 49° S between 2008 and 2015. Factory and freezer vessels used predominantly bottom trawl nets while <i>surimeros</i> conducted fishing operations both with bottom and mid-water trawl nets. A total of 130 taxa were identified in 24,788 commercial hauls, including fishes and pelagic and benthic invertebrates. The specific composition of the hauls allowed the identification of three groups: Group 1 was comprised mainly by hoki (frequency >80%) while in Groups 2 and 3 this species represented less than 50% and fishes such as the Southern hake (<i>Merluccius australis</i>), Southern blue whiting (<i>Micromesistius australis</i>) and Patagonian toothfish (<i>Dissostichus eleginoides</i>) were dominant. Groups 1 and 2 include hauls carried out on the continental shelf and continental slope.</p> <p>Zavatteri <i>et al.</i> (2015) conducted an extensive research to explore any possible relationship between the CPUE and some abiotic and geographical factors. To do this, a total of 30,614 records, coming from the area 37° - 56° SL and obtained between 2000 and 2014 were analyzed. Results showed no clear/consistent relationship between bottom temperature, depth, geographic position and season and the abundance index (t per hour).</p>
<p>Condition 3: the client group must to provide some evidence that the partial strategy for managing the by-catch species is being implemented successfully for all the fishery fleets under assessment</p>	<p>2.2.2</p>	<p>Year 4 (2016)</p>	<p><u>Provide some evidence that the main bycatch species in the Argentine hoki fishery are highly likely to be within biologically based limits. Alternatively, if it is outside such limits, a partial strategy of demonstrably effective mitigation measures has been developed and the strategy has been implemented successfully.</u></p> <p>As it is mentioned in previous surveillance audits, it was provided evidence that main bycatch species in the Argentine hoki fishery as <i>Dipturus chilensis</i> and <i>Squalus acanthias</i> (two chondrichthyan species) are extremely vulnerable to intensive fishing pressure. However, data of monitoring by observers indicated that there are highly variable estimates of catches in hoki's fleet.</p>



			<p>The reproductive pattern of spiny dogfish (<i>Squalus acanthias</i>) and yellownose stake (<i>Dipturus chilensis</i>) was studied by Colonello & Cortés (2013) and Colonello <i>et al.</i> (2016). In both species, high size at maturity and low fecundity were highlighted and confirm the susceptibility of this species. It was evaluated by Cortés & Cueto (2012) in a demographic model to assess the reduction of the population under different fishing pressure.</p> <p>Several sharks and skates are caught in the austral fisheries targeting hoki (<i>Macruronus magellanicus</i>), Southern blue whiting (<i>Micromesistius australis</i>) and Patagonian toothfish (<i>Dissostichus eleginoides</i>). Puliafito & Massa (2016) described on board manipulation of sharks and skates by OBOs Program, using in situ visual recording. The authors proposed a series of modifications to avoid the entrance of specimens to the well that connects with the processing floor of the vessel. Use of chains was implemented successful, but was not operative because difficulties in the normal fishing operations. Then, INIDEP's chondrichthyan research group elaborates a partial strategy based on convincing the crew in the relevance of avoiding capture of sharks and rays, the acceptance of the use of devices on deck and the promotion to explore alternatives.</p> <p>Documents provided to the assessment team describes a partial strategy for main bycatch species is being implemented, but to demonstrate effectiveness as mitigation measures to establish that bycatch species need time to be tested and incorporate in the crew behaviour.</p>
<p>Condition 4: the client group must provide evidence that the indirect effects have been considered and that they are thought to be unlikely to create unacceptable impacts.</p>	<p>2.3.1</p>	<p>Year 4 (2016)</p>	<p><u><i>Continue with the implementation of the program to measure indirect impacts on ETP species. Continue analyzing data from this program. Providing evidence that unlikeness of unacceptable indirect impacts of the Argentine hoki fishery on ETP species.</i></u></p> <p>In 2013, evidences provided demonstrated that marine mammals, including ETP, would not have major interactions with the Argentine hoki fishery.</p> <p>However, catches of sensitive sharks, like the protected <i>Lamna nasus</i>, have been reported in hoki fishery. Frequency of occurrence of <i>L. nasus</i> in freezer vessels and factory ships is lesser (1.4%) than surimi vessels (12.5%). Catches of <i>L. nasus</i> can be considered low frequent and represent a low percentage of the total catch (Cortés & Waessle, 2016). From 2013, the incidental catch decreased due to the surimi fleet was reduced to one vessel.</p> <p>During 2015, INIDEP's chondrichthyan research group studied the distribution area of incidental catches of <i>L. nasus</i> to evaluate the indirect effect of fishing on this species and established critical areas that can affect the survivorship. Massa <i>et al.</i> (2015) found that the incidental catch has high seasonality and related with several operative variables (depth and towing speed), environmental (sea surface temperature) and ecological (prey availability). Also, the authors described a stationary trend between 2006 and 2012.</p> <p>INIDEP's chondrichthyan research group proposes to maintain the monitoring based on the collapse of the</p>



			other Atlantic populations, the low reproductive potential and level of incidental catches. The program to measure indirect impacts on ETP species (especially <i>Lamna nasus</i>) is supported in the data collection by INIDEP's OBO Program.
Condition 5: the client group must provide evidence that the strategy is being implemented successfully.	2.3.2	Year 4 (2016)	<p><u>Continue implementation of the program developed during years 1 to 3. Provide evidences of the effectiveness of the implemented devices developed in Year 1-3.</u></p> <p>As it is mentioned in previous surveillance audits, evidences provided demonstrated that marine mammals, including ETP, would not have major interactions with the Argentine hoki fishery.</p> <p>The CFP Resolution N° 04/2013, established that sharks larger than 160 cm must be returned at sea. Some of them, like the protected <i>Lamna nasus</i>, have a high post-capture survivorship when the time on deck is reduced. In CITES Appendix II (last version 5th February 2015) this species is classified as a species not necessarily now threatened with extinction, but that may become so, unless trade is closely controlled. Sensitivity of <i>L. nasus</i> to fishing actions is cushioned by the large geographic distribution of this species in relation with the reduced area where the fishing effort is applied in the fishery under assessment.</p> <p>During 2015, INIDEP's chondrichthyan research group developed an assay to assess the effectiveness of deck devices to reduce bycatch and avoid the capture of ETP species (especially <i>L. nasus</i>). Puliafito & Massa (2016) proposed the use of chains preventing their entry into holds of vessels so that species can quickly return to the sea. The hold connects the deck with the processing floor of the vessel where the porbeagles dies. The strategy consists on convincing the crew in the relevance of avoiding capture of sharks and rays, and to explore more operative alternatives.</p>
Condition 6: the client group must provide evidence that the nature, distribution and vulnerability of all main habitat types in the fishery area are known at a level of details relevant to the scale and intensity of the fishery.	2.4.3	Year 4 (2016)	<p><u>Continue the implementation of the program developed in Year 1. Description of the habitats (based on benthic samples) comparing fished and un-fished areas, from the last three years surveys. Gathering conclusive information on the nature, distribution and vulnerability of all main habitat types in the fishery area, at a level of details relevant to the scale and intensity of the fishery.</u></p> <p>Information on the nature, distribution and vulnerability of all main habitat types in the fishery area was provided. It was performed an analysis of samples of benthic invertebrates that are part of the bycatch in the hoki fishery in several documents. Gaitan <i>et al.</i> (2014) reviewed historical information on benthic fauna in areas coincident with the distribution of fishing effort in hoki fishery. The authors described species richness in several subareas and determined until 176 species per subarea. The total area analysed is extensive and includes almost the entire Magellanic region.</p> <p>On the other hand, composition of benthic bycatch species caught by trawling nets in hoki fishery was analysed with samples collected by the OBOs Program (Gaitan & Escolar, 2015). Bycatch of hoki fishery</p>



			<p>between 52-56° S involve 88 taxa of benthic macro-invertebrates allowing to 9 phyla, some of them are Taxa indicators of Vulnerable Marine Ecosystem (VME) and Patagonian scallop (<i>Zygochalmys patagónica</i>). This activity was initiated as regular by the INIDEP and include assessing the benthic faunal composition in two zones where the fishing effort is concentrated: one dominated by <i>Z. patagonica</i> at S of Tierra del Fuego, and other at NE of Isla de los Estados. Due to the dominance of trawling nets, the cumulative effort in both zones could produce visible changes in benthic habitat.</p>
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4.3 Assessment methodologies

a. The version number of the FCR used to assess the fishery

The MSC Fishery Certification Requirements v2.0 was used to assess the fishery.

b. The version number of the 'MSC Full Assessment Reporting Template' used to produce this report

The MSC Full Assessment Reporting Template v2.0 was used to produce this report.

The Default Assessment Tree was used without adjustments and the RBF methodology v2.0 is not used.

Stakeholder comments and OIA responses are included in Appendix 3.

4.4 Evaluation Processes and Techniques

4.4.1 Site visits

In consultation with the client group, OIA started the re-assessment process in June 2016. Completing the formal documentation, including Client Document Checklist, OIA announced to the client group and stakeholders on August 19th, 2016, the beginning of the re-certification assessment, the proposed assessment team and, where and when the on-site visit would take place. All stakeholders who had expressed interest and contributed to the full-assessment and surveillances were directly contacted by email and later by telephone. There was no comment received about the proposed team members.

All interviews with stakeholders (client group, scientist, NGOs) were carried out in Mar del Plata on 29th and 30th September 2016, where the fishery client is based. All meeting minutes are presented in Appendix 3. All information received is based on update of relevant scientific-technical documents of Argentine hoki (*Macruronus magellanicus*) bottom and mid-water trawl fishery.

The assessment team reviewed the fishery status and whether the fishery complies with the scoring issues of the default assessment tree and its performance of the fishery regarding the MSC Standard.

The site visit was comprised of the following parts:

-Provision of information: The site visit program and logistical information were provided to stakeholders previous to the meetings. Also, the notification included the links of "Stakeholder Guide to the MSC" and the "Template for Stakeholder Input".

-Meetings: The individual meetings started an interview with the Client Group in San Arawa's office and then with INIDEP scientists and FVSA experts. In all interviews, relevant information and documents regarding the re-assessment process were exchanged. Consultations have taken place on 29th September 2016. Meetings were conducted by the proposed assessment team and were focused in the on-going activities associated with the new process on the fishery as well as the eventual changes occurred after the last surveillance.

-Documentation: Relevant documents related to the process were provided to the assessment team by Client Group and stakeholders prior and during meetings. After these, follow up emails were sent to stakeholders to request additional information. All documents received by team members during audit activities were reviewed and detailed in Reference section.

OIA gave the opportunity that all stakeholders identified in the certification process provide information (*i.e.* fisheries and fishery managers, scientist, NGOs, citizens, government agencies, others). The assessment team inspected the following issues:

- Any potential or actual changes in Management Systems.
- Any changes or additions/deletions to regulations.
- Any personnel changes in science, management and industry and their impact on the management of the fishery.
- Any potential changes to the scientific base of information, including stock assessments.
- Any changes affecting traceability.

4.4.2 Consultations

Details of people interviewed as residents, representatives of stakeholder organisations, including contacts with any regional MSC representative are provided in the following table.

Table 14. Outline of re-certification activities

Stakeholders notification: visit scheduled	August 19 th , 2016
Re-assessment process: visit on-site	Mar del Plata, September 29 th and 30 th , 2016
MEETING ATTENDEES AND ORGANIZATIONS	
<i>Opening surveillance meeting with Client Group</i>	
Name	Affiliation
<i>Mr. Ezequiel Navatta</i>	<i>San Arawa S.A.</i>
<i>Mr. Fabián Carrasco</i>	<i>Empresa Pesquera de la Patagonia y Antártida S.A.</i>
<i>Dr. Oscar Iribarne</i>	<i>Universidad Nacional Mar del Plata</i>
<i>INIDEP group meeting</i>	
Name	Affiliation
<i>Dra. Patricia Martínez</i>	<i>Head of "Dirección de Pesquerías Demersales", INIDEP</i>
<i>Dr. Analía Giussi</i>	<i>Head of "Pesquerías de Peces Demersales Australes y Subantárticos" Program, INIDEP</i>
<i>Lic. Anabella Zavatteri</i>	<i>Researcher of "Pesquerías de Peces Demersales Australes y Subantárticos" Program, INIDEP</i>
<i>Lic. Federico Gorini</i>	<i>Researcher of "Pesquerías de Peces Demersales Australes y Subantárticos" Program, INIDEP</i>
<i>Lic. Emiliano Di Marco</i>	<i>Researcher of "Pesquerías de Peces Demersales Australes y Subantárticos" Program, INIDEP</i>
<i>Lic. Noemí Mari</i>	<i>Researcher of "Pesquerías de Peces Demersales Australes y Subantárticos" Program, INIDEP</i>
<i>Dra. Natalia Ruocco</i>	<i>Researcher of "Gabinete de Muestreo de Desembarque", INIDEP</i>
<i>Mr. Gonzalo Tróccoli</i>	<i>Researcher of "Gabinete de Muestreo de Desembarque", INIDEP</i>
<i>Lic. Ana Massa</i>	<i>Head of "Pesquerías de Condrictios" Program, INIDEP</i>
<i>Lic. Jorge Colonello</i>	<i>Researcher of "Pesquerías de Condrictios" Program, INIDEP</i>
<i>Fundación Vida Silvestre Argentina staff meeting</i>	
<i>Lic. Guillermo Cañete</i>	<i>Coordinator of Marine Program, Fundación Vida Silvestre Argentina</i>
<i>Lic. Verónica García</i>	<i>Researcher of Marine Program, Fundación Vida Silvestre Argentina</i>

A summary of the information obtained from the stakeholder meetings including the range of opinions are provided in the Appendix 3. The following topics have been discussed:

- Implications of re-certification process.

- Stock status and fleet participation.
- Stock assessment changes.
- Primary, secondary and ETP species related with the fishery and potential impact.
- Documents related to collecting data.
- Execution of INIDEP OBO Program.
- Unwanted catch in the fishery.
- Measures carried out to control unwanted catch.
- Technique-scientific information available.

4.4.3 Evaluation techniques

Site visits to the fishery were performed by OIA and the assessment team, and consultations were done with interested stakeholders. Performance indicators and the pertaining scoring systems were evaluated, and it was judged if the fishery meets the requirements for MSC certification. To fulfill the requirements for certification the following minimum scores are required:

- The fishery must obtain a score of 80 or more for each of the three MSC Principles, based on the weighted aggregate scores for all Performance Indicators under each Criterion in each Principle.
- The fishery must obtain a score of 60 or more for each Performance Indicator under each Criterion in each Principle.

There are performance indicators that score less than 80, but more than 60. To be granted a MSC fishery certificate, the client group must agree to further improvements to raise the score to 80. OIA sets a timescale for the fishery to improve the relevant areas, so that the certification process can continue.

The RBF methodology is not used in the re-certification process.

5. Traceability.

5.1 Eligibility date

Expiration date for the current certificate is 21st May 2017. The target eligibility date for this fishery is therefore the date recertification is completed. This means that any fish caught by the certified fleet following that date will be eligible to enter the chain of custody as certified product.

However, due to delay of re-certification process, OIA requested to MSC a certificate extension. MSC granted it and the current certificate expires on **21st October 2017**. More information is available in MSC website.

It is important to mention that this fishery is continuous in the year. Measures taken by the client group to account for risks within the traceability of the fishery – and therefore generating confidence in the use of this date for target eligibility – are detailed in the rest of this section.

5.2 Traceability within the fishery

Vessels assessed catch during 40-60 days each one (depending on fuel availability and storage capacity), completing approximately 8 trips per year.

The entire catch (target fish and accompanying species) is placed in storage ponds and from there fishes are delivered to a classification sector where experienced crew members separate them by species. The on target species is the first to be processed. Retained species, are classified and stored in a special pit waiting to be processed. When processing certified fish, the production line operates exclusively for this species.

Therefore, the first point to determine is whether the fish will be certified or not. As it is reviewed in the Principle 2 background, there are catch hauls in a same fishing trip addressed to others on target species not subject of this certification (i.e. Patagonian toothfish and Southern blue whiting, where hoki is classified as accompanied fauna, representing < 2% of total weight catch of each fishing haul and in some cases, being absent). So, when vessels addressed fishing operations to other target species, hoki caught as accompanying fauna is not sold as MSC fish. According to the calculation of the proportion of species caught as determining haul, hoki is classified as MSC fish or not. If a haul corresponds to Group 3 described in the Principle 2 background, hoki caught shall not be considered MSC fish, due to this haul being part of a different fishing practice addressed to other target species.

The filleting machine requires specific calibration for hoki, failing if other species is introduced. When producing HG/HGT, hoki discrimination from other species depends exclusively on eye-recognition by staff members and supervisors. Fillets boneless skin-on or not are placed in plates in freezers. Only one species products are placed in each cabinet freezer.

The crew registers products according to type of presentation and species in internal records that allow traceability. Once frozen, products are packaged in master carton that contain traceability information (company data, vessel name, quantities - gross and net weights - product presentation, production and expiry date). As it is impossible to weigh the catch before being processed on board, management authority established a conversion rate applied in final product to estimate the whole fish captured. The conversion rate estimated for factory, surimeros and freezers that process hoki on board is established according CFP Resolutions N° 5/2004 and N° 12/2014. The following conversion rates are applied: HG/HGT uses a factor of 1.82; Fillet skinless a factor of 4; Fillet skin-on a factor of 3; and, Surimi a factor of 4.16

The landing process is monitored at all time by SSPyA, Aduana, SENASA and company staff. An SSPyA's inspector weighs and recounts boxes to verify catches previously declared by captain through the following forms:

-“PARTE DE PESCA FINAL” that includes total fish caught by species in the trip, including main fishing operation areas.

-“PARTE DIARIO DE POSICIÓN Y CAPTURA” provides total daily catch per species and area position.

-“PARTE DE PESCA LANCE POR LANCE” details species and quantities per fishing hauls. This document is mandatory according SAGPyA Resolution N° 327/2000. The PARTE DE PESCA LANCE POR LANCE is the first traceability document that allows to conclude if the hoki could be sold as MSC fish. Also, this document is completed when a fishing haul is completely processed. So, there is not overlapping between two fishing hauls. The production date notified in the master carton allows to cross check hauls addressed to hoki of other ones declared in the “PARTE DE PESCA LANCE POR LANCE”.

-“PARTE DE PRODUCCIÓN A BORDO” describes fish products processed including form and quantities. Also, it specifies entire fish quantities that are processed including conversion rate.

Information detailed above is checked in the “ACTA DE DESCARGA” and SSPyA staff ensures hoki weighing complies with the regulation. All products are re-counted and weighted by inspectors. SENASA, scientific community and internal quality management of companies request samples to monitor if boxes carton contain species declared, as data for age-structure models or to control quality aspects.

As the product is frozen, hoki can be transported directly to customers or processing plants with a WAYBILL. Goods are transported by subcontracted/owner company in sealed containers. All products sold provided are registered in “CERTIFICADO DE CONTROL DE CARGA”, including species, type of product, total weight, number of boxes and the receiving company.

Traceability data is obtained with these documents. All information provided must be completed by each vessel and company. In case processing on board, the risk to mix certified and non-certified fish is reduced due to Argentine hoki fishery is managed throughout allocation quota and company must control hoki's production to comply with CIRC adjustments according proportion of TAC assigned. In case of hoki provided by a subset of hauls that are defined “targeting” a P1 species, the organisation shall comply with MSC CoC Standard v4.0 – 2.1 “certified products shall be identified as certified at all stages of purchasing, receiving, storage, processing, packing, labelling, selling and delivery”. This aspect includes that certified hoki is identifiable as certified on the physical product as well as on the accompanying traceability records. The companies have this methodology in place and therefore, there is no risk of mixing certified with non-certified fish in the unloading and transportation processes (or prior to entering in the chain of custody).

Fishes can be traced from their origin using mentioned documents and traceability is maintained as it is implemented by SICAP system. This process is deemed robust enough to allow tracing fish products back to the area and day of catch, through a series of required documents by Argentine management authority and records provided by the company.

Only Argentine hoki caught by vessels using bottom and mid-water trawl net (see Table 1) and fishing practices determined above (*i.e.* when vessels addressed fishing operations to catch hoki as ‘targeting’ species) can be MSC certified under re-assessment, according the UoA definition. Also, and including as it is mentioned, only vessels linked to the Client Group can sell hoki as MSC. Tracking and tracing certified hoki will be guaranteed via the following system:

- Logbooks and Vessel Monitoring System (VMS) will allow the tracing of catch back to the location and date of landing;
- Outgoing documentation (waybills, 'Parte de Pesca Final', 'Parte Diario de Posición y Captura', 'Parte de Pesca Lance por Lance', "Parte de Producción a Bordo", 'Acta de Descarga' and 'Certificado de Control de Carga') states species and origin.

Table 15. Traceability factors within the fishery

Traceability Factor	Description of risk factor if present. Where applicable, a description of relevant mitigation measures or traceability systems (this can include the role of existing regulatory or fishery management controls)
Potential for non-certified gear/s to be used within the fishery	<p>According CFP Resolution N° 22/2012 – Article 5°, it is established that fishing gears allowed to harvest hoki are bottom and mid-water trawl nets due to these fishing gears allow to control minimal size (i.e. 120 mm). No other fishing gears are used to catch hoki in AEEZ.</p> <p>Also, the enforcement authority has implemented in the traceability system the document 'PARTE DE PESCA FINAL', that include a declaration of the fishing gear used to catch species and the marine area harvested. This official form shall be completed by the captain in every fishing trip and must be presented in landing port. This document is used by management authority to monitor TACs and assess stock status of species.</p> <p>According to the above mentioned, there is no potential risk to mixing hoki catch by other fishing gear.</p>
Potential for vessels from the UoC to fish outside the UoC or in different geographical areas (on the same trips or different trips)	<p>The fleet can operate in the hoki's distribution area placed in AEEZ, except <i>surimeros</i> that must operate southern of 49° S as it is established in the CFP Resolution N° 22/2012. The whole hoki's distribution in Argentine Sea is certified against MSC Standard since 2012.</p> <p>To control this aspect, it is mandatory the use of GPS for all vessels by fishing management authority. This requirement is part of VMS or SICAP (see section 3.5.4 Monitoring, control and surveillance and enforcement) and all fishing trips are tracked and landings are recorded. In case fishing outside the assigned area, sanction measures established in the Law N° 24.922 will be applied.</p> <p>Therefore, there is no potential risk for vessels from the UoC to fish outside the UoC or in different geographical area.</p>
Potential for vessels outside of the UoC or client group fishing the same stock	<p>There are other vessels outside the client group fishing the same stock. These vessels are identified in the Table 1. These vessels are eligible to use the certificate and sell product as certified.</p> <p>To monitor that only vessels with authorization, catch hoki, Argentine legislation requires the keeping of logbooks, which are verified by SICAP (VMS) scheme. The fishery records the location and landings, including vessel name, which accompany landing documentation, allowing the fishery product to be traced.</p>

	<p>In case these vessels are interested in entering in the actual Client Group, it is necessary to sign a certificate sharing agreement.</p>
<p>Risks of mixing between certified and non-certified catch during storage, transport, or handling activities (including transport at sea and on land, points of landing, and sales at auction)</p>	<p>During storage, transport and handling activities as it is described before, there are hoki products outside of the UoA, increasing the risk to mix certified and non-certified products. However, hoki products are clearly identified in physical packaging and landing documentation until a change on the ownership occurs or new activity out-scope is carried out in land and then, a separate Chain of Custody certification is required.</p> <p><u>The production date notified in the master carton allows to cross check hauls addressed to hoki of other ones declared in the “PARTE DE PESCA LANCE POR LANCE”. This document allows to conclude if the hoki could be sold as MSC fish or not.</u></p> <p><u>The client group shall comply with MSC CoC Standard v4.0 – 2.1: “certified products shall be identified as certified at all stages of purchasing, receiving, storage, processing, packing, labelling, selling and delivery”. This aspect includes that certified hoki is identifiable as certified on the physical product as well as on the accompanying traceability records.</u></p> <p>In case certified and non-certified hoki are landing at the same time, both fishes are separated and adequately documented with the supervision of control authority (SSPyA' inspector). A registration of this surveillance is recorded in the “ACTA DE DESCARGA” that identifies species and vessel origin.</p> <p>There is risk of mixing between certified and non-certified catch during storage, transport or handling activities, but to reduce it, companies complies with aspects described above.</p>
<p>Risks of mixing between certified and non-certified catch during processing activities (at-sea and/or before subsequent Chain of Custody)</p>	<p>As it is described before, there are hoki catch outside the UoA and the crew must separate this fish according targeting hauls. The on target fish and accompanying species are placed in storage ponds and from there fishes are delivered to a classification sector where experienced crew members separate them by species. The on target species is the first processed. Retained species, are classified and stored in a special pit waiting to be processed. When processing certified fish, the production line operates exclusively for this species. The crew processes only one haul per time, in order to complete the record “PARTE DE PESCA LANCE POR LANCE”.</p> <p>As on-target species is accompanied by other species, the vessel processes on board, in first stage, hoki and then, retained species to reduce the risk of mixing certified and non-certified catch. The filleting machine requires specific calibration for hoki, failing if other species is introduced. This point of processing activity is identified as control point. Also, this risk is reduced due to Argentine hoki fishery is managed throughout allocation quota and companies must control hoki’s production to comply with CITC adjustments according to the proportion of TAC assigned, avoiding fraud in the information.</p> <p>In case of hoki surimi production, this processing line is derived</p>

	<p>from filleting. So, the raw material of surimi is provided by hoki fillets. Before processing hoki surimi, a proportion of 120-140 kg of surimi is discarded in order not to mix surimi of other species (<i>i.e.</i> Southern blue whiting). This process is called “purge” and it is an internal procedure in order to ensure that surimi processed is exclusive of only one species.</p> <p>Even if there is risk of mixing between certified and non-certified catch during processing activities at sea, there are mechanisms described above to separate both products.</p>
<p>Risks of mixing between certified and non-certified catch during transshipment</p>	<p>Transshipment at sea is forbidden in Argentine waters, but under exceptional circumstances described in the Federal Fishing Law N° 24.922 and Decree N° 748/99. Authorization must be sought and can only occur in ports of places close to the shore. It does not occur in this fishery. To monitor the compliance of this issue, the management authority has in place the SICAP system.</p> <p>So, there is no risk of mixing between certified and non-certified catch during transshipment.</p>
<p>Any other risks of substitution between fish from the UoC (certified catch) and fish from outside this unit (non-certified catch) before subsequent Chain of Custody is required</p>	<p>There is no risk of substitution at the landing process between vessels outside UoC due to fish is placed in closed boxes that contain only one species and is identified with a label. Hoki products are weighted and recounted by management authorities to verify the fishing declaration of the captain (‘PARTE FINAL DE PESCA’). This reduces the opportunity of mixing or substitution with other non-certified product.</p> <p>Parte de Pesca Final, Parte de Pesca Lance por Lance and production date clearly identify the hoki eligible to be certified as MSC. These documents support the origin of fish stating if the fish belongs to UoC. The document provides data of the fishing area (latitude and longitude), including fishing gear used. Non-certified cannot commingle with certified fish.</p> <p>Documents accompanying the boxes are waybill and Certificado de Control de Carga. Information detailed on them allows cross checking of what is sold, with what is delivered.</p> <p>The system in place to ensure that non-certified product does not enter certified supply chains is the monitoring by the management authority that controls the landing process and transportation. Products are placed in sealed containers that cannot have products from other vessels. This activity is reflected in the waybill.</p>

5.3 Eligibility to Enter Further Chains of Custody

-Ports of landing: There are two eligible points of landing for hoki to enter into further Chains of Custody: Mar del Plata (Buenos Aires Province) and Ushuaia (Tierra del Fuego Province).

-Point of intended change of ownership of product: For hoki landed at Mar del Plata and Ushuaia, products will be sold directly to clients in boxes, which are intended to change of ownership under that situation, or to be conducted to a processing plant of the same company for a re-processing process. The change of ownership will occur upon purchase of the seafood. If hoki is sold directly to clients, its transportation shall be completed by an approved sub-contractor and this shall be covered within the scope of the fishery certificate.

-Point from which Chain of Custody is required: Separate Chain of Custody Certification will be required from on board the vessel (when hoki hauls are carried out and deposited in the fishing ponds or from the first point of sale (hoki products change ownership). So, all processing plants require to carry out Chain of Custody's certification, including processing on board carried out by UoA's vessels.

-Conclusion for product eligibility to be sold as MSC certified: As it is in traceability description, there are catch hauls in a same fishing trip addressed to others on target species not subject of this certification (i.e. Patagonian toothfish and Southern blue whiting, where hoki is classified as accompanied fauna, representing < 2% of total weight catch of each fishing haul and in some cases, being absent). So, when vessels addressed fishing operations to other target species, hoki caught as accompanying fauna is not sold as MSC fish. Catch location in MSC certified areas is verifiable through VMS data. Traceability documentation allows tracing of the products back to the area, day and method of capture. Waybill, 'Parte de Pesca Final', 'Parte Diario de Posición y Captura', 'Parte de Pesca Lance por Lance', "Parte de Producción a Bordo", 'Acta de Descarga' and 'Certificado de Control de Carga' provide clear identification of product into further chains of custody. The conclusion of the team is that only hoki hauls caught by vessels linked to the client group can be sold as MSC. Vessels that are outside of UoC described in Table 1 are eligible to use the certificate and sell product as certified, previous agreement with the Client Group (i.e. Certificate sharing agreement).

5.4 Eligibility of Inseparable or Practicably Inseparable (IPI) stock(s) to Enter Further Chains of Custody

There are no IPI stocks included in the re-assessment process.

6. Evaluation Results.

6.1 Principle Level Scores

The PIs were re-assessed according the Fishery Certification Requirements FCRv2.0.

All references cited in rationale texts are presented in the background of re-certification report.

Table 16. Final principle scores

Final Principle Scores	
Principle	Score
Principle 1 – Target Species	82.5
Principle 2 – Ecosystem	82.0
Principle 3 – Management System	92.9

6.2 Summary of PI Level Scores

Table 17. Summarize of scores.

Principle	Component	Wt	Performance Indicator (PI)	Wt	Score
One	Outcome	0.333	1.1.1 Stock status	1.0	90
	Management	0.667	1.2.1 Harvest strategy	0.25	85
			1.2.2 Harvest control rules & tools	0.25	65
			1.2.3 Information & monitoring	0.25	80
			1.2.4 Assessment of stock status	0.25	85
Two	Primary species	0.2	2.1.1 Outcome	0.333	100
			2.1.2 Management	0.333	80
			2.1.3 Information	0.333	80
	Secondary species	0.2	2.2.1 Outcome	0.333	75
			2.2.2 Management	0.333	85
			2.2.3 Information	0.333	80
	ETP species	0.2	2.3.1 Outcome	0.333	80
			2.3.2 Management	0.333	85
			2.3.3 Information	0.333	80
	Habitat	0.2	2.4.1 Outcome	0.333	80
			2.4.2 Management	0.333	80
			2.4.3 Information	0.333	85
	Ecosystem	0.2	2.5.1 Outcome	0.333	80
			2.5.2 Management	0.333	80
			2.5.3 Information	0.333	80
Three	Governance and policy	0.5	3.1.1 Legal & customary framework	0.333	95
			3.1.2 Consultation, roles & responsibilities	0.333	100
			3.1.3 Long term objectives	0.333	100
	Fishery specific management system	0.5	3.2.1 Fishery specific objectives	0.25	90
			3.2.2 Decision making processes	0.25	85
			3.2.3 Compliance & enforcement	0.25	85
			3.2.4 Monitoring & management performance evaluation	0.25	90

6.3 Summary of Conditions

Table 18. Summary of conditions

Condition number	Condition	Performance Indicator	Related to previously raised condition? (Y/N/NA)
1	By the 1 st annual surveillance, the client group must provide evidence that there are well defined HCRs that ensure that the exploitation rate is reduced as the PRI (Limit Reference Points) is approached. Also, the client group must provide evidence that the HCR should also ensure that the stock is likely to fluctuate around B_{MSY} level in the long term.	1.2.2 SI a)	YES
2	<i>The assessment team established a timeline of 2 years to close this condition. However, the client, in consultation with INIDEP researchers, requested to extent the timeframe to satisfy the compliance in realistic period (see notes provided in Appendix 1.2). According to this argument, team members granted a one-year extension.</i> By the 3 rd annual surveillance, the client group must provide evidence that the HCRs are likely to be robust to the main uncertainties and to the uncertainties related to the stock structure.	1.2.2 SI b)	NO
3	<i>The assessment team established a timeline of 2 years to close this condition. However, the client, in consultation with INIDEP researchers, requested to extent the timeframe to satisfy the compliance in realistic period (see notes provided in Appendix 1.2). According to this argument, team members granted a one-year extension.</i> By the 3 rd annual surveillance, the client group must provide evidence that the main secondary species (<i>i.e. Merluccius australis</i>) is highly likely to be above biologically based limits or If below biologically based limits, there is either evidence of recovery or a demonstrably effective partial strategy in place such that the UoA does not hinder recovery and rebuilding.	2.2.1 SI a)	NO

6.4 Recommendations

There are no recommendations established in the first re-certification process.

6.5 Determination, Formal Conclusion and Agreement

The certification recommendation reached by the assessment team is that the Argentine hoki (*Macruronus magellanicus*) bottom and mid-water trawl fishery in Argentine Sea should be re-certified with 3 conditions according to the Principles and Criteria for Sustainable Fishery as set out by MSC.

(REQUIRED FOR PCR)

- | |
|---|
| <p>1. The report shall include a formal statement as to the certification action taken by the CAB's official decision-makers in response to the Determination recommendation.</p> |
|---|

6.6 Changes in the fishery prior to and since Pre-Assessment

(OPTIONAL)

<p>Identify any work conducted by the client (or the management agency) specifically targeted at bringing the fishery to the MSC standard, either prior to or since any pre-assessment report that was prepared. This information is particularly valuable for MSC's reporting on the impacts of its programme.</p>

7. References.

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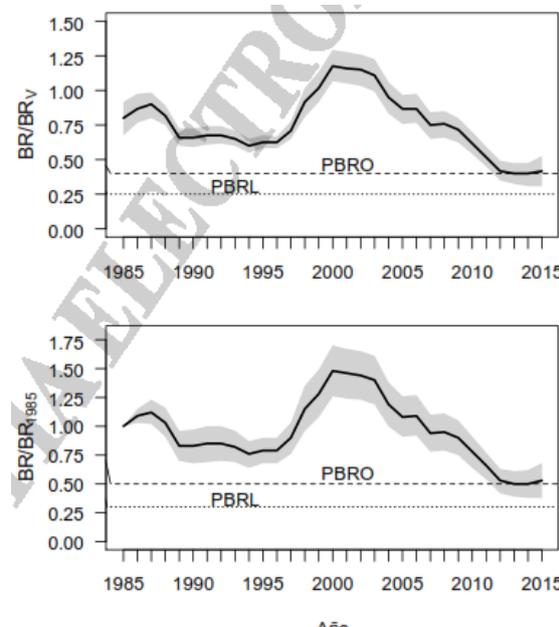
Appendices.

Appendix 1 Scoring and Rationales

Appendix 1.1 Performance Indicator Scores and Rationale

-Principle 1

Evaluation Table for PI 1.1.1 – Stock status

PI 1.1.1	The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing		
Scoring Issue	SG 60	SG 80	SG 100
a	Stock status relative to recruitment impairment		
Guided post	It is likely that the stock is above the point where recruitment would be impaired (PRI).	It is highly likely that the stock is above the PRI.	There is a high degree of certainty that the stock is above the PRI.
Met?	YES	YES	YES
Justification	<p>Limits reference points provide a reliable estimation of the point where recruitment could be impaired.</p> <p>The limit biological reference points for Argentine hoki fishery in the Southwest Atlantic have been recently established as follows (Giussi <i>et al.</i>, 2016):</p> <p>LBRP: 0.25BR₀ and LBRP: 0.3BR₁₉₈₅, where BR₀ is the virginial reproductive biomass and BR₁₉₈₅ the biomass estimated for 1985.</p> <p>The most recent stock assessment concluded that current reproductive biomass (BR₂₀₁₅) is 42% BR₀ and 53% BR₁₉₈₅, values which are above the limit levels.</p>  <p>Fig. 16. Variation of spawning biomass and reference points (Giussi <i>et al.</i>, 2016)</p> <p>According to Figure 16, annual BR's would have been for a long time well above or close</p>		

		<p>above (in most recent years) the Limit Reference Points.</p> <p>Therefore, there is a high degree of certainty that the stock is currently above a point where recruitment would be impaired and this scoring issue meets the SG100 level of performance.</p>		
b	Stock status in relation to achievement of MSY			
	Guided post		The stock is at or fluctuating around a level consistent with MSY.	There is a high degree of certainty that the stock has been fluctuating around a level consistent with MSY or has been above this level over recent years.
	Met?		YES	NO
	Justification	<p>Target Reference Points were established as follows (Giussi <i>et al.</i>, 2016):</p> <p>TBRP: $0.4BR_0$ and TBRP: $0.5BR_{1985}$, where BR_0 is the virginial reproductive biomass and BR_{1985} the biomass estimated for 1985.</p> <p>According to these recently defined Reference Points, and if credit is given to these points, $0.4 BR_0$ is a proxy of MSY. This being the case, during the period 1985-2015, the stock has been above or at a level consistent with MSY (Figure 16). Mean value of reproductive biomass over the last 6 years (generation time estimated as 5.5 years) is 227,827 t, a value <u>that is not less than the proxy of MSY</u> (<i>i.e.</i> 177,206 t).</p> <p>Although reproductive biomass has shown a consistent decrease since 2000, values have not reached levels <u>below the proxy of MSY</u> and in the last years reproductive biomass has stopped the downward trend.</p> <p>Reproductive biomass in 2015 was 42% BR_0 and 53% BR_{1985}, and therefore the stock – in terms of the current reproductive biomass - is above or at the target reference points recently set. However, according to Figure 16, there is not a high degree of certainty that over recent years annual BR's have been above the Target Reference Points (levels consistent with MSY), since the lower confidence intervals (95%) fall below that level.</p> <p>According to Canales (2016) maximum sustainable yield (MSY) in the hoki fishery would be achieved at approximately $0.4 BR_0$ and so, this figure is a proxy of MSY. In other words, TRP's were set consistent with MSY.</p> <p>Consequently, the scoring issue achieves the requirements at SG80.</p>		
References	Giussi <i>et al.</i> , 2016 and Canales, 2016.			
Stock Status relative to Reference Points				
	Type of reference point	Value of reference point	Current stock status relative to reference point	
Reference point used in scoring stock relative to PRI (S1a)	LBRP: $0.25 BR_0$, and LBRP : $0.3 BR_{1985}$	LBRP: 123,060 t LBRP: 117,708 t	Current status: BR_{2015} : 206,312 t which is 1.7 and 1.8 times the LBRP's	
Reference point used in scoring stock relative to MSY (S1b)	TBRP : $0.4 BR_0$ (proxy of MSY) and TBRP : $0.5 BR_{1985}$ (BR_0 : 492,240 t & BR_{1985} : 392,360 t)	TBRP: 196,896 t TBRP : 196,180 t	Current status: BR_{2015} : 206,312 t which correspond to 42% BR_0 and 53% BR_{1985}	
OVERALL PERFORMANCE INDICATOR SCORE:			90	

Evaluation Table for PI 1.1.2 – Stock rebuilding

PI 1.1.2	Where the stock is reduced, there is evidence of stock rebuilding within a specified timeframe		
Scoring Issue	SG 60	SG 80	SG 100
a	Rebuilding timeframes		
Guidepost	A rebuilding timeframe is specified for the stock that is the shorter of 20 years or 2 times its generation time. For cases where 2 generations is less than 5 years, the rebuilding timeframe is up to 5 years.		The shortest practicable rebuilding timeframe is specified which does not exceed one generation time for the stock.
Met?			
Justification	This PI is not scored since PI Stock Status achieved a 90 score (MSC FCRv2.0, SA2.3.1).		
b	Rebuilding evaluation		
Guidepost	Monitoring is in place to determine whether the rebuilding strategies are effective in rebuilding the stock within the specified timeframe.	There is evidence that the rebuilding strategies are rebuilding stocks, or it is likely based on simulation modelling, exploitation rates or previous performance that they will be able to rebuild the stock within the specified timeframe.	There is strong evidence that the rebuilding strategies are rebuilding stocks, or it is highly likely based on simulation modelling, exploitation rates or previous performance that they will be able to rebuild the stock within the specified timeframe.
Met?			
Justification	This PI is not scored since PI Stock Status achieved a 90 score (MSC FCRv2.0, SA2.3.1).		
References	N/A		
OVERALL PERFORMANCE INDICATOR SCORE:			N/A

Evaluation Table for PI 1.2.1 – Harvest strategy

PI 1.2.1	There is a robust and precautionary harvest strategy in place		
Scoring Issue	SG 60	SG 80	SG 100
a	Harvest strategy design		
Guidepost	The harvest strategy is expected to achieve stock management objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving stock management objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and is designed to achieve stock management objectives reflected in PI 1.1.1 SG80.
Met?	YES	YES	NO
Justification	Certainly harvest strategy is a management framework comprising several elements (<i>i.e.</i> monitoring program, HCRs, regulation tools, stock assessment, reference points). In reality harvest strategy is not always formally and explicitly stated in written format, but is an act in practice.		

	<p>The assessment team considers that harvest strategy is responsive to the state of the status and the elements work together to achieve objectives. Catch limits, control of access, protection of juveniles, minimum legal size, spatial restrictions to some vessels, on board monitoring, and several actions aimed to strenght enforcement and compliance, among others, are all responsive to the stock status and are directed to achieve the management objectives.</p> <p>Actual annual catches represent about 80% of the TAC; removals are strickly controlled by the authority and removals carried out by the Argentine fleet over the last 11 years (2005-2015) average 32% (range 26%-38%) of the estimated annual reproductive biomass.</p> <p>The harvest strategy for the hoki fishery has been applied since long and improvements have been made through the years. This strategy is based on monitoring, research and stock assessment, harvest control rules and management actions. The harvest strategy is based on the following principal issues (regulations in place for hoki are compiled in CFP Resolution N° 22/2012):</p> <p>The harvest strategy is based on the following principal issues:</p> <ol style="list-style-type: none"> 1. Monitoring is in place and includes : <ol style="list-style-type: none"> a. Observers On Board Program and dock-side catch monitoring. b. Port and on board inspectors, for control and surveillance. c. Operation of an <i>Analysis and Follow Up Commission</i> for the hoki fishery. d. Satellite vessel monitoring system (VMS) and gear surveillance by on- board video. e. Mandatory submission of logbooks. 2. Research and Stock assessment: <ol style="list-style-type: none"> a. Regular researches for life-history parameters, stock composition, relative abundance, associated species, etc. is conducted mainly by INIDEP. b. Stock assessment using a Bayesian approach started to be applied by INIDEP in 2011. The assessment methodology is in line with international guidelines for similar demersal fisheries. The model considers all the removals from the fishery in Atlantic waters, including domestic and foreign catches. Reliable estimates of the stock size exist; INIDEP estimation of the abundance of the total and spawning biomass is provided with 95% confidence. Nevertheless, some important uncertainties remain unresolved. c. Target and limit reference points are computed and the stock is assessed against them. 3. Harvest control rules. A HCR has been recently designed and is available for the fishery. <ol style="list-style-type: none"> a. A fishing license is required to harvest hoki. b. Proportion of juveniles in catches must be less than 50% (otherwise the vessel should move from the area, at least 5 nm from the original position). c. The minimum legal size for the target species is 60 cm. in total length. This is an effective measure to control juvenile catches. d. Surimi vessels can operate exclusively south of 49° S. e. Annual TAC is established by the CFP, which is set following technical advisor of INIDEP which, in turn, is based on the results of the latest assesement. TAC is the main harvest control rule in place and aims to keep the stock at or above a certain reproductive biomass threshold, which is set according to the agreed Target Reference points. 4. Management actions are further described in PI 3.2.1 and consider: <ol style="list-style-type: none"> a. Individual transferable quotas (ITQs) are established as a percentage of the TAC and are
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		<p>granted to holders of fishing licenses.</p> <p>b. A percentage of the TAC is reserved under precautionary criteria.</p> <p>c. Sanctions for violations of the regulatory measures are imposed.</p> <p>According to all the above, the fishery meets the SG80 level of performance for this scoring issue.</p>		
b	Harvest strategy evaluation			
	Guidepost	The harvest strategy is likely to work based on prior experience or plausible argument.	The harvest strategy may not have been fully tested but evidence exists that it is achieving its objectives.	The performance of the harvest strategy has been fully evaluated and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels.
	Met?	YES	YES	NO
	Justification	The yearly catch is limited by mean of the TAC established by CFP following the advice of INIDEP, and as such it can be concluded that there is evidence that the harvest strategy exists and it is achieving its objectives, although it may not have been fully tested (see also rationale of scoring issue c). Therefore, the fishery meets a SG80 level for this SI.		
c	Harvest strategy monitoring			
	Guidepost	Monitoring is in place that is expected to determine whether the harvest strategy is working.		
	Met?	YES		
	Justification	As it is stated in SI a), a comprehensive monitoring program is in place that is expected to determine whether the harvest strategy is working. Fishing operations are controlled through a satellite vessel position system, electronic fishing reports, on board and at-landing inspectors, observers on board, video camera control, etc. These actions provide evidence that the harvest strategy is working and achieving its objectives.		
		The fishery complies with SG60 for this scoring issue.		
d	Harvest strategy review			
	Guidepost			The harvest strategy is periodically reviewed and improved as necessary.
	Met?			YES
	Justification	The harvest strategy is periodically reviewed and improved as necessary. The main periodic revision to the harvest strategy deals with the stock assessment model. Annually, INIDEP, as technical advisor of CFP, makes a review of the stock assessment procedures and update the stock status. On the other hand, as part of the harvest strategy, biological reference points were recently revised, a harvest control rule has been also recently designed and approved (CFP Resolution N° 14/2017), and hoki fishery follow-up commission regularly reviews and discusses the regulation tools.		
		The fishery meets with SG100 level of performance for this scoring issue.		
e	Shark finning			
	Guidepost	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.

	Met?	NOT RELEVANT	NOT RELEVANT	NOT RELEVANT
	Justification	Sharks are not the target species, so this issue is not scored.		
f	Review of alternative measures			
	Guided post	There has been a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock and they are implemented as appropriate.	There is a biannual review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock, and they are implemented, as appropriate.
	Met?	NOT RELEVANT	NOT RELEVANT	NOT RELEVANT
	Justification	There is no unwanted catch of the target stock. The team interprets that there is no unwanted catch if all specimens of the target species are commercially used. Industry declares that there are no discards of the target species, since all the caught fishes are sold. Therefore, this SI is not scored.		
References		There are no specific references, since rationales related to this PI refer to general management issues and/or judgements of the assessment team.		
OVERALL PERFORMANCE INDICATOR SCORE:				85

Evaluation Table for PI 1.2.2 – Harvest control rules and tools

PI 1.2.2	There are well defined and effective harvest control rules (HCRs) in place			
Scoring Issue	SG 60	SG 80	SG 100	
a	HCRs design and application			
	Guided post	Generally understood HCRs are in place or available that are expected to reduce the exploitation rate as the point of recruitment impairment (PRI) is approached.	Well defined HCRs are in place that ensure that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock fluctuating around a target level consistent with (or above) MSY, or for key LTL species a level consistent with ecosystem needs.	The HCRs are expected to keep the stock fluctuating at or above a target level consistent with MSY, or another more appropriate level taking into account the ecological role of the stock, most of the time.
	Met?	YES	NO	NO
	Justification	<p>The harvest control rule now available is explicitly based on reference points and states that catch will be gradually reduced when the stock status falls below the target reference point. It also establishes that a recovery process will be triggered if the stock status is below the limit reference point (PRI). The assessment team deemed that the HCR in its present design is only generally understood and so meets SG60.</p> <p>The HCR available for hoki fishery was described by the technical fishery advisor (INIDEP) in the Invest. Report N° 23/2017 and was adopted by the management body according to CFP Act N° 14/2017 in order to establish it before the stock declines below B_{MSY} (<i>i.e.</i> Limit Reference Point).</p> <p>INIDEP proposes to establish HCRs to be applied in the fishery in order to facilitate the</p>		

		<p>determination of management actions when the stock status declines below B_{MSY}, in the event of unfavourable changes that put a risk to the sustainability as result of changes in the ecosystem or alterations in the species biology. The HCR available is based in explicitly biological reference points and associated fishing mortalities.</p> <p>The proposed HCR is generally understood and has been prepared in accordance with international guidelines with the aim of contributing to good fishing practices, and establishes:</p> <ul style="list-style-type: none"> -to act directly in the catch (<i>i.e.</i> such as with the annual setting of TACs or effort restrictions), and indirectly in fishing mortality, when stock status decreases below target reference point, decreasing gradually and trying to avoid the PRI. Results should be tested in future stock assessments. -to trigger a recovery process in cases when the stock status is below PRI (<i>i.e.</i> Limit Reference Point), applying an effort that would allow the biomass to increase to a level of 50% the size of the biomass in the absence of fishing in short term period. <p>Even if the current stock status is not overfished (<i>i.e.</i> below target reference point level), CFP decided to adopt these measures in order to ensure that the exploitation rate keeps the stock fluctuating around a target level consistent with (or above) MSY.</p> <p>However, there is no evidence ensuring that the stock is likely to fluctuate around a B_{MSY} level. There is no testing that shows this is achieved by the inclusion of a B_{MSY} consistent with reference point as a trigger in the HCRs (such as an inflection in a 'hockey stick' form) at a point that would deliver B_{MSY} in the long term.</p> <p>Therefore, the Argentine hoki fishery does not achieve the SG80 level of performance for this scoring issue and a condition is raised.</p>		
b	HCRs robustness to uncertainty	Guidepost	The HCRs are likely to be robust to the main uncertainties.	The HCRs take account of a wide range of uncertainties including the ecological role of the stock, and there is evidence that the HCRs are robust to the main uncertainties.
		Met?	NO	NO
		Justification	<p>Recent progresses in the knowledge of the Argentine hoki stock has permitted to identify some of the main uncertainties and to include them into the management of the fishery (<i>i.e.</i> recruitment temporal variability), particularly into the annual TAC (<i>i.e.</i> two scenarios of future recruitment in the assessment model).</p> <p>However, the main management tool in place (TAC) which effectively impacts on the state of the stock does not consider other important uncertainties like the degree of connectivity and interdependency between the Southeast Pacific and the Southwest Atlantic stocks. This is a particularly relevant issue, should the existence of a unique population unit along the South America cone be confirmed. Zavatteri <i>et al.</i> (2016a) pointed out the existence of a high correlation between the abundance index (CPUE) in Argentine waters and mean density in 2 spawning grounds located in Chile during the period 2007-2013. Giussi <i>et al.</i> (2016) also noted the similarity between the Pacific and Atlantic Ocean in regard to the temporal trend of the reproductive fraction (2000-2015).</p> <p>Therefore, the assessment team considers that the TAC (note that the available HCR is directly focused on the control of the catch) is not likely to be robust to the main uncertainties.</p> <p>Similarly, the assessment team considers that there is not evidence to state that the TAC</p>	

		<p>considers a wide range of uncertainties (<i>i.e.</i> ecological role of hoki, migration patterns, and influence of environmental conditions).</p> <p>So, the fishery does not achieve the SG80 level of performance for this SI and a condition is raised.</p>		
c	HCRs evaluation			
	Guided post	There is some evidence that tools used or available to implement HCRs are appropriate and effective in controlling exploitation.	Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs.	Evidence clearly shows that the tools in use are effective in achieving the exploitation levels required under the HCRs.
	Met?	YES	YES	YES
	Justification	<p>Over the last 10 years catches made by the foreign fleet represent a minor fraction of the total harvest (average 15%) and the management system applied to these vessels is outside the regulatory framework of Argentina. In the view of the assessment team, the major contributor to the exploitation rate of hoki in the South Atlantic is the domestic Argentinian fleet. Annual TAC's and access control (licensing is required) are the principal and traditional tools used in controlling exploitation of hoki. Official catch statistics show that these tools are appropriate to this purpose. Fishing is halted as soon as the TAC is reached. TAC is shared between the national participants (ITQs) and the clients fleet accounts for most of the national annual catches.</p> <p>Annually, INIDEP as technical advisor of CFP makes a review of the stock assessment procedures and updates the stock status.</p> <p>In respect to fishing mortality (F), Canales (2016) shows the evolution (1993-2015) of F in the hoki fishery. According to the author fishing mortalities in 2014 and 2015 were equal or less than F_{MSY} (=0.3), with values of 0.3 and 0.27, respectively. However, in previous years (<i>i.e.</i> 2012, 2013) F values were above F_{MSY}.</p> <p>All vessels have a satellite monitoring system and their location is known on real time by the management authority. The INIDEP Observers On Board Program regularly monitors and collects information about operational issues and other matters.</p> <p>Satellite monitoring and observer on board reports show that annual TAC is fully observed by fishers. In addition, all licensed vessels must report their catches through a daily fishing electronic report, which is sent to the fishery management. A final catch report must be presented by the captain to the management system after each trip. These data are used to produce catch statistics, which are crossed with processed data obtained by the Observers On Board Program.</p> <p>An integrated control system using video cameras and information recording on real time is applied and penalties are established when data are falsified.</p> <p>Therefore, it is considered that evidence clearly shows that the tools in use are effective in achieving the exploitation levels, and so the fishery complies with SG100 level of performance for this SI.</p>		
References	Zavatteri <i>et al.</i> , 2016a and Giussi <i>et al.</i> , 2016. CFP Act N° 14/2017 and INIDEP Invest. Report N° 23/2017.			
OVERALL PERFORMANCE INDICATOR SCORE:				65
CONDITION NUMBER (if relevant):				1 and 2

Evaluation Table for PI 1.2.3 – Information and monitoring

PI 1.2.3	Relevant information is collected to support the harvest strategy
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Scoring Issue	SG 60	SG 80	SG 100	
a	Range of information			
	Guidepost	Some relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.	Sufficient relevant information related to stock structure, stock productivity, fleet composition and other data is available to support the harvest strategy.	A comprehensive range of information (on stock structure, stock productivity, fleet composition, stock abundance, UoA removals and other information such as environmental information), including some that may not be directly related to the current harvest strategy, is available.
	Met?	YES	YES	NO
	Justification	<p>There is sufficient relevant information, related to stock structure, stock productivity and fleet composition, available to support the harvest strategy.</p> <p>Stock structure: The Observer On Board Program regularly collects information about size and age composition of hoki catfish within the Argentine continental platform. Studies to determine the existence of one or more stocks in the Southwest Atlantic have also been conducted and research to identify spawning areas in the Atlantic has been carried out.</p> <p>Research on stock structure, in particular about the existence of one or more units in the South Atlantic, is still ongoing. Alternative hypothesis within the stock assessment model should be explored when conclusions become available.</p> <p>Stock productivity: Adequate and updated information on individual growth rate is available, as well as size and age at sexual maturity. Abundance index in commercial activities is routinely monitored. Reliable estimates of the stock size exist.</p> <p>Fleet Composition: A specific license is required to fish hoki, so the overall fleet composition and the performance of each vessel, in terms of fishing areas and actual catches, is known.</p> <p>Other information: The species composition in commercial catches of hoki carried out South of 49° S has also been investigated (Mari <i>et al.</i>, 2015 and Mari & Giussi, 2016) and studies have been conducted to relate environmental and temporal-spatial variables with the catch per unit effort (Zavatteri <i>et al.</i>, 2015). Although environmental information (<i>i.e.</i> physical variables) has been collected and analyzed, results were not conclusive.</p> <p>Sufficient information is available to support the harvest strategy, but there is not a comprehensive range of information. Therefore, the fishery meets the SG80 level of performance for this SI.</p>		
b	Monitoring			
	Guidepost	Stock abundance and UoA removals are monitored and at least one indicator is available and monitored with sufficient frequency to support the harvest control rule.	Stock abundance and UoA removals are regularly monitored at a level of accuracy and coverage consistent with the harvest control rule, and one or more indicators are available and monitored with sufficient frequency to support the harvest control	All information required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of inherent uncertainties in the information [data] and the robustness of assessment and management to this

			rule.	uncertainty.
	Met?	YES	YES	NO
	Justification	<p>Stock abundance and fishery removals are regularly monitored at a level of accuracy and coverage consistent with the harvest control rule, and one or more indicators are available with sufficient frequency to support the harvest control rule.</p> <p>Stock abundance (total and spawning biomass) is regularly monitored by INIDEP to allow determination of Biological Acceptable Catches and can provide the management authority (CFP) with scientific basis to establish TAC.</p> <p>Domestic fishery removals are monitored by daily electronic catch reports and the Observers On Board Program has a good coverage of all the fleet. Regular collection of relative abundance indices (t per nm²) obtained through research surveys was suspended from 2010 onwards but catch per unit effort (CPUE) in commercial operations is regularly recorded and analysed as an abundance index. Fishery removals made by foreign fleets are also recorded and analyzed.</p> <p>However, although relevant information required by the harvest control rule is regularly collected and monitored by INIDEP and Universidad Nacional de Mar del Plata, there is not enough evidence to support that all information required is monitored with a high degree of certainty, and that there is a good understanding of inherent uncertainties in the information [data] and the robustness of assessment and management to this uncertainty.</p> <p>Therefore, the Argentine hoki fishery only complies with SG80 level of performance for this SI.</p>		
c	Comprehensiveness of information			
	Guided post		There is good information on all other fishery removals from the stock.	
	Met?		YES	
	Justification	<p>There is good information on all other fishery removals from the stock.</p> <p>INIDEP technical recommendations consider information from foreign fleets and the Malvinas fishery removals. Also, INIDEP scientists are aware of progresses in the harvesting and management of hoki in Chile and exists a permanent exchange of information and data.</p> <p>Information on removals by the foreign fleet is available to INIDEP through the official statistics and FAO data-base. Data about the length composition of the foreign catches is also available to INIDEP.</p> <p>Therefore, the fishery fully complies with SG80 level for this SI.</p>		
	References	Mari <i>et al.</i> , 2015; Mari & Giussi, 2016 and Zattereri <i>et al.</i> , 2015.		
OVERALL PERFORMANCE INDICATOR SCORE:				80

Evaluation Table for PI 1.2.4 – Assessment of stock status

PI 1.2.4	There is an adequate assessment of the stock status		
Scoring Issue	SG 60	SG 80	SG 100
a	Appropriateness of assessment to stock under consideration		
	Guided post	The assessment is appropriate for the stock and for the harvest control rule.	The assessment takes into account the major features relevant to the biology of the species and the nature of the UoA.

	Met?	YES	NO
	Justification	<p>The assessment methodology is in line with international guidelines for similar demersal fisheries (<i>i.e.</i> Chilean hoki fishery) and, in addition, has been validated by two external experts.</p> <p>The assessment provides all the inputs necessary to support the HCR.</p> <p>The current stock assessment model is a statistical catch at age model implemented in the AD Model Builder platform; parameters of the model are estimated using nonlinear techniques.</p> <p>The implementation of the model considers the catch-at-age composition during the period 1985-2015 and includes two abundance indices: t per nm² (research cruises) and the catch rate of the commercial fleet (t per hour). However, research cruises (a fishery independent piece of information in the model) were suspended from 2010 onwards and have not been reinitiated.</p> <p>The model provides estimates of recruitment, fishing mortality and reproductive and total biomass with 95% confidence. Also, the model incorporates a projection routine (20 years), with different scenarios, whose results provide options for the short-term management of the fishery. The assessment takes due account of the biology of the species.</p> <p>Therefore, evidences indicate that the fishery meets the SG80 level for this SI.</p>	
b	Assessment approach		
	Guided post	The assessment estimates stock status relative to generic reference points appropriate to the species category.	The assessment estimates stock status relative to reference points that are appropriate to the stock and can be estimated.
	Met?	YES	YES
	Justification	<p>The new biological reference points related to reproductive biomass are based on justifiable and reasonable international practice, are appropriate for the stock and can be estimated.</p> <p>International experience shows that for stocks with low productivity it is appropriate to consider as target point a proportion BR/BR₀ greater or equal than 0.30 and FAO recommends values between 0.30 and 0.55.</p> <p>In the case of Argentine hoki, two target and limit references points have been agreed considering the reproductive biomass at the beginning of the fishery activities (BR₁₉₈₅) and the virginial reproductive biomass (BR₀).</p> <p>Target reference points are TBRP: 0.4 BR₀ and TBRP : 0.5 BR₁₉₈₅</p> <p>Limit reference points are LBRP: 0.25 BR₀ and LBRP: 0.3 BR₁₉₈₅</p> <p>As mentioned earlier in this report 0.4 BR₀ is a proxy of MSY and limit points are considered safe enough in terms of appreciable risk of reproductive impairing.</p> <p>The assessment model estimates the stock status relative to biological reference points. According to the latest available assessment (Giussi <i>et al.</i>, 2016) reproductive biomass in 2015 was 206,312 t (95% confidence limits: 147,250 – 265,370 t) and it was concluded that this value represents around 42% BR₀ and 53% BR₁₉₈₅.</p> <p>References points established in the Chilean hoki fishery are quite like those set in Argentina. The following values are reported by SUBPESCA (2016):</p> <p>Target BR_{MYS} : 0.4 BR₀ and F_{MYS} : U_{0.45 BRPR}</p> <p>Limit BR_{lim}: 0.2 BR₀.</p>	

		<p>Where U is the exploitation rate and BRPR the reproductive biomass per recruit.</p> <p>According to SUBPESCA (<i>op.cit.</i>) the Chilean hoki stock is in a depleted condition, having an exploitation rate around the recommended level, but a biomass abundance lower than the limit point ($B < B_{lim}$).</p> <p>Therefore, the fishery meets the SG80 level of performance.</p>		
c	Uncertainty in the assessment			
	Guidepost	The assessment identifies major sources of uncertainty.	The assessment takes uncertainty into account.	The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a probabilistic way.
	Met?	YES	YES	NO
	Justification	<p>The major sources of uncertainty have been identified, although not necessarily (all) taken into account.</p> <p>The following sources of uncertainties are taken into account: observation uncertainty (catch data, CPUE indexes), process uncertainty (magnitude of future recruitments, magnitude of current total and reproductive biomass). Therefore, the fishery meets SG80.</p> <p>In fact, there are still some important uncertainties, namely:</p> <ul style="list-style-type: none"> • The reliability of abundance indices should be confirmed. It must be noted that the suspension of the research assessment surveys poses an additional quota of uncertainty. At present relative abundance indices are solely based upon the commercial CPUE. • Recruitments show a high interannual variability, mainly in the last period, and its causes are unclear. Uncertainties regarding the magnitude of future recruitments were incorporated into the 20 years projections of the model, but no studies have been conducted aimed to relate the strength and variability of recruitment with environmental conditions. • The migration patterns of hoki are not well understood. • The influence of environmental conditions on hoki is not well understood, nor considered in the advisory process. • The degree of connectivity and interdependency between the southeast Pacific and the southwest Atlantic stocks need to be clarified. The current assessment model does not consider alternative hypotheses about the stock structure in the Atlantic and Pacific waters and no structurally different models have either been explored. <p>Therefore, the fishery meets the SG80 level.</p>		
d	Evaluation of assessment			
	Guidepost			The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.
	Met?			NO
	Justification	<p>As far as the evaluation team knows, the assessment has not been tested for robustness and no alternative hypotheses and assessment approaches have been rigorously explored.</p> <p>This scoring issue does not meet the SG100 (a score of 80 is achieved as default).</p>		
e	Peer review of assessment			

	Guidepost		The assessment of stock status is subject to peer review.	The assessment has been internally and externally peer reviewed.
	Met?		YES	YES
	Justification	<p>The assessment of stock status has been internally and externally peer reviewed.</p> <p>The stock assessment model has been reviewed by 2 external peer reviewers, in 2014 and 2016 (Payá, 2014 and Canales, 2016) who helped improve the current assessment procedure.</p> <p>On the other hand, results of the annual stock assessment and subsequent management advice (Biological Acceptable Catch) are internally reviewed by INIDEP scientists and the Director of the Institute.</p> <p>It is worth noting that INIDEP has recently enacted a Resolution N° 30/2008 which rules the different steps involved in the publication of the reports and documents produced by the institute. The provisions of this Resolution include the internal and external review of all the published reports.</p> <p>Therefore, the fishery meets the SG100 level.</p>		
References	Giussi et al., 2016; INIDEP Resolution N° 30/2008; Payá, 2014; Canales, 2016 and SUBPESCA, 2016			
OVERALL PERFORMANCE INDICATOR SCORE:				85

-Principle 2

Evaluation Table for PI 2.1.1 – Primary species outcome

PI 2.1.1	The UoA aims to maintain primary species above the PRI and does not hinder recovery of primary species if they are below the PRI.			
Scoring Issue	SG 60	SG 80	SG 100	
a	Main primary species stock status			
Guidepost	<p>Main primary species are likely to be above the PRI</p> <p>OR</p> <p>If the species is below the PRI, the UoA has measures in place that are expected to ensure that the UoA does not hinder recovery and rebuilding.</p>	<p>Main primary species are highly likely to be above the PRI</p> <p>OR</p> <p>If the species is below the PRI, there is either evidence of recovery or a demonstrably effective strategy in place between all MSC UoAs which categorise this species as main, to ensure that they collectively do not hinder recovery and rebuilding.</p>	<p>There is a high degree of certainty that main primary species are above the PRI and are fluctuating around a level consistent with MSY.</p>	
Met?	NOT SCORED	NOT SCORED	NOT SCORED	
Justification	<p>There are no main primary species. The information provided by Mari <i>et al.</i> (2015) and Mari & Giussi (2016) based upon observations on board, allowed to know and quantify the specific composition of catches and bycatches in the hoki fishery.</p> <p>According to SA 3.1.3 (FCRv2.0), primary species are those species in the catch that are not covered under P1; are within the scope of MSC program and where management tools and</p>			

		<p>measures are in place, intended to achieve stock management objectives reflected in either limit or target reference points.</p> <p>Based on the definition above and the Decision Tree to assist teams in the designation of P2 components, the assessment team concluded that there are no primary species (neither main nor minor) in the Argentine hoki fishery.</p>		
b	Minor primary species stock status			
	Guidepost			For minor species that are below the PRI, there is evidence that the UoA does not hinder the recovery and rebuilding of minor primary species
	Met?			NOT SCORED
	Justification	See rationale provided above. There are no primary species.		
References	N/A			
OVERALL PERFORMANCE INDICATOR SCORE:				100

Evaluation Table for PI 2.1.2 – Primary species management strategy

PI 2.1.2	There is a strategy in place that is designed to maintain or to not hinder rebuilding of primary species, and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch.			
Scoring Issue	SG 60	SG 80	SG 100	
a	Management strategy in place			
	Guidepost	There are measures in place for the UoA, if necessary, that are expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are likely to above the point where recruitment would be impaired.	There is a partial strategy in place for the UoA, if necessary, that is expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are highly likely to be above the point where recruitment would be impaired.	There is a strategy in place for the UoA for managing main and minor primary species.
	Met?	YES	YES	NO
	Justification	<p>If the intent of this PI is to assess the arrangements in place to manage the impact that the UoA has on the primary species to ensure that it does not pose a risk of serious or irreversible harm to them, the fishery does not need to have measures or a partial strategy in place, because there is no impact on primary species.</p> <p>The term “<i>If necessary</i>” referred to in Tables SA8 and GSA3 (FCRv2.0) is invoked here.</p> <p>The fishery meets SG80 level of performance.</p>		
b	Management strategy evaluation			
	Guidepost	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is some objective basis for confidence that the measures/partial strategy will work, based on some information directly about the fishery and/or species involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the fishery and/or species involved.
	Met?	YES	YES	NO

	Justification	<p>If the intent of this PI is to assess the arrangements in place to manage the impact that the UoA has on the primary species to ensure that it does not pose a risk of serious or irreversible harm to them, the fishery does not need to have measures or a partial strategy in place, because there is no impact on primary species.</p> <p>The term “<i>If necessary</i>” referred to in Tables SA8 and GSA3 (FCRv2.0) is invoked here.</p> <p>The fishery meets SG80 level of performance.</p>		
c	Management strategy implementation			
	Guidepost		There is some evidence that the measures/partial strategy is being implemented successfully.	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its overall objective as set out in scoring issue (a).
	Met?		YES	NO
	Justification	<p>If the intent of this PI is to assess the arrangements in place to manage the impact that the UoA has on the primary species to ensure that it does not pose a risk of serious or irreversible harm to them, the fishery does not need to implement measures or a partial strategy, because there is no impact on primary species.</p> <p>The term “<i>If necessary</i>” referred to in Tables SA8 and GSA3 (FCRv2.0) is invoked here.</p> <p>The fishery meets SG80 level of performance.</p>		
d	Shark finning			
	Guidepost	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	NOT RELEVANT	NOT RELEVANT	NOT RELEVANT
	Justification	There are no sharks detected as primary species, so this issue is not scored.		
e	Review of alternative measures			
	Guidepost	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of all primary species, and they are implemented, as appropriate.
	Met?	NOT RELEVANT	NOT RELEVANT	NOT RELEVANT
	Justification	There are no unwanted catches of primary species in the hoki fishery.		
References		N/A		
OVERALL PERFORMANCE INDICATOR SCORE:				80

Evaluation Table for PI 2.1.3 – Primary species information

PI 2.1.3	Information on the nature and extent of primary species is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage primary species		
Scoring Issue	SG 60	SG 80	SG 100
a	Information adequacy for assessment of impact on main species		
	Guidepost	Qualitative information is	Some quantitative

	ost	adequate to estimate the impact of the UoA on the main primary species with respect to status. OR If RBF is used to score PI 2.1.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for main primary species.	information is available and is adequate to assess the impact of the UoA on the main primary species with respect to status. OR If RBF is used to score PI 2.1.1 for the UoA: Some quantitative information is adequate to assess productivity and susceptibility attributes for main primary species.	available and is adequate to assess with a high degree of certainty the impact of the UoA on main primary species with respect to status.
	Met?	YES	YES	NO
	Justification	<p>As stated in GSA3.6 of the FCRv2.0, the intent of PI 1.2.3 is to address the information base for the management of primary species. <i>'The information and monitoring required in this PI is intended to include that which is needed to determine the risk posed by the UoA and the effectiveness of the strategy to manage these species.'</i> (Sic)</p> <p>The assessment team has been unable to find any specific instruction/guidance in the MSC Standard (FCRv2.0) or provided with a reasonable argument regarding the need to score this PI in cases where there are no primary species, and hence no information to take into account to assess the impact of the UoA on these primary species.</p> <p>Nevertheless, to fulfill with SA 3.3.1 and following verbal advice, the team decided to score this performance indicator considering the adequacy of the information that supports the statement that there are no primary species in the hoki fishery.</p> <p>The assignment of primary species follows the criteria set up in SA 3.1.3 and its sub-clauses. In this context, the sub-clause SA 3.1.3.3 has special relevance that refers to the existence of management tools and measure in place <i>'intended to achieve stock management objectives reflected in either limit or target reference points'</i>. (Sic)</p> <p>The existence of primary and/or secondary species in the hoki fishery was determined on the basis of the information provided by Mari <i>et al.</i> (2015) and Mari & Giussi (2016). This information is deemed as reliable since it covers a representative period (2008-2015); it comes from direct observations on board; it comes from the (current) main area of the fishery (South of 49° SL); and it is supported by a large number of fishing trawls (more than 24,000) conducted by the commercial fleet. Depending on the relative predominance of hoki in the trawls, three groups were identified by these authors, the group 1 being the most stable through time and where hoki represented around 80% or more of the total catch, indicating that this was the target species.</p> <p>Taken into account the criteria to identify primary species, the background information in respect to the species identified as bycatch of the target species (<i>i.e.</i> existence/non-existence of reference points) and the results of Mari <i>et al.</i> (2015) and Mari & Giussi (2016), the team determined that there are no primary (main and minor) species in the hoki fishery.</p> <p>A score of 80 is given to this scoring issue.</p>		
b	Information adequacy for assessment of impact on minor species			
	Guidepost			Some quantitative information is adequate to estimate the impact of the

				UoA on minor primary species with respect to status.
	Met?			NO
	Justification	See rationale provided in SI a). A default score is given of 80.		
c	Information adequacy for management strategy			
	Guidepost	Information is adequate to support measures to manage main primary species.	Information is adequate to support a partial strategy to manage main Primary species.	Information is adequate to support a strategy to manage all primary species, and evaluate with a high degree of certainty whether the strategy is achieving its objective.
	Met?	YES	YES	NO
	Justification	See rationale provided in SI a). A score of 80 is given to this scoring issue.		
References		Mari <i>et al.</i> (2015); Mari & Giussi (2016)		
OVERALL PERFORMANCE INDICATOR SCORE:				80

Evaluation Table for PI 2.2.1 – Secondary species outcome

PI 2.2.1	The UoA aims to maintain secondary species above a biological based limit and does not hinder recovery of secondary species if they are below a biological based limit.		
Scoring Issue	SG 60	SG 80	SG 100
a	Main secondary species stock status		
	Guidepost	<p>Main Secondary species are likely to be within biologically based limits.</p> <p>OR</p> <p>If below biologically based limits, there are measures in place expected to ensure that the UoA does not hinder recovery and rebuilding.</p>	<p>Main secondary species are highly likely to be above biologically based limits</p> <p>OR</p> <p>If below biologically based limits, there is either evidence of recovery or a demonstrably effective partial strategy in place such that the UoA does not hinder recovery and rebuilding.</p> <p>AND</p> <p>Where catches of a main secondary species outside of biological limits are considerable, there is either evidence of recovery or a, demonstrably effective strategy in place between those MSC UoAs that also have considerable catches of the species, to ensure that they collectively do not hinder recovery and rebuilding.</p>

	Met?	YES for <i>M. australis</i>	YES for seabirds	NO
	Justification	<p>-Southern hake, <i>Merluccius australis</i></p> <p>As stated in the P2 Background, there is only one individual species assigned as main secondary (<i>i.e. Merluccius australis</i>). Catches are composed of individuals older than 3 years, and mainly by mature specimens (age groups 5 to 7). Although there are no target or limit reference points to more properly assessed stock status, the last stock assessment (Giussi & Zavatteri, 2016) concluded that total and spawning biomass has remained relatively stable since 1992.</p> <p>Based upon the above evidence, the assessment team considers that this species is likely to be within biologically based limits. The assessment team considers that it would not be precautionary to state that “it is highly likely” (SG80) that the species is within the BBL’s since over the last 3 years the annual landings have been somewhat above the recommended TAC; catches made by foreign fleet are not fully accurate; and there are not independent abundance index for the last years.</p> <p>Therefore, in the case of <i>M. australis</i> the scoring issue meets the SG60 and a condition is raised (Condition N° 3).</p> <p>-Seabirds</p> <p>With respect to the other main secondary species (<i>i.e. seabirds</i>) most of them have been classified in a conservation status of Least Concern (LC); the global population trends of these species are unknown but it is suggested that population declines have not reached threshold levels to categorize these species as threatened. On the other hand, given that all seabirds are included in the PAN-Aves, which provides a comprehensive framework for the protection and conservation of these species and -in addition- all vessels fishing hoki as a target resource have the obligation to have observers on board and inspectors, who ensure compliance with the regulations. The assessment team considers that it is highly likely that seabirds are within biologically based limits. The SG80 is met in the case of this group.</p>		
b	Minor secondary species stock status			
	Guidpost			For minor species that are below biologically based limits’, there is evidence that the UoA does not hinder the recovery and rebuilding of secondary species
	Met?			NO for all minor species
	Justification	<p>As stated in the P2 Background, two individual species were assigned as minor secondary (Patagonian cod, <i>Salilota australis</i> and Savorin, <i>Seriollella sp.</i>). Also, Chondrichthyes (as a group) and a group of numerous Osteichthyes were assigned as minor secondary.</p> <p>-Osteichthyes</p> <p>Regarding a group of 34 species of Osteichthyes which were assigned as minor secondary, given that their individual weight is totally negligible in respect to the weight of the total catch (taken as a whole this group represents 4%) the assessment team decided not assessed them.</p> <p>-Patagonian cod, <i>Salilota australis</i></p> <p>Regarding the Patagonian cod, the results of the latest stock assessment (Di Marco & Giussi, 2014) showed that total biomass has continuously diminished since the beginning of the time series reaching a value of 65,577 t. in 2013, which represents 57% of the</p>		

	<p>biomass estimate for 2003 (app. 114,800 t.). The authors concluded that the stock should be considered at risk of overexploitation.</p> <p>At present, there are no management measures set for the Patagonian cod and total landings reported by the Argentinean fleet over the last decade have varied between 2,000 to 8,000 t. Even though total catches (Argentinean + foreign fleets) have decreased since 2013, there are not new studies to determine if total biomass has remained stable or is in a process of recovery.</p> <p>So, there is no evidence to support that this minor secondary species is highly likely to be above biologically based limits.</p> <p>Based upon the above, the assessment team considers that in the case of <i>S. australis</i> the SG100 is not met and the SG80 level is met by default.</p> <p>-Savorin, <i>Serirolella sp.</i></p> <p>In respect to <i>Serirolella sp.</i> the catches are highly fluctuating and depend on the spatial distribution of the fleet and the degree of retention of the specimens rather than on the level of biomass of Savorin. Since 2002, there are no studies addressed to estimate the stock status and there are no measures or management rules for <i>Serirolella sp.</i></p> <p>Therefore, there is no evidence to support that this minor secondary species is highly likely to be above biologically based limits.</p> <p>Based upon the above, the assessment team considers that in the case of <i>Serirolella sp.</i> the SG100 is not met and the SG80 level is met by default.</p> <p>-Chondrichthyes</p> <p>With respect to other minor secondary species (Chondrichthyes), given that all species of this group are included in the PAN-Tiburones, which provides a comprehensive framework for the protection and conservation of the species and -in addition- all vessels fishing hoki as a target resource have the obligation to have observers on board and inspectors, who ensure compliance with the regulations. However, the assessment team considers that there is no evidence to support that chondrichthyans are highly likely to be above biologically based limits. So, the SG100 is not achieved and the SG80 level is met by default.</p>	
References	Di Marco & Giussi, 2014; Giussi & Zavatteri, 2016	
OVERALL PERFORMANCE INDICATOR SCORE:		75
CONDITION NUMBER (if relevant):		3

Evaluation Table for PI 2.2.2 – Secondary species management strategy

PI 2.2.2	There is a strategy in place for managing secondary species that is designed to maintain or to not hinder rebuilding of secondary species and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch.		
Scoring Issue	SG 60	SG 80	SG 100
a	Management strategy in place		
Guidepost	There are measures in place, if necessary, which are expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be within biologically based limits or to ensure that the UoA does	There is a partial strategy in place, if necessary, for the UoA that is expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be within biologically based limits or to ensure	There is a strategy in place for the UoA for managing main and minor secondary species.

		not hinder their recovery.	that the UoA does not hinder their recovery.	
Met?	YES	YES for main species	NO for all secondary species	
Justification	<p>-Southern hake, <i>Merluccius australis</i></p> <p><i>Merluccius australis</i> and Seabirds have been identified as main secondary species in the hoki fishery. On the other hand, the Patagonian cod, Savorin and Chondrichthyes have been identified as minor secondary species</p> <p>In the case of <i>M. australis</i> there is a measure (<i>i.e.</i> limit to the catch through the establishment of a TAC of 5,000 t., according to CFP Resolution N° 4/2016) which is expected to help that the UoA does not to hinder its recovery (by making large catches). It is worth noting that the latest stock assessment (Giussi & Zavatteri, 2016) concluded that the biomasses have remained relatively stable since 1992, and catch levels would seem to have not affected the stock biomass and age structure. The assessment team considers that there is no need to have a partial strategy in place, because the impact of the hoki fishery seems to be negligible. So, the SG80 is met.</p> <p>-Seabirds</p> <p>With respect to Seabirds (main species), there is a partial strategy in place for managing this group (<i>i.e.</i> PAN-Aves). So, the SG80 is met.</p> <p>-Patagonian cod, <i>Salilota australis</i> and Savorin, <i>Seriolella sp</i></p> <p>Concerning the Patagonian cod (<i>S. australis</i>) and Savorin (<i>Seriolella sp</i>) (minor species) there is no strategy in place for managing these fishes. So, the SG100 is not met.</p> <p>-Chondrichthyes</p> <p>Regarding Chondrichthyes (minor species), there is a partial strategy in place for managing this group (<i>i.e.</i> PAN-Tiburones). So, the SG100 is not met.</p> <p>Given that there is no a strategy in place for (all) main and minor secondary species, the scoring issue does not meet the SG100 and the fishery complies with SG80 level.</p>			
b	Management strategy evaluation			
Guided post	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/species).	There is some objective basis for confidence that the measures/partial strategy will work, based on some information directly about the UoA and/or species involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or species involved.	
Met?	YES	YES for main species	NO for all secondary species	
Justification	<p>There is some objective basis for confidence that the measures /partial strategy will work.</p> <p>National Action Plans (<i>i.e.</i> PAN-Aves & PAN-Tiburones) are closely monitored and there is some direct information about the UoA (Massa <i>et al.</i>, 2015 and Pulifiato & Massa, 2016 for Chondrichthyes; and results of workshop for Seabirds in: http://www.agroindustria.gob.ar/sitio/areas/pesca_maritima/plan/PAN-AVES/_archivos//000001_TALLER%20SEGUIMIENTO%20PAN%20AVES%20JUNIO%202012.pdf).</p> <p>In the case of the fishes assigned as secondary species, only one of them (<i>M. australis</i>) is subjected to a measure (TAC) which, in general terms and if properly controlled, provides some basis for confidence that will work.</p> <p>However, strategies have not been fully tested yet and the fishery meets the SG80 level.</p>			

c	Management strategy implementation			
	Guidepost		There is some evidence that the measures/partial strategy is being implemented successfully.	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a).
	Met?		YES for main species	NO for all secondary species
	Justification	<p>There is some evidence that the measures/strategies are being implemented successfully.</p> <p>The annual catch limit set to <i>S. australis</i> is controlled by the Subsecretaria de Pesca y Acuicultura (SSPyA) and there is a comprehensive system in place.</p> <p>Observance of measures/actions included in the National Action Plans are routinely monitored at sea by the Observer On Board Program (INIDEP); these plans are under the responsibility of SSPyA and Secretaria de Ambiente and advisory technical groups to evaluate the functioning and implementation of the PAN, were instituted.</p> <p>The fishery meets the SG80 level of performance.</p>		
d	Shark finning			
	Guidepost	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	YES	YES	YES for chondrichthyes
	Justification	<p>Chondrichthyans have been identified as minor secondary species in the hoki fishery, but there is a high degree of certainty that shark finning is not taking place. As it is mentioned in the CFP Resolution N° 7/2013, shark finning in Argentine Sea is forbidden. All vessels fishing for hoki as a target species must have an observer on board and inspector, who ensures compliance with this regulation. In case of non-compliance, the vessel is sanctioned according to provisions established in Law N° 24.922, and the vessel risks having the fishing permit withdrawn.</p> <p>Therefore, the fishery meets with SG100 level of performance for this SI.</p>		
e	Review of alternative measures to minimise mortality of unwanted catch			
	Justification	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main secondary species.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main secondary species and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of all secondary species, and they are implemented, as appropriate.
	Met?	YES	YES for seabirds	NO for seabirds and chondrichthyans
	Guidepost	<p>Seabirds (main secondary species) and Chondrichthyes (minor secondary species) have been identified as unwanted catch in the hoki fishery, and National Action Plans are available for birds and sharks.</p> <p>In both cases there is a regular review of potential effectiveness and practicality of alternative measures that are established as management tools.</p> <p>A review of these measures and progresses made regarding specific objectives of the National Action Plans are discussed in workshops carried out by government officials and</p>		

	experts. Meeting results are provided in the following website: www.agroindustria.gob.ar . Therefore, the fishery meets the SG80 level of performance for this SI.
References	CFP Resolution N° 7/2013; CFP Resolution N° 4/2016; Giusi & Zavatteri, 2016; Massa <i>et al.</i> , 2015; Pulifiato & Massa, 2016
OVERALL PERFORMANCE INDICATOR SCORE:	
	85

Evaluation Table for PI 2.2.3 – Secondary species information

PI 2.2.3	Information on the nature and amount of secondary species taken is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage secondary species.		
Scoring Issue	SG 60	SG 80	SG 100
a	Information adequacy for assessment of impacts on main secondary species		
Guidepost	Qualitative information is adequate to estimate the impact of the UoA on the main secondary species with respect to status. OR If RBF is used to score PI 2.2.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for main secondary species.	Some quantitative information is available and adequate to assess the impact of the UoA on main secondary species with respect to status. OR If RBF is used to score PI 2.2.1 for the UoA: Some quantitative information is adequate to assess productivity and susceptibility attributes for main secondary species.	Quantitative information is available and adequate to assess with a high degree of certainty the impact of the UoA on main secondary species with respect to status.
Met?	YES	YES for main species	NO
Justification	Some quantitative information is available and adequate to assess the impact of the UoA on main secondary species with respect to status. Identification and quantification of catches of main secondary species are systematically carried out. The main pieces of information are collected and provided by the INIDEP Observers On Board Program, with high level of coverage; observers collect data by fleet, both for bottom and semi-pelagic trawl nets occurring in the same vessel and fishing trip. Sampling conducted during the landings also contributes to obtain quantitative information. In the case of seabirds' information is continuously collected and updated in the framework of PAN-Aves. Therefore, the fishery meets the SG80 level of performance for this SI.		
b	Information adequacy for assessment of impacts on minor secondary species		
Guidepost			Some quantitative information is adequate to estimate the impact of the UoA on minor secondary species with respect to status.
Met?			NO for minor species
Justification	Both for <i>Salilota australis</i> and <i>Serirolella sp.</i> biological and fishery data were obtained from		

	tion	<p>annual research surveys carried out by INIDEP during the 90's. Sampling of landings also contributed to gather valuable information. At present, there is a systematic quantification of catches, but the assessment team is not sure if information is adequate to estimate the impact.</p> <p>In the case of chondrichthyes, there is some quantitative information about the catch composition and biological data collected by OBO's and research groups. This information is transferred to management authorities to establish management measures and is considered adequate for those purposes.</p> <p>Given the adequacy of information to estimate impacts is not applicable to all minor secondary species, this scoring issue does not meet the SG100.</p>		
c	Information adequacy for management strategy			
	Guidepost	Information is adequate to support measures to manage main secondary species.	Information is adequate to support a partial strategy to manage main secondary species.	Information is adequate to support a strategy to manage all secondary species, and evaluate with a high degree of certainty whether the strategy is achieving its objective.
	Met?	YES	YES for main species	NO for all secondary species
	Justification	<p>Although the current measure set for <i>M. australis</i> is rather limited (TAC), the assessment team considers that the available information (<i>i.e.</i> average age and size at maturity; age-size structure of the catches, estimates of biomasses, catch-effort data per fleet) is adequate to support a partial strategy. The current absence of more proper measures does not necessarily imply that the information available is inadequate.</p> <p>In the case of seabirds, management of this group is under the umbrella of PAN-Aves and information is continuously collected and updated to support at least a partial strategy.</p> <p>The fishery meets the SG80 level.</p>		
References	References are provided in the background.			
OVERALL PERFORMANCE INDICATOR SCORE:				80

Evaluation Table for PI 2.3.1 – ETP species outcome

PI 2.3.1	The UoA meets national and international requirements for the protection of ETP species The UoA does not hinder recovery of ETP species			
Scoring Issue	SG 60	SG 80	SG 100	
a	Effects of the UoA on population/stock within national or international limits, where applicable			
	Guidepost	Where national and/or international requirements set limits for ETP species, the effects of the UoA on the population/stock are known and likely to be within these limits.	Where national and/or international requirements set limits for ETP species, the combined effects of the MSC UoAs on the population/stock are known and highly likely to be within these limits.	Where national and/or international requirements set limits for ETP species, there is a high degree of certainty that the combined effects of the MSC UoAs are within these limits.
	Met?	NOT SCORED	NOT SCORED	NOT SCORED
Justification	As it is reviewed in the background, there are identified <i>Lamna nasus</i> as ETP Chondrichthyes, according CMS agreements and 5 ETP seabirds (Table 10, following IUCN Redlist and National legislation) that interact with Argentine hoki fishery. However, there are no population/stock limits set for these species. As it is established in the FCRv2.0, this			

		scoring issue is not scored.		
b	Direct effects			
	Guided post	Known direct effects of the UoA are likely to not hinder recovery of ETP species.	Known direct effects of the UoA are highly likely to not hinder recovery of ETP species.	There is a high degree of confidence that there are no significant detrimental direct effects of the UoA on ETP species.
	Met?	YES	YES for all ETP species	NO
	Justification	<p>The management measures established for Argentine hoki fishery described in the CFP Resolution N° 22/2012 establishes that observers on board shall record and provide information of possible capture/interaction of seabirds during fishing tasks. In the case of chondrichthyes, the CFP Resolution N° 4/2013 indicates that all individuals captured must be recorded in logbooks.</p> <p>The accurate and verifiable information of interactions with ETPs species is provided by observed coverage under respective National Action Plans framework. All mortalities truly are known, including the levels of unobserved mortalities arising from gear interactions (<i>i.e.</i> trawling wires and sound nets in the case with seabirds and direct catching of Chondrichthyans).</p> <p>As it is analysed by Mari <i>et al.</i> (2015), the proportion of all skates and sharks does not exceed the 1% of the total catch. In the case of <i>Lamna nasus</i>, Cortés & Waessle (2014) determined that this species is incidentally catch by bottom and mid-water trawl fishery, especially when the fleet conducts fishing effort in Southern blue whiting (<i>Micromesistius australis</i>) and hoki (<i>Macruronus magellanicus</i>) (<i>i.e.</i> Cortés & Waessle (2016) estimated an incidental catch of <i>Lamna nasus</i> in surimi fleet of 489 t during 2006-2012). However, these authors indicated that unwanted catch of <i>L. nasus</i> has being a relatively stable trend with a high value in 2012. Other aspect observed is that incidental catch decreases when fishing gear is over 500 m of depth. As it is described by Mari <i>et al.</i> (2015), the 71% of fishing operations were carried out mainly with bottom trawl nets in a wide range of depths (50 to 1,600 m); while other hauls were concentrated at 400-1,600 m employing mid-water trawl net.</p> <p>Moreover, <i>Lamna nasus</i> is a top predator that habits in temperate and cold pelagic zone of the North Atlantic, and along temperate and cold waters formed by the Southern Atlantic, Indian and Pacific Oceans, and the Northern zone of the Antarctic Ocean (Compagno, 2001). Therefore, even if the fishery reports unwanted catch of this species, it is probable that does not affect the population recovery, due fishing operations is very local (<i>i.e.</i> between 51° - 56° S) in comparison with its wide distribution, due the highly migratory nature, of this ETP species and the hoki fleet mainly use bottom trawl net in a wide range of depths (50 to 1,600 m).</p> <p>However, there are not studies related with a high degree of confidence that the direct effects of UoA does not affect this species, due there are not biological limits established for <i>L. nasus</i>. Also, the PAN-Tiburones contributes to the protection and conservation of biological diversity and the structure and function of the ecosystem.</p> <p>In the case of seabird interaction, the use of streamer lines (LEPs) in the trawling fleet reduced significantly the mortality as identified by Tamini <i>et al.</i> (2016). The CFP Resolution N° 3/2017 established that all trawler vessels shall implement two streamer lines (<i>i.e.</i> one in port and another one in starboard). Also, LEPs shall be used at moment when otter boards are submerged until the beginning of the overturning of the net in each haul.</p> <p>So, the fishery meets with SG80 level of performance for this PI.</p>		
c	Indirect effects			

	Guidepost		Indirect effects have been considered and are thought to be highly likely to not create unacceptable impacts.	There is a high degree of confidence that there are no significant detrimental indirect effects of the fishery on ETP species.
	Met?		YES for all ETP species	NO
	Justification	<p>Mitigation measures developed in the fishery reduced significantly indirect effects: depredation of seabirds in hoki (Tamini <i>et al.</i>, 2016) and survival of shark post-capture (Pulifiato & Massa, 2016).</p> <p>However, the implementation of LEPs to reduce interaction of seabirds is voluntary until 30th April 2018 and the use of grids or chains to increase survival of great sharks was reviewed as pilot test.</p> <p>Related with <i>L. nasus</i>, Pulifiato & Massa (2016) identified that individuals placed in the deck of the ship are generally returned alive to the sea, even if they are maintained 20-25 min out off. This aspect corroborates that this species has a high post-capture survival as it is observed by Stobutzki <i>et al.</i> (2002).</p> <p>However, as it is mentioned in SI b), the catch of Chondrichthyans does not exceed 1% and indirect effects do not create unacceptable impacts, but the assessment team considers that there is not a high degree of confidence that there are no significant detrimental indirect effects of the fishery on ETP species. So, the fishery only meets with SG80 level of performance for this SI.</p>		
	References	<p>CFP Resolutions N° 15/2010; N° 22/2012; N° 4/2013; N° 7/2013 and N° 3/2017.</p> <p>Mari <i>et al.</i>, 2015; Tamini <i>et al.</i>, 2016; Pulifiato & Massa, 2016; Cortés & Waessle, 2014, 2016; Compagno, 2001; Stobutzki <i>et al.</i> (2002).</p>		
OVERALL PERFORMANCE INDICATOR SCORE:				80

Evaluation Table for PI 2.3.2 – ETP species management strategy

PI 2.3.2	<p>The UoA has in place precautionary management strategies designed to:</p> <ul style="list-style-type: none"> • meet national and international requirements; • ensure the UoA does not hinder recovery of ETP species. <p>Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species.</p>		
Scoring Issue	SG 60	SG 80	SG 100
a	Management strategy in place (national and international requirements)		
Guidepost	There are measures in place that minimise the UoA-related mortality of ETP species, and are expected to be highly likely to achieve national and international requirements for the protection of ETP species.	There is a strategy in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to be highly likely to achieve national and international requirements for the protection of ETP species.	There is a comprehensive strategy in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to achieve above national and international requirements for the protection of ETP species.
Met?	YES	YES	YES for all ETP species
Justification	National Action Plans for seabirds and chondrichthyans provide a comprehensive strategy for managing effects on ETP species, which is designed to achieve national and international requirements for their protection (general objectives are provided in Tables 12 and 13). Measures identified in CFP Resolutions N° 15/2010, N° 22/2012, N° 4/2013 and		

		<p>N° 7/2013 (management measures for seabirds and chondrichthyans are provided in the Principle 2 background) have minimised mortality and reduce interactions with fishing operations.</p> <p>Therefore, the fishery complies with SG100 level of performance for this SI.</p>		
b	Management strategy in place (alternative)			
	Guidepost	There are measures in place that are expected to ensure the UoA does not hinder the recovery of ETP species.	There is a strategy in place that is expected to ensure the UoA does not hinder the recovery of ETP species.	There is a comprehensive strategy in place for managing ETP species, to ensure the UoA does not hinder the recovery of ETP species
	Met?	NOT RELEVANT	NOT RELEVANT	NOT RELEVANT
	Justification	See rationale mentioned in SI a).		
c	Management strategy evaluation			
	Guidepost	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is an objective basis for confidence that the measures/strategy will work, based on information directly about the fishery and/or the species involved.	The Strategy/comprehensive strategy is mainly based on information directly about the fishery and/or species involved, and a quantitative analysis supports high confidence that the strategy will work.
	Met?	YES	YES for all ETP species	NO
	Justification	<p>There is an objective basis for confidence that strategy will work, based on information directly about the fishery and species involved.</p> <p>As it is mentioned in SI a), management measures described in CFP Resolutions are established for all trawling fleet, including specific measures related to chondrichthyans and seabirds for Argentine hoki.</p> <p>In case of Chondrichthyans, the main measures are: the prohibition to catch them as target species and shark finning practices, and to return living individuals that exceed the body size of 160 cm. Pulifiato & Massa (2016) identified that individuals placed in the deck of the ship are generally returned alive to the sea, even if they are maintained 20-25 min out off. This aspect corroborates that this species has a high post-capture survival as it is observed by Stobutzki <i>et al.</i> (2002).</p> <p>Referring to seabirds, even measures are recently implemented (<i>i.e.</i> use of streamer lines) by management authority, pilot tests carried out by Tamini <i>et al.</i> (2016) determined that impacts with ETP seabirds as <i>Thalassarche melanophrys</i>, <i>Diomedea epomorpha</i>, <i>Macronectes giganteus</i> and <i>Macronectes halli</i> were significantly reduced when the fleet uses the streamer lines (LEPs).</p> <p>Also, there is quantitative data that supports the success of the strategy (Tamini <i>et al.</i>, 2016, Pulifiato & Massa, 2016), but there are measures recently implemented (<i>i.e.</i> use of streamer lines) that there is no high of confidence that this strategy will work in short-terms due to these requirements are set as voluntary until 30th April 2018. So, the fishery does not achieve with SG100 level, scoring 80 for this SI.</p>		
d	Management strategy implementation			
	Guidepost		There is some evidence that the measures/strategy is being implemented	There is clear evidence that the strategy/comprehensive strategy is being

			successfully.	implemented successfully and is achieving its objective as set out in scoring issue (a) or (b).
	Met?		YES for all ETP species	NO
	Justification	<p>Fishing actions of the freezer trawling fleet are monitored by INIDEP OBO Program, recording incidental catches of several species, especially sharks and skates (in agreement with established in PAN-Tiburones) and interactions with seabirds (in agreement with PAN-Aves).</p> <p>Both PANs are supervised by management authority that set mandatory resolutions that allow achieving objectives established to minimise mortality with ETP species. Also, the objectives described in background section for chondrichthyans and seabirds are constantly reviewed by stakeholders (government, NGOs, CFP, INIDEP, SSPyA, etc.) in annual meetings (meetings are published in Ministerio Agroindustria website).</p> <p>However, the strategy is recently placed and there is no clear evidence if it is being implemented successfully. So, the fishery only meets with SG80 as precautionary approach taking into account some experiences as pilot tests.</p>		
e	Review of alternative measures to minimize mortality of ETP species			
	Guidepost	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality ETP species, and they are implemented, as appropriate.
	Met?	YES	YES for all ETP species	NO
	Justification	<p>There are regular review of potential effectiveness and practicality of alternative measures that are established as management measures for chondrichthyans and seabirds.</p> <p>Tamini <i>et al.</i> (2016) analysed the incidental mortality level on a freezer trawler fleet and the efficacy of mitigation measures aimed at reducing such mortality level. Observations carried out by instructors of Albatross Task Force Argentina between 2012 and 2014 determined a mortality rate of 0.25 birds per tow, including four ETP species: <i>Thalassarche melanophris</i>, <i>Diomedea epomophora</i>, <i>Macronectes giganteus</i> and <i>Macronectes halli</i>. Impacts were significantly reduced when using the Streamer Lines (LEPs). CFP recently approved the use of LEPs (CFP Resolution N° 3/2017) for the trawling fleet that will be mandatory in 2018.</p> <p>Pulifiato & Massa (2016) reviewed an alternative measure in the manipulation of the catch that maximizes the possibility of post-capture survival of the great sharks. During two fishing trips carried out in 2014 by austral vessels, it was observed how the crew manipulates the sharks once they arrive on board. In addition, it was assessed with crew members the feasibility of using instruments, such as grids or chains, to avoid the arrival of sharks at the hole and enable their return to the sea, avoiding their mistreatment and death, complying with measures established for the conservation of chondrichthyans. Also, workshops were carried out with crews to spread the problems of these species and good fishing practices (Massa <i>et al.</i>, 2015). Authors indicated that this alternative measure will be reviewed with hoki fleet.</p> <p>Also, the review of these measures and progress in specific objectives of National Action Plans to reduce fishery impacts in chondrichthyans and seabirds are discussed in workshops carried out by government and experts. Meeting results are provided in the</p>		

	following website: www.agroindustria.gob.ar . Therefore, the fishery meets with SG80 level of performance for this SI.
References	Plan de Acción Nacional para Reducir la Interacción de Aves con Pesquerías en la República de Argentina (2010) Plan de Acción Nacional para la Conservación y el Manejo de Condrictios (tiburones, rayas y quimeras) en la República Argentina (2009, revised 2015) CFP Resolutions N° 15/2010; N° 22/2012; N° 4/2013 and N° 7/2013 Tamini <i>et al.</i> , 2016; Massa <i>et al.</i> , 2015; Pulifiato & Massa, 2016; Stobutzki <i>et al.</i> , 2002.
OVERALL PERFORMANCE INDICATOR SCORE:	
	85

Evaluation Table for PI 2.3.3 – ETP species information

PI 2.3.3	Relevant information is collected to support the management of UoA impacts on ETP species, including: <ul style="list-style-type: none"> Information for the development of the management strategy; Information to assess the effectiveness of the management strategy; and Information to determine the outcome status of ETP species. 		
Scoring Issue	SG 60	SG 80	SG 100
a	Information adequacy for assessment of impacts		
Guidepost	Qualitative information is adequate to estimate the UoA related mortality on ETP species. OR If RBF is used to score PI 2.3.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for ETP species.	Some quantitative information is adequate to assess the UoA related mortality and impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species. OR If RBF is used to score PI 2.3.1 for the UoA: Some quantitative information is adequate to assess productivity and susceptibility attributes for ETP species.	Quantitative information is available to assess with a high degree of certainty the magnitude of UoA-related impacts, mortalities and injuries and the consequences for the status of ETP species.
Met?	YES	YES for all ETP species	NO
Justification	As described in the respective background, there are biological characteristics of main ETP species that have been studied and some quantitative information to estimate productivity and susceptibility attributes is available. The main data are obtained by INIDEP OBO Program, dock samplings, INIDEP research surveys, fishing electronic records and NGO researches experiences (<i>i.e.</i> Albatross Task Force). Results are available in NGO websites and technical scientific reports. As it is established in the CFP Resolution N° 22/2012, it is mandatory to ship an observer on board in the hoki fleet fishery to obtain relevant data of fishing operation, including interaction with ETP species. However, there is no quantitative information with high degree of certainty yet to assess the mortality and impact of ETP specie on consequences for the status of ETPs. Nacional Action Plans (Tables 12 and 13) are working to estimate the magnitude of UoA-related		

		impacts, including establishing the best mitigation measures to manage these species. So, the fishery meets with SG80 level of performance for this SI.		
b	Information adequacy for management strategy			
	Guidepost	Information is adequate to support measures to manage the impacts on ETP species.	Information is adequate to measure trends and support a strategy to manage impacts on ETP species.	Information is adequate to support a comprehensive strategy to manage impacts, minimize mortality and injury of ETP species, and evaluate with a high degree of certainty whether a strategy is achieving its objectives.
	Met?	YES	YES for all ETP species	NO
	Justification	<p>As it is mentioned in the background, accurate and verifiable information is available in specific studies on the fishery's impacts on seabirds and chondrichthyans ETP species (<i>i.e.</i> assessment of survival rate, ETP species recording sheets, etc). Information is adequated to measure trends and support strategy to manage impacts on ETP species. As stated above, this information is available by INIDEP OBOs Program, experts and NGOs.</p> <p>Even though there is adequate information to support the strategy to manage impacts and minimize mortality (CFP Resolutions N° 4/2013 for chondrichthyans and N° 3/2017 for seabirds), it is not evaluated yet with a high degree of certainty whether a strategy is achieving its objectives. This assessment is established in the framework of National Action Plans. So, the fishery meets the SG80 level of performance for this SI.</p>		
References	<p>Plan de Acción Nacional para Reducir la Interacción de Aves con Pesquerías en la República de Argentina (2010)</p> <p>Plan de Acción Nacional para la Conservación y el Manejo de Condrictios (tiburones, rayas y quimeras) en la República Argentina (2009, revised 2015)</p> <p>CFP Resolutions N° 15/2010; N° 22/2012; N° 4/2013; N° 7/2013 and N° 3/2017.</p>			
OVERALL PERFORMANCE INDICATOR SCORE:				80

Evaluation Table for PI 2.4.1 – Habitats outcome

PI 2.4.1	The UoA does not cause serious or irreversible harm to habitat structure and function, considered on the basis of the area(s) covered by the governance body(s) responsible for fisheries management.			
Scoring Issue	SG 60	SG 80	SG 100	
a	Commonly encountered habitat status			
	Guidepost	The UoA is unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	The UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	There is evidence that the UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.
	Met?	YES	YES	NO
Justification	<p>Gaitán & Mari (2016) studied the benthic habitat where hoki fishery operates and categorized them into 3 groups. Two of them (located in Southern of Tierra del Fuego and East of Canal de Beagle and external sector of Continental Shelf) have recorded medium or high low fishing effort. The other is heterogenous in sediment type and biota.</p> <p>The biota of fishing the area is composed by 88 taxa, allowing to 9 phyla. Main groups are</p>			

	<p>Patagonian scallop (<i>Z. patagonica</i>), sea stars, snails and tunicates.</p> <p>In the UoA, bottom trawl is the most impacting fishing activity, on the structure and function of the benthos. It is mostly used by the hake freezer fleet. Data processed by the INIDEP, and provided by the INIDEP Observers On Board Program suggests a minimal impact of the hoki fishery on benthic species, but does not allow to assess the real impact occurring in the habitat structure and functions. These data are geo-referenced and correspond to several individuals, discriminated by species, recorded by haul.</p> <p>Based on extensive worldwide literature, bottom gear impact likely produces footprints on benthic habitat. However, the existence of wide areas of untrawlable bottom and mandatory closed areas are two factors that may limit the impact of trawling on benthic habitats. Alemany <i>et al.</i> (2015) analysed the bottom trawl fisheries in Patagonia using satellite data from 2006–2012 period, and provide the evidence that the spatial distribution of trawling activity is patchy and trawling hotspots were small, comprising annually <5% of the shelf extension or <7% of the total trawlable area.</p> <p>Therefore, the fishery meets with the SG80 level of performance for this SI.</p>			
b	VME habitat status			
	Guidepost	The UoA is unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	The UoA is highly unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	There is evidence that the UoA is highly unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.
	Met?	YES	YES	NO
	Justification	<p>The UoA is highly unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.</p> <p>Spatial distribution of trawling activity in the Argentine Economic Exclusive Zone (AEEZ) is patchy, with few areas characterized by high trawling effort. However, such hotspots were relatively small, comprising <5% of the total AEEZ extension, and showing little variation in their spatial location between years.</p> <p>Vulnerable Marine Ecosystem habitats are also protected by zones of exclusion to trawling such as Patagonian Closed Area (established in 1997) and Burkwood bank.</p> <p>The Burdwood bank, also called Namuncura, is a sensitive area, that was set as a protected area (“Área Marina Protegida Namuncura - Banco Burdwood”) by Cámara de Diputados y Senadores of Argentina, with the following objectives:</p> <p>a) Conservation of Burdwood Bank, due to its high environmental sensitivity and its relevance to the protection and management of biodiversity of the marine seafloor. By Argentine law, it is a marine protected area.</p> <p>b) Promotion of environmental and economic sustainable management of the marine benthic ecosystem</p> <p>c) Promotion of scientific research addressed to the application of ecosystem approach of fishing activities and mitigation of global changing effects.</p> <p>Alemany <i>et al.</i> (2014) identified the effects of Marine Protected Areas located on the Southwest Atlantic Patagonian Shelf on fish assemblages. They analyzed 8 years of satellital data of spatial distribution of fishing effort and data of many trawling stations of scientific surveys. They concluded were a trend towards increasing abundance of the demersal fish assemblage, the target and non-target fish species, and these positive trends support the case for offshore, large-scale MPAs.</p>		

		Evidence presented indicate that the fishery complies with SG80 level of performance.		
c	Minor habitat status			
	Guidepost			There is evidence that the UoA is highly unlikely to reduce structure and function of the minor habitats to a point where there would be serious or irreversible harm.
	Met?			NO
	Justification	There are no studies, describing minor habitats in the fishery area. Therefore, there are no evidence that the UoA is highly unlikely to reduce structure and function of the minor habitats to a point where there would be serious or irreversible harm. So, the fishery not meets with this SI.		
References		Alemany <i>et al.</i> , 2014; 2015; Gaitán & Mari (2016).		
OVERALL PERFORMANCE INDICATOR SCORE:				80

Evaluation Table for PI 2.4.2 – Habitats management strategy

PI 2.4.2	There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats.			
Scoring Issue	SG 60	SG 80	SG 100	
a	Management strategy in place			
	Guidepost	There are measures in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.	There is a partial strategy in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.	There is a strategy in place for managing the impact of all MSC UoAs/non-MSC fisheries on habitats.
	Met?	YES	YES	NO
	Justification	<p>As was explained above two factors limit the extent of the impact of trawling on Argentinean benthic habitats: (a) the existence of wide areas of untrawlable bottom and (b) mandatory closed areas.</p> <p>There are several areas closed for trawl fishing which act as protection of the benthic habitat and the whole ecosystem, as they are enforced using the vessel monitoring system. These are:</p> <p>(1) Fishery by trawl permanent prohibition for any kind of vessel. In July 1997, it was established this Patagonian closed area by SAGPyA Resolution N° 447/97. In December 1997, it became stronger by SAGPyA Resolutions N° 930/97, N° 96/98 and N° 2/99 confirming the area. Associated with the previous area it was created an additional area for the protection of hake juveniles (CFP Act N° 265/2000). This has permanent and no permanent places in the closed area, covering approximately 200,000 km² (Consejo Federal Pesquero Data).</p> <p>(2) Areas for the protection of Patagonian toothfish juveniles (CFP Act N° 17/2002);</p> <p>(3) Areas closed for all trawling fisheries (Federal Law N° 23.968);</p> <p>(4) Closed areas for the protection of cold water corals at Banco de Burdwood (CFP Act N° 18/2008, the area is delimited by 54° 30' S and 60° 30' W, 54° 30' S and 59° 30' W, 54° 15' S and 60° 30' W, 54° 15' S and 59° 30' W).</p> <p>Therefore, there is a partial strategy in place for managing the impact of UoA and non-MSC</p>		

		fisheries on habitats and the fishery meets with the SG80 level of performance for this SI.		
b	Management strategy evaluation			
	Guided post	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/habitats).	There is some objective basis for confidence that the measures/partial strategy will work, based on information directly about the UoA and/or habitats involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or habitats involved.
	Met?	YES	YES	NO
	Justification	<p>The closed area system (explained above) enforced using a Vessel Monitoring System which is supervised by Prefectura Naval Argentina and SSPyA.</p> <p>On the other hand, areas of highest trawling intensity are somehow related to fronts and, thus, these trawling hotspots represent relatively small areas of similar geographical scale as fronts, that cover an area lesser than 15% of the Patagonian shelf extension. Marine fronts influence the organism's distribution and are a physical feature that affects the dynamics of trawling activities (Alemany <i>et al.</i>, 2015).</p> <p>Thus, protection of ecologically sensitive areas is combined with the preference of the trawl fleet to operate in reduced but highly productive areas, reducing the impact on the benthic habitat. However, there are no testing supports with high confidence that the partial strategy will work. Therefore, the fishery complies with SG80 level of performance.</p>		
c	Management strategy implementation			
	Guided post		There is some quantitative evidence that the measures/partial strategy is being implemented successfully.	There is clear quantitative evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective, as outlined in scoring issue (a).
	Met?		YES	NO
	Justification	Distribution of the Argentine hoki fishery effort depicted from a fine scale map shows that closed areas are not affected by this fishery, evidencing that the partial strategy may be successfully implemented. The fishery complies with SG80 level of performance for this SI.		
d	Compliance with management requirements and other MSC UoAs'/non-MSC fisheries' measures to protect VMEs			
	Guided post	There is qualitative evidence that the UoA complies with its management requirements to protect VMEs.	There is some quantitative evidence that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.	There is clear quantitative evidence that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.
	Met?	YES	YES	NO
	Justification	All vessels trawling in the Argentine Sea are being monitored by satellite, recording their speed (which allows inferring if they are moving to a fishing zone or trawling). The Authorities have direct online access to information which is quantitative evidence that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries. Fine scale distribution of the		

	Argentine hoki fishery effort shows that closed areas are not affected by this fishery. Therefore, the fishery meets with SG80 level of performance.
References	SAGPyA Resolutions N° 447/97, N° 930/97, N° 96/98 and N° 2/99. CFP Acts N° 265/2000, N° 18/2008 and N° 17/2002. Federal Law N° 23.968. Alemany <i>et al.</i> , 2015
OVERALL PERFORMANCE INDICATOR SCORE:	
	80

Evaluation Table for PI 2.4.3 – Habitats information

PI 2.4.3	Information is adequate to determine the risk posed to the habitat by the UoA and the effectiveness of the strategy to manage impacts on the habitat.		
Scoring Issue	SG 60	SG 80	SG 100
a	Information quality		
Guidepost	<p>The types and distribution of the main habitats are broadly understood.</p> <p>OR</p> <p>If CSA is used to score PI 2.4.1 for the UoA:</p> <p>Qualitative information is adequate to estimate the types and distribution of the main habitats.</p>	<p>The nature, distribution and vulnerability of the main habitats in the UoA area are known at a level of detail relevant to the scale and intensity of the UoA.</p> <p>OR</p> <p>If CSA is used to score PI 2.4.1 for the UoA:</p> <p>Some quantitative information is available and is adequate to estimate the types and distribution of the main habitats.</p>	<p>The distribution of all habitats is known over their range, with particular attention to the occurrence of vulnerable habitats.</p>
Met?	YES	YES	YES
Justification	<p>Information on the nature, distribution and vulnerability of all main habitat types in the fishery area exists. It was performed an analysis of samples of benthic invertebrates that are part of the bycatch in the hoki fishery in several documents.</p> <p>Geological characteristic of the seafloor is starting. Since 1998, the Geología y Geografía Marina group of Servicio de Hidrografía Naval developed a Project to recognize the geological and physical details of Continental Shelf. Three decades later, they mapped the Northern part of the Continental Shelf, focalizing in the coastal areas. The long-term goal is to map the entire Continental Shelf.</p> <p>A series of benthic surveys on the Patagonian shelf and adjacent slope in the Southwest Atlantic under Atlantis' project was carried out. The study resulted in: i) a detailed cartographic and bathymetric mapping of the area; ii) a description of the geological substratum and the benthic features; iii) the identification and description of the VMEs; iv) the delineation of candidate sites for protected areas, based on geological, geomorphological, and biological criteria; v) a multivariate analysis of the fishery footprint in relation to VMEs; vi) an analysis of the abundance and distribution of the main commercial species; and vii) an analysis of hydrographic conditions and pollutants.</p> <p>Seven submarine canyons and their multiple branches bisected the upper and middle continental slopes from west to east, across the terraces and the steps were described by Lasta <i>et al.</i> (2011). These canyons belong to the Patagonian submarine canyon system and run parallel to the slope in a SSW–NNE direction.</p> <p>Gaitan <i>et al.</i>, (2014) reviewed historical information on benthic fauna in areas coincident</p>		

		<p>with the distribution of fishing effort in hoki fishery. The authors described species richness in several subareas and determined 176 species per subarea. The total area analysed is extended and includes almost the entire Magellanic region.</p> <p>On the other hand, composition of benthic bycatch species caught by trawling nets in hoki fishery was analysed with samples collected by the OBOs Program (Gaitan & Escolar, 2015). Bycatch of the hoki fishery between 52-56° S involve 88 taxa of benthic macro-invertebrates allowing 9 phyla, some of them are Taxa indicators of Vulnerable Marine Ecosystem (VME) and Patagonian scallop (<i>Zygochlamys patagonica</i>). This activity was initiated as regular by the INIDEP and included assess on the benthic faunal composition in two zones where the fishing effort is concentrated: one dominated by <i>Z. patagonica</i>, Southern of Tierra del Fuego, and other at Northeastern of Isla de los Estados. Due to the dominance of trawling nets, the cumulative effort in both zones could produce visible changes in benthic habitat.</p> <p>In 2014, INIDEP began to explore, in a systematic and continuous way, the state of seafloor where the hoki fishery takes place. The activity is addressed to assess quali-quantitatively the macrobenthic communities potentially affected by the trawling.</p> <p>Therefore, the fishery complies with SG100 level of performance for this SI.</p>		
b	Information adequacy for assessment of impacts			
	Guidepost	<p>Information is adequate to broadly understand the nature of the main impacts of gear use on the main habitats, including spatial overlap of habitat with fishing gear.</p> <p>OR</p> <p>If CSA is used to score PI 2.4.1 for the UoA:</p> <p>Qualitative information is adequate to estimate the consequence and spatial attributes of the main habitats.</p>	<p>Information is adequate to allow for identification of the main impacts of the UoA on the main habitats, and there is reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear.</p> <p>OR</p> <p>If CSA is used to score PI 2.4.1 for the UoA:</p> <p>Some quantitative information is available and is adequate to estimate the consequence and spatial attributes of the main habitats.</p>	The physical impacts of the gear on all habitats have been quantified fully.
	Met?	YES	YES	NO
	Justification	<p>Following a recommendation from the previous assessment process, in 2014 INIDEP began to explore, in a systematic and continued way, the state of seafloor where the hoki fishery takes place. The activity is addressed to assess quali-quantitatively the macrobenthic communities potentially affected by the trawling. This sampling is oriented to determine the footprint scope of each haul for each trawl net on the benthos, to develop a habitat mapping, to determine the impact of trawling and subsequent turbulences on the water column in relation to the specific sediment grains size frequency distribution on each seabed region.</p> <p>The team considers that it is adequate to allow for identification of the main impacts of the UoA on the main habitats, and there is reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear. Therefore, the fishery</p>		

		complies with SG80 level of performance		
c	Monitoring			
	Guidepost		Adequate information continues to be collected to detect any increase in risk to the main habitats.	Changes in habitat distributions over time are measured.
	Met?		YES	NO
	Justification	<p>The main information is collected and provided by the INIDEP Observers On Board Program. They collect data by fleet for both bottom net and semipelagic net occurring in the same vessel and trip. Data is collected with same emphasis for both fishing gear.</p> <p>Information on benthic habitat may exist, but no evidence has been provided to the assessment team of the existence of analysis, relevant to the scale and intensity of the fishery, useful to determine the nature, distribution and vulnerability of the main habitats and to detect any increase in risk.</p> <p>Changes over time were not provided and the Argentine hoki fishery meets with SG80 level of performance.</p>		
References	Lasta <i>et al.</i> , 2011; Gaitan <i>et al.</i> , 2014; Gaitan & Escolar, 2015.			
OVERALL PERFORMANCE INDICATOR SCORE:				85

Evaluation Table for PI 2.5.1 – Ecosystem outcome

PI 2.5.1	The UoA does not cause serious or irreversible harm to the key elements of ecosystem structure and function.			
Scoring Issue	SG 60	SG 80	SG 100	
a	Ecosystem status			
	Guidepost	The UoA is unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	The UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	There is evidence that the UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.
	Met?	YES	YES	NO
	Justification	<p>Several studies revealed main aspects of the fishery ecosystem in the Patagonian Shelf Large Marine Ecosystem (PSLME):</p> <ul style="list-style-type: none"> - The Argentine Economic Exclusive Zone (AEEZ) is an important fishing area (mean annual landings of all species 2006–2013: 840,000 t) where bottom trawling, performed by ice- and freezer trawlers, is the dominant fishing method. In this sense, a hoki fishery is one of the most relevant. - The key element of the ecosystem is the presence of Malvinas Current (cold and rich in nutrients). It flows along the slope generating oceanographic structures, such as fronts, which are discontinuities in the marine environment influencing the ecology of marine organisms. This system brings several services like nutrient recycling from the bottom, carbon dioxide absorption (specially associated to fronts) and antropogenic use (transport and fisheries). Frontal systems are characterized by high primary and secondary production that is transferred to higher trophic levels within the regional food web (Alemany <i>et al.</i>, 2014). The fishing area impacted by the trawling is influenced by the presence of fronts, highly productive areas, which modify the organism's spatial distribution, and resulting in a small area effectively trawled. Sanchez & Mari (2005) 		

	<p>studied trophic web of fish community between 45° and 54° S. They found that the community was strongly supported by zooplankton. Hoki is a versatile species that has the potential to feed at different trophic levels, and to live in different environments.</p> <ul style="list-style-type: none"> - Mari & Giussi (2016) studied fish grouping affected by trawling fisheries using INIDEP OBOs data base from 2008 – 2015. They considered the date, geographic position, trawling time, fishing gear and species composition. The analysis determined three groups characterized by different proportion of hoki. The group in which hoki was the dominant species, other species have a low proportion (~3%). - Chondrichthyans are a relevant item due to their role as top predators, with low abundance and highly sensitive species (very low natural mortality rate). However, they were represented by less than 1%. <p>Even the comprehension of the entire ecosystem functioning requires of complex and integrative studies, at moment, the UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious irreversible harm. Considering the evidence presented above, the fishery meets with SG80 level this SI.</p>
References	Sánchez & Mari, 2005; Alemany <i>et al.</i> , 2014; Mari <i>et al.</i> , 2015; Mari & Giussi, 2016.
OVERALL PERFORMANCE INDICATOR SCORE:	
	80

Evaluation Table for PI 2.5.2 – Ecosystem management strategy

PI 2.5.2	There are measures in place to ensure the UoA does not pose a risk of serious or irreversible harm to ecosystem structure and function.		
Scoring Issue	SG 60	SG 80	SG 100
a	Management strategy in place		
Guided post	There are measures in place, if necessary which take into account the potential impacts of the fishery on key elements of the ecosystem.	There is a partial strategy in place, if necessary, which takes into account available information and is expected to restrain impacts of the UoA on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance.	There is a strategy that consists of a plan, in place which contains measures to address all main impacts of the UoA on the ecosystem, and at least some of these measures are in place.
Met?	YES	YES	NO
Justification	Measures to protect the key elements of the ecosystem are in place oriented to reduce the trawling area but they are indirect in relation to the ecosystem. Marine protected areas and closing areas (like Banco de Burdwood) exist and are expected to restrain impacts of the fishery on the ecosystem, to be considered as a partial strategy. There are no measures oriented in the biomass fluctuations of the main species (target and non-target in trawling fisheries) and how they affect their trophic relationships. Therefore, the Argentine hoki fishery complies with SG80 level of performance for this SI.		
b	Management strategy evaluation		
Guided post	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/ ecosystems).	There is some objective basis for confidence that the measures/partial strategy will work, based on some information directly about the UoA and/or the ecosystem involved	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or ecosystem involved
Met?	YES	YES	NO

	Justification	<p>Areas closed to trawling are on line monitored by PNA (Naval Authority), the vessels are enforced using the vessel monitoring system and the information is available to Fisheries Authorities. In combination with the fact that the fleet is concentrated in productive areas such as fronts, the area trawled is <5%.</p> <p>Target species in the main fisheries are assessed regularly, and sensitive species like sharks and skate are protected as explained above. All regulations are centralized by CFP.</p> <p>These aspects are some objective basis for confidence that the measures/partial strategy will work, based on some information directly about the UoA and/or the ecosystem involved. But they are not tested in an integrated way to support high confidence that the strategy will work. The fishery meets with SG80 level of performance.</p>		
c	Management strategy implementation			
	Guidepost		There is some evidence that the measures/partial strategy is being implemented successfully.	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a).
	Met?		YES	NO
	Justification	There is evidence that the closing areas, as partial strategy to protect the ecosystem, are being implemented successfully. All vessels are forced to use monitoring system, they are monitored by satellite and violations are punished. Therefore, the fishery complies with SG80 level.		
References		There are no specific references, since rationales related to this PI refer to general management issues and/or judgements of the assessment team.		
OVERALL PERFORMANCE INDICATOR SCORE:				80

Evaluation Table for PI 2.5.3 – Ecosystem information

PI 2.5.3	There is adequate knowledge of the impacts of the UoA on the ecosystem.			
Scoring Issue	SG 60	SG 80	SG 100	
a	Information quality			
	Guidepost	Information is adequate to identify the key elements of the ecosystem.	Information is adequate to broadly understand the key elements of the ecosystem.	
	Met?	YES	YES	
	Justification	Information is adequate to broadly understand the key elements of the ecosystem. The INIDEP Observers Program records enough data on species to detect any relevant variation on the species composition. INIDEP Research surveys allow determining variations on species composition, functional groups, trophic structure and distribution of the community. Benthic communities and sediment structure of the benthos have been studied (Bastida <i>et al.</i> , 1992; 1981).		
b	Investigation of UoA impacts			
	Guidepost	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, but have not been investigated in detail.	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, and some have been investigated in detail.	Main interactions between the UoA and these ecosystem elements can be inferred from existing information, and have been investigated in detail.
	Met?	YES	YES	NO

	Justification	<p>Research programs are generating biological and ecological information constantly. Two main sources of information were used: - OBOs Program which collect information of the fishing processes (fishing effort, catch composition) and, - research surveys collecting both oceanographic and biological information. Even when there is no extensive time series, main impacts of the UoA on these key ecosystem elements can be inferred from existing information. INIDEP Reports and general experience indicate that a small portion of the ecosystem is trawled, and fishing does not pose a risk to this very large ecosystem.</p> <p>The ecosystem is changing accordingly with environmental and fishing changes. Population biomass fluctuates because they have different resilient capacity and their responses are different. Many aspects of the existing information, collected by OBOs of years of surveys, are analysed constantly but many others need to be investigated and integrated to a comprehensive description of the Patagonic ecosystem.</p>		
c	Understanding of component functions			
	Guided post		The main functions of the components (i.e., P1 target species, primary, secondary and ETP species and Habitats) in the ecosystem are known.	The impacts of the UoA on P1 target species, primary, secondary and ETP species and Habitats are identified and the main functions of these components in the ecosystem are understood.
	Met?		YES	NO
	Justification	<p>The main functions of the Components (i.e. P1 target species, primary, secondary and ETP species and Habitats) in the ecosystem are known. Main studies related to the ecosystem was that focused on frontal system and how they influence diversity, abundance and assemblage structure of fish and shellfish (Bogazzi <i>et al.</i>, 2005; Alemany <i>et al.</i>, 2009; Mauna <i>et al.</i>, 2011; Lucifora <i>et al.</i>, 2012). These studies included hoki, secondary and ETP species.</p> <p>Prenski & Angelescu (1993) analysed the possible consequences of intensive fishing on different resources, considering the formation of guilds and their interspecific competition. Posteriorly, Mari & Giussi (2016) studied fish assemblages affected by trawling activities in hoki fishery. Sánchez & Mari (2005) analyzed trophic connectivity in fish community including zooplanktonic and benthic composition.</p>		
d	Information relevance			
	Guided post		Adequate information is available on the impacts of the UoA on these components to allow some of the main consequences for the ecosystem to be inferred.	Adequate information is available on the impacts of the UoA on the components and elements to allow the main consequences for the ecosystem to be inferred.
	Met?		YES	NO
	Justification	Available information described in PI 2.5.1 and SI c) and the work of Mari <i>et al.</i> (2015) which described the specific composition of the trawling activities in the hoki fishery is considered adequate and enough to infer the main consequences for the ecosystem.		
e	Monitoring			
	Guided post		Adequate data continue to be collected to detect any increase in risk level.	Information is adequate to support the development of strategies to manage ecosystem impacts.
	Met?		YES	NO

Justification	<p>As was explained in the SI b), many aspects of the existing information, collected by OBOs of years of surveys, are analysed constantly. Each research group can detect any increase in risk level of one or some groups. Abundance data can be complemented with fishing process data (spatial pattern and intensity), using OBOs and survey sources.</p> <p>However, the information needs to be integrated to support an adequate strategy to manage the Patagonian ecosystem impact (<i>i.e.</i> modification of dominance that alters trophic relationship).</p>	
References	Bastida, <i>et al.</i> , 1981; 1992; Mauna <i>et al.</i> , 2011; Lucifora <i>et al.</i> , 2012; Prenski & Angelescu, 1993; Sánchez & Mari, 2005; Mari & Giussi, 2016; Mari <i>et al.</i> , 2015.	
OVERALL PERFORMANCE INDICATOR SCORE:		80

-Principle 3

Evaluation Table for PI 3.1.1 – Legal and/or customary framework

PI 3.1.1	<p>The management system exists within an appropriate legal and/or customary framework which ensures that it:</p> <ul style="list-style-type: none"> • Is capable of delivering sustainability in the UoA(s); and • Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and • Incorporates an appropriate dispute resolution framework. 			
Scoring Issue	SG 60	SG 80	SG 100	
a	Compatibility of laws or standards with effective management			
Guidepost	<p>There is an effective national legal system and a framework for cooperation with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2</p>	<p>There is an effective national legal system and organised and effective cooperation with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2.</p>	<p>There is an effective national legal system and binding procedures governing cooperation with other parties which delivers management outcomes consistent with MSC Principles 1 and 2.</p>	
Met?	YES	YES	NO	
Justification	<p>There is an effective national legal system and binding procedures governing cooperation with other parties which delivers management outcomes consistent with MSC Principles 1 and 2. In the case of Argentine hoki fishery, there is a national law, agreements and policies governing the actions of authorities and actors involved in managing the UoA.</p> <p>In the national fishing area, the Management System is consistent with the Federal Fishing Law N° 24.922/1998 (Regulatory Decree N° 748/1999) which creates CFP as the management authority, which fixes the general fishing and research policies.</p> <p>The Articles 1° and 17° from the Federal Fisheries Law N° 24.922/1998 are aimed to achieving sustainable fisheries in accordance with MSC Principles 1 and 2. The Article 1° promotes the exercise of fishing according the rational use of marine living resources, the effective protection of national interests related to fisheries and the sustainability of fishing activity for encouraging long-term resource conservation. The Article 17° establishes restrictions for the conservation of resources, with the object of avoiding excesses of exploitation and to prevent harmful effects on the environment and the unity of the ecological system. Given that, INIDEP is working on the hypothesis that the Argentine hoki harvested by the fleet in AEEZ could be a stock shared with Chile, even if there is not a joint management. There are being conducted meetings between INIDEP and IFOP researchers to exchange information and agree on future working methods.</p>			

		<p>Moreover, Argentina approved other binding and non-binding international instruments related indirectly to conservation as it is reviewed in the background. In the case of illegal, unreported and unregulated fishing activities, even if Argentina is not one of the 46-member states that signed FAO's Agreement, since 2008, it has adopted these international measures. Argentina developed a National Action Plan (PAN-IUU) to prevent and monitor such practices.</p> <p>From evidence exposed before, the overarching legal framework meets with SG80 level of performance for this scoring issue.</p>		
b	Resolution of disputes			
	Guidepost	The management system incorporates or is subject by law to a mechanism for the resolution of legal disputes arising within the system.	The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes which is considered to be effective in dealing with most issues and that is appropriate to the context of the UoA.	The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes that is appropriate to the context of the fishery and has been tested and proven to be effective.
	Met?	YES	YES	YES
	Justification	<p>The Management System is subject by law to a transparent mechanism for the resolution of legal disputes (<i>i.e.</i> issues and dispute involving allocation of quota and access to marine resources) that is appropriate to the context of the fishery and has been tested and proven to be effective.</p> <p>The dispute resolution system is well defined in the Federal Fishing Law N° 24.922. Usually, CFP receives and discusses in their public minutes any comment which emerges from any stakeholder group. There is a formal dispute-resolution mechanism, but it is not independent of the Management Authority. When the resolution of the dispute is not accepted, affected parties should recourse to the legal system. There is an elaborate sanction and penalty structure in the Fisheries.</p> <p>CFP as management authority acts when a legal dispute arises, under request from a stakeholder. Decisions are written in minutes that are published in www.cfp.gob.ar as transparency system and efficacy has been tested during years of practice. Additionally, verbatim transcripts of the proceedings of CFP do exist, which can be consulted by everyone interested if it is necessary to clarify issues related to the spirit of its decisions.</p> <p>It provides a mechanism for parties to challenge decisions of administrative bodies. In case of civilian disputes against administration decisions, the Administrative Procedure Law N° 19.549 and its Regulatory Federal Decree N° 1759/1972, which establishes, inter alia, mechanisms for dispute resolutions. Fisheries regulations (Laws N° 24.922, N° 25.470 and Federal Decree N° 748/1999) repeat the same recursive procedures than Law N° 19.549. As an example of dispute resolution mechanism, in case of common hake fishery, the CFP reviewed its decision making as petitioned of fishing client. Process stages were submitted in respective official documents (CFP Acts N° 46 and 49/2014, and 37/2015).</p> <p>So, the overarching legal framework meets the SG100 level of performance for this SI.</p>		
c	Respect for rights			
	Guidepost	The management system has a mechanism to generally respect the legal rights created explicitly or established by custom of	The management system has a mechanism to observe the legal rights created explicitly or established by custom of people	The management system has a mechanism to formally commit to the legal rights created explicitly or established by custom of

		people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	people dependent on fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.
	Met?	YES	YES	YES
	Justification	In Argentina's jurisdiction, there are no aboriginal and indigenous people dependent on fishing for food or livehood, so it is not necessary to develop a management system that has a mechanism to formally commit to the legal rights created explicitly or established by custom of people dependent on fishing for food or livehood in a manner consistent with the objectives of MSC Principles 1 and 2. Consequently, the overarching legal framework meets the SG100 level of performance for this SI.		
References	Federal Fishing Law N° 24.922 – Regulatory Decree N° 748/1999; Laws N° 25.470 and 19.549 – Regulatory Decree N° 1759/1972.			
OVERALL PERFORMANCE INDICATOR SCORE:				95

Evaluation Table for PI 3.1.2 – Consultation, roles and responsibilities

PI 3.1.2	The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties			
Scoring Issue	SG 60	SG 80	SG 100	
a	Roles and responsibilities			
Guidepost	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are generally understood.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for key areas of responsibility and interaction.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for all areas of responsibility and interaction.	
Met?	YES	YES	YES	
Justification	<p>The overarching legal framework identifies all organizations and individuals involved in the management process, including implementing agencies, fishery business groups, national and provincial government and food inspection agency. Functions, roles and responsibilities are explicitly defined and well understood for all area of responsibility and interaction.</p> <p>All organizations and individuals in the management process have been identified and functions, roles and responsibilities are explicitly defined in the Federal Fishing Law N° 24.922 and Federal Decree N° 214/99, Federal Decree N° 373/2007 establishes specific functions, Federal Decree N° 1030/2014 updates SSPyA's functions.</p> <p>Federal Law N° 21.673/1977 creates INIDEP as the Federal scientific authority. Annually, INIDEP Resolution approves the Activities Planning for each of its dependent research, operative and administrative areas. The current organizational chart is available in its website.</p> <p>PNA and the Navy collaborate in the control of closed areas, illegal foreign vessels fishing, navigation safety, amongst other functions. Sanitary control oversees the Servicio Nacional de Sanidad y Calidad Agroalimentaria (SENASA), who acts in accordance to ex SAGPyA</p>			

	Disposition SSPyA N° 552/2006.			
	<p>Ministerio de Relaciones Exteriores y Culto serves many roles in the fishery area. It is responsible for developing foreign policy in the Exclusive Economic Zone (EEZ) and the adjacent regions of Argentina, promotes the fishery sector in the international markets, represents the country on the International Commissions and signs International Agreements.</p> <p>These public agencies have missions and functions perfectly well defined and established by laws, while respecting manuals and instructions specific to procedure on each situation.</p> <p>Therefore, the overarching legal framework meets this SI at the SG100 level of performance.</p>			
b	Consultation processes			
	Guidepost	The management system includes consultation processes that obtain relevant information from the main affected parties, including local knowledge, to inform the management system.	The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information obtained.	The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information and explains how it is used or not used.
	Met?	YES	YES	YES
	Justification	<p>The overarching legal framework includes consultation processes that regularly seek and accept relevant information, from the stakeholders, including local knowledge, to inform the Management System. For Argentine hoki fishery, it was created Comisión de Análisis y Seguimiento de la Pesquería de Merluza de Cola (<i>Macrurus magellanicus</i>) (CFP Resolution N° 5/2010) as consultation mechanism. The Management System demonstrates consideration of the information and explains how it is used or not used. As an example, the recitals of CFP Resolution N° 22/2012 show that the Commission intervened in the discussion of the Management Measures that were established. The progress is reflected in INIDEP (www.inidep.edu.ar) and CFP (www.cfp.gob.ar). Regularly, INIDEP updates the research program to obtain information and knowledge to advice the Management System (www.inidep.edu.ar) (<i>i.e.</i> INIDEP Resolution N° 133/2010). As well, Law N° 24.922 recognizes that scientific data can be provided by other research institutions.</p> <p>Secretaría de Política Ambiental, Cambio Climático Ambiente y Desarrollo Sustentable regularly organizes different workshops, where stakeholders, environmental institutions and NGOs can discuss the impact of fishing on birds, chondrichthyes and marine mammals. Any information about Management System is open to stakeholders, considering its views in the process to make a decision. Representative at CFP from the Ministerio de Ambiente y Desarrollo Sustentable provides the conclusions from these workshops to be carried out by CFP who is responsible for the approval of the action plans aimed to mitigate interactions between fisheries and mentioned species. Actions from CFP include dispositions and resolutions which are mandatory for all fishers operating in Argentine waters.</p> <p>In conclusion, the Management System has a clear and transparent consultation process that seeks, accepts and demonstrates consideration of relevant information including local knowledge when available; and there is evidence that the process explains how the information is used or not used. So, overarching legal framework meets the SG100 level of performance for this scoring issue.</p>		

c	Participation			
	Guidepost		The consultation process provides opportunity for all interested and affected parties to be involved.	The consultation process provides opportunity and encouragement for all interested and affected parties to be involved, and facilitates their effective engagement.
	Met?		YES	YES
	Justification	<p>The consultation process provides opportunity and encouragement for all interested and affected parties to be involved, and facilitates their effective engagement. As it is mentioned, Comisión de Análisis y Seguimiento de la Pesquería de Merluza de Cola (<i>Macrurus magellanicus</i>), which is consulted by CFP and SSPyA authorities prior to take any decision on the fishery (CFP Resolution N° 22/2012). Interested stakeholders have the opportunity to be involved in the consultation process and facilitate their effective engagement supported by Consejo Federal Pesquero and Ministerio de Ambiente y Desarrollo Sustentable.</p> <p>In the Article 1° of the CFP Resolution N° 21/2014 establishes: “Authority is instructed to Law Enforcement N° 24.922 to conduct invitations to monitoring committees of the various fisheries and they could settle in the future with a minimum frequency of two (2) times per year”. According this article, in the case of Argentine hoki fishery, it is established that the Comisión de Análisis y Seguimiento de la Pesquería de Merluza de Cola (<i>Macrurus magellanicus</i>) will meet at least twice a year and shall submit to CFP its minutes of meetings with the issues and respective conclusions.</p> <p>Therefore, the overarching legal framework meets with SG100 level of performance for this scoring issue.</p>		
References	Federal Fishing Law N° 24.922; Federal Decrees N° 214/99, N° 373/07, N° 1030/14; Law N° 21.673; SAGPyA Disposición SSPyA N° 552/2006; CFP Resolutions N° 5/2010, N° 22/2012 and N° 21/2014. INIDEP Resolution N° 133/2010			
OVERALL PERFORMANCE INDICATOR SCORE:				100

Evaluation Table for PI 3.1.3 – Long term objectives

PI 3.1.3	The management policy has clear long-term objectives to guide decision-making that are consistent with MSC fisheries standard, and incorporates the precautionary approach.			
Scoring Issue	SG 60	SG 80	SG 100	
a	Objectives			
	Guidepost	Long-term objectives to guide decision-making, consistent with the MSC fisheries standard and the precautionary approach, are implicit within management policy.	Clear long-term objectives that guide decision-making, consistent with MSC fisheries standard and the precautionary approach are explicit within management policy.	Clear long-term objectives that guide decision-making, consistent with MSC fisheries standard and the precautionary approach, are explicit within and required by management policy.
	Met?	YES	YES	YES
Justification	<p>Argentinean fisheries management has a solid legislative foundation through the clear long-term objective that guide decision-making it is consistent with MSC Principles and Criteria and the precautionary approach are explicit within the Federal Law N° 24.922 and required by management policy.</p> <p>The Federal Fishing Law N° 24.922 (Article 1°) establishes that Argentina will foster the practice of maritime fishing in function of a maximum development compatible with the</p>			

	<p>rational exploitation of living marine resources, will promote the effective protection of national interests related with fishing and will encourage the sustainability of the fishing activity, the long-term conservation of the resources, the development of industrial processes environmentally appropriate to reach the maximum added value and the maximum employment.</p> <p>In the management plan is established long-term political objectives, specifically for Argentine hoki fishery (CFP Resolution N° 22/2012). The main objective of the fishery is to maintain sustainability of on target species, seabirds and chondrichthyes, including improvement of information and measures to reduce unwanted catch.</p> <p>Long-term political objective on rational exploitation, stocks productivity protection social and inter generation equity and species conservation approach is included in technical recommendations.</p> <p>The precautionary approach is also present in the stock assessment models and in the technical recommendations of biologically acceptable capture. This is included in the Law N° 24.922 expressed in its Article 8° of its Regulatory Federal Decree N° 748/99: "It must be understood as Maximum Sustainable Yield (MSY) of a species, the maximum biomass that can be captured annually without affecting its conservation".</p> <p>Additionally, other sections of the Federal Fishing Law N° 24.922 are related with preventing excesses on exploitation and the sustainable utilization fishery resources.</p> <p>The Argentine hoki fishery is under the CITC scheme, which limits the increase of the fleet that can fish as a target species. This policy is a limitation of the extractive activity and encourages the adoption of long-term objectives on the part of companies that are compatible with the sustainability of the resource.</p> <p>Therefore, evidence supports that the Argentine hoki (<i>Macruronus magellanicus</i>) bottom and mid-water trawl fishery fully meets this SI at the SG100 level of performance.</p>
References	Federal Fishing Law N° 24.922. Federal Fisheries Law N° 24.922 and in the Regulatory Decree N° 748/1999. CFP Resolution N° 22/2009.
OVERALL PERFORMANCE INDICATOR SCORE:	
	100

Evaluation Table for PI 3.2.1 Fishery-specific objectives

PI 3.2.1	The fishery-specific management system has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2.		
Scoring Issue	SG 60	SG 80	SG 100
a	Objectives		
Guided post	Objectives, which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are implicit within the fishery-specific management system.	Short and long-term objectives, which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery-specific management system.	Well defined and measurable short and long-term objectives, which are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery-specific management system.
Met?	YES	YES	PARTIAL
Justification	There are short and long-term objectives well defined which are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, and there are explicit within the fishery's specific management system which is reviewed and updated every 5 years. However, objectives to achieve the wide range of Principle 2 are operationally less		

		<p>measurable and they are not explicit within the fishery's specific Management System; which is reviewed and updated every 5 years.</p> <p>The Argentine hoki fishery shares the general objectives stipulated in Law N° 24.922 and other legal normative related to the exploitation of fisheries resources in Argentina. The management system is based on fishing licenses allowing the access to the exploitation of fishery resources (<i>i.e.</i> ITQ system), establishing closures, obligatory discard of bycatch species immediately and with the least damage as possible, for marine birds, chondrichthyan, cetaceans and turtle protection, data collection of environmental aspects of the fishery during fishing operations is the responsibility of the on board observer program, and INIDEP Southern and Subantartical Demersal Fisheries Program, who also states objectives of Argentine hoki and associated research species (INIDEP Resolution N° 133/2010).</p> <p>In relation to achieve the outcomes expressed by the MSC's Principle 1, maintaining the stock at level consistent with the ecosystem needs, is expressed in CFP resolution to establish the respective TAC. In recent resolution (CFP Resolution N° 13/2015), it is mentioned: "for conservation, protection and management of marine living resources shall be established annually the TAC for different species in accordance with the Articles 9° and 18° of Law N° 24.922, to avoid excessed of exploitation and ensure long-term preservation".</p> <p>The Management Plan for Argentine hoki fishery is explicitly established in the CFP Resolution N° 22/2012 as it is described in the Background (Section 3.5.3 Objectives for the fishery).</p> <p>Explicit objectives for marine birds' protection are established in the National Action Plan for Birds (CFP Resolutions N° 3/2010 and 15/2010). Recently, CFP Resolution N° 3/2017 established that trawling freezer vessels were obliged to carry out the trawling tasks with two scarecrow lines (LEPs) arranged one to port and one to starboard of the trawl lines, to prevent contact of seabirds with them. This resolution will come into effect on May 1st, 2017 and will be applied voluntarily until April 30th, 2018 and mandatory as of that date.</p> <p>Explicit objectives for chondrichthyes, marine mammal and sea turtles protection are established in the National Action Plan for Chondrichthyes (CFP Resolutions N° 6/2009 and N° 4/2013 and Annex 1 of CFP Act N° 42/2015), in the National Action Plan for Marine Mammals (CFP Resolution N° 11/2015) and in the National Action Program for Sea Turtles (CFP Act N° 37/2016); respectively.</p> <p>The Federal Law N° 25.577 protects Cetaceans from any kind of intentional catch. Federal Law N° 25.052 and its complementary Decree N° 598/2003 prohibit catch and commercialization of Killer Whale (<i>Orcinus orca</i>).</p> <p>Consejo Federal Pesquero also regulated by means of its Resolution N° 3/2001, the data collection and analysis of birds, reptiles and mammals bycatch during fishing activities.</p> <p>Therefore, even though explicit short and long-term objectives consistent with achieving the outcomes expressed by MSC's Principle 1 are well defined and are explicit within the fishery's Management System, there are no objectives to achieve wide range of outcomes of Principle 2, due to being operationally less measurable. Thus, it is considered that SG100 performance indicator is partial completed, and the Patagonian scallop bottom otter trawl fishery scores 90 for this PI.</p>
References		Laws N° 24.922, N° 25.577, N° 25.052; Decree N° 598/2003; CFP Resolutions N° 3/2010, N° 15/2010, N° 6/2009, N° 4/2013, N° 11/2015, N° 22/2012, N° 13/2015 and N° 3/2001; INIDEP Resolution N° 133/2010. CFP Acts N° 37/2016 and Annex 1 N° 42/2015; CFP Resolution N° 3/2017.
OVERALL PERFORMANCE INDICATOR SCORE:		90

Evaluation Table for PI 3.2.2 – Decision-making processes

PI 3.2.2	The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery.		
Scoring Issue	SG 60	SG 80	SG 100
a	Decision-making processes		
Guidepost	There are some decision-making processes in place that result in measures and strategies to achieve the fishery-specific objectives.	There are established decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.	
Met?	YES	YES	
Justification	<p>There are established decision-making processes that result in measures and strategies to achieve the fishery-specific objectives. Decision-making processes are formal and clearly outlined in the Federal Fishing Law N° 24.922, the Federal Decree N° 748/1999, N° 373/2007, N° 571/2008 and N° 1030/2014, amongst other legal documents. Consejo Federal Pesquero is the main authority, who established the TAC based on scientific biological recommendations issue by INIDEP and other social and economic aspects. CFP has the responsibility to ensure that it is provided with carefully alternatives for considering before making any decisions.</p> <p>In the case of meetings carried out by the Comisión de Análisis y Seguimiento de la Pesquería de Merluza de Cola (<i>Macrurus magellanicus</i>), stakeholders' concerns are exposed and, if necessary, the CFP may determine measure or strategy. In the meeting carried out on May 30th, 2016, the Committee requested review the minimum percentage of ITQ use for this specie. This request was considered by CFP in its CFP Resolution N° 1/2017 in which a transitional clause was introduced that modified subsection b) of Article 9° of Resolution CFP N° 2/2013, decreasing that percentage from 90 to 55%.</p> <p>So, the Argentine hoki (<i>Macrurus magellanicus</i>) bottom and mid-water trawl fishery meets the SG80 level of performance for this SI.</p>		
b	Responsiveness of decision-making processes		
Guidepost	Decision-making processes respond to serious issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take some account of the wider implications of decisions.	Decision-making processes respond to serious and other important issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.	Decision-making processes respond to all issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.
Met?	YES	YES	NO
Justification	<p>Decision-making processes responds to serious and other important issues identified in relevant research monitoring, evaluation and consultation, in a transparent, timely and adaptive manner, and takes into account the wider implications of decisions.</p> <p>The decision-making process can be considered to respond to requirements for this indicator, integrating the scientific knowledge, the monitoring, the evaluation, and the consultation processes of the interested parties using INIDEP Technical Reports and Commission meeting reports. The outcomes of these activities are considered when taking decisions on fisheries management. The TAC decisions and fishing measures have been accepted after scientific review and all decisions are available in the CFP website through resolution and/or official acts (CFP Resolutions N° 22/2012, N° 13/2015 and N° 18/2016</p>		

		<p>and CFP Acts N° 49/2012, N° 46/2015 and N° 35/2016). In the case of annual TAC, INIDEP recommendations (INIDEP Technical Report with scientific data) are cited in the CFP Resolution respective. This mechanism ensures the transparency of the decision-making process.</p> <p>So, there are no evidence provided that all issues identified in relevant research, monitoring, evaluation and consultation respond to decision-making process and the Argentine hoki (<i>Macrurus magellanicus</i>) bottom and mid-water trawl fishery meets with SG80 of this performance issue.</p>		
c	Use of precautionary approach			
	Guided post		Decision-making processes use the precautionary approach and are based on best available information.	
	Met?		YES	
	Justification	<p>Decision-making processes use the precautionary approach in the exploitation of marine resources based on best available information and is legislatively enshrined in the Federal Fisheries Law N° 24.922 and the Federal Decree N° 1030/2014, amongst other legal documents. Consejo Federal Pesquero that obligation is detailed in the sustainable fisheries framework and fishery decision-making framework incorporating the precautionary approach to ensure that the precautionary approach is built into fisheries management decisions (see rationale of scoring issue a).</p> <p>A formal Precautionary Approach Framework has been implemented in the Argentine hoki fishery the existence of a Management Plan, whose main objective is maintaining the sustainability of the Fishery, consistent with achieving the outcomes expressed by MSC's Principles 1 and 2. TAC is set annually in tons. CFP Resolutions N° 13/2015 and N° 18/2016 describes TAC Argentine hoki for the years 2016 and 2017, respectively.</p> <p>Therefore, it is considered that decision-making processes use the precautionary approach and are based on best available information, and so the Argentine hoki (<i>Macrurus magellanicus</i>) bottom and mid-water trawl fishery meets with SG80 of this performance issue.</p>		
d	Accountability and transparency of management system and decision-making process			
	Guided post	Some information on the fishery's performance and management action is generally available on request to stakeholders.	Information on the fishery's performance and management action is available on request, and explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.	Formal reporting to all interested stakeholders provides comprehensive information on the fishery's performance and management actions and describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.
	Met?	YES	YES	NO
	Justification	<p>Information on the fishery's performance and management action is available on request. Explanations are provided for any actions (or lack of actions) associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity. These are released in INIDEP Technical Reports. These reports are referred to CFP and its reception published in its meetings' records, which in turn are published on its website (www.cfp.gob.ar). Once published by CFP, they become available for anyone who</p>		

		<p>wants to obtain a copy on INIDEP's web site (www.inidep.edu.ar). Fishery statistics are also published in CFP's and SSPyA's websites, as well as the positioning of fishing vessels, which is updated twice a day (www.minagri.gob.ar).</p> <p>On the other hand, CFP makes public in their minutes any considerations and technical and legal advice considered in decision-making as well as the concerns being submitted or exposed for any stakeholders to CFP.</p> <p>However, since there is no clear evidence that formal reporting to all interested stakeholders describing how the management system responds to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity, it is considered that the Argentine hoki (<i>Macruronus magellanicus</i>) bottom and mid-water trawl fishery does not fully comply with SG100 level, and a score of SG80 is assigned to this SI.</p>		
e	Approach to disputes			
	Guided post	Although the management authority or fishery may be subject to continuing court challenges, it is not indicating a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability for the fishery.	The management system or fishery is attempting to comply in a timely fashion with judicial decisions arising from any legal challenges.	The management system or fishery acts proactively to avoid legal disputes or rapidly implements judicial decisions arising from legal challenges.
	Met?	YES	YES	YES
	Justification	<p>The management system or fishery acts proactively to avoid legal disputes or rapidly implements judicial decisions arising from legal challenges.</p> <p>The management authority has not records that the Argentine hoki bottom and mid-water trawl fishery has been repeatedly violating the same law or regulation necessary for the sustainability issue.</p> <p>The Subsecretaría de Pesca y Acuicultura acts proactively to avoid legal disputes and its staff involves lawyers specialized in fishery activities and regulations.</p> <p>To minimize the legal wrangling, any decision of the administration affecting the rights of third parties requires a control and legal opinion prior to its sanction. Such control is carried out by a statutory body external to the agency that promotes the sanction of the rule.</p> <p>Argentine National Constitution establishes that judicial decisions are mandatory for any authority from the fisheries administrative system and they must be implemented immediately. If not, the responsible officer will incur in civilian disobedience.</p> <p>Therefore, the Argentine hoki (<i>Macruronus magellanicus</i>) bottom and mid-water trawl fishery meets with the SG100 level of performance for this SI.</p>		
References	Federal Fisheries Law N° 24.922, the Federal Decrees N° 748/1999, N° 373/2007, N° 571/2008 and N° 1030/2014, CFP Resolutions N° 1/2017, N° 2/2013, N° 22/2012, N° 13/2015 and N° 18/2016. CFP Acts N° 49/2012, N° 46/2015 and N° 35/2016. Published on its website www.cfp.gob.ar , INIDEP Technical Reports are available in www.inidep.edu.ar .			
OVERALL PERFORMANCE INDICATOR SCORE:				85

Evaluation Table for PI 3.2.3 – Compliance and enforcement

PI 3.2.3	Monitoring, control and surveillance mechanisms ensure the management measures in the
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		fishery are enforced and complied with.		
Scoring Issue	SG 60	SG 80	SG 100	
a	MCS implementation			
	Guidepost	Monitoring, control and surveillance mechanisms exist, and are implemented in the fishery and there is a reasonable expectation that they are effective.	A monitoring, control and surveillance system has been implemented in the fishery and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.	A comprehensive monitoring, control and surveillance system has been implemented in the fishery and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.
	Met?	YES	YES	YES
	Justification	<p>There is a comprehensive monitoring, control and surveillance system that has been implemented in the fishery and demonstrates a consistent ability to enforce relevant management measures, strategies and rules. This system includes electronic vessel monitoring systems (VMS) on each vessel, at-sea observations by patrol vessels and fixed-wing aircraft, 100% dockside monitoring of landings, catch and effort data, observer on board coverage in all certified vessels with protocols to monitor fishing operations and mandatory submission of fishing vessel log books.</p> <p>Argentina endeavors to deter fisheries-related offenses through a successful prosecution and deterrent penalties. Penalties for fisheries-related offenses include fines and forfeiture of fish, vessels, other property and quota (Law N° 25.470, Federal Fisheries Law N° 24.922 and Federal Decree N° 748/1999).</p> <p>Several monitoring, control and surveillance tools are used to control the activities of vessels fishing within Argentine fisheries waters. There are described in the Certification Report of the Argentine hoki bottom and mid-water trawl fishery.</p> <p>All this control tools are well implemented and seems to be extremely efficient, to the point there are not systematic non-compliance with in force regulations, as consequence of a very strict control system, proving its ability to enforce relevant management measures, strategies and/or rules. The main rules to control in the fishery are TAC, minimum catch size of the species, annual research surveys, OBO Program monitoring and all of them are conscientiously controlled by means of landing control system and VMS system. The VMS system is called SICAP and allows know the location of each vessel in real time and rebuild its course. This works very well and is mandatory used by the fleet.</p> <p>The observation on board for this fleet was implemented by CFP Resolution N° 22/2009 replaced then by CFP Resolution N° 2/2013.</p> <p>Therefore, evidence indicates that there is a comprehensive monitoring to obtain data and then carry out the respective measures or strategy. There is a monitoring, control and surveillance system that has been implemented in the fishery under assessment and has demonstrated an ability to enforce relevant management measures, strategies and/or rules as is reflected in the low number of infractions over a long period. And so, the Argentine hoki (<i>Macruronus magellanicus</i>) bottom and mid-water trawl fishery meets the SG100 level of performance for this SI.</p>		
b	Sanctions			
	Guidepost	Sanctions to deal with non-compliance exist and there is some evidence that they are applied.	Sanctions to deal with non-compliance exist, are consistently applied and thought to provide effective deterrence.	Sanctions to deal with non-compliance exist, are consistently applied and demonstrably provide effective deterrence.
	Met?	YES	YES	NO

	Justification	<p>Sanctions to deal with non-compliance exist and there is evidence that they are consistently applied and thought to provide effective deterrence, in case that an unacceptable issue in the fishery occurs. If it is the case, sanctions are applied through the administration of the fishery through a court-based system, where there are many instances of negotiation to resolve understanding of the rights of the fishers and even legal recourses if required.</p> <p>However, there is no clear evidence on how consistently these measures are applied and how demonstrably provide with the effective deterrence. So, the Argentine hoki (<i>Macrurus magellanicus</i>) bottom and mid-water trawl fishery meets with SG80 for this SI.</p>		
c	Compliance			
	Guided post	Fishers are generally thought to comply with the management system for the fishery under assessment, including, when required, providing information of importance to the effective management of the fishery.	Some evidence exists to demonstrate fishers comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery.	There is a high degree of confidence that fishers comply with the management system under assessment, including, providing information of importance to the effective management of the fishery.
	Met?	YES	YES	NO
	Justification	<p>There is some evidence to demonstrate that fishers comply with the management system under assessment, including when required, providing information of the importance to the effective management of the fishery.</p> <p>During the re-certification process, the assessment team interviewed the Dirección Nacional de Coordinación Pesquera and Dirección Nacional de Planificación Pesquera. They commented that there have not been non-compliance sanctions during last years, and there have not been much from the beginning of the fishery either. The very low rate of violations indicates that fishers comply with the management system under assessment. Nevertheless, if any exist, it is unlikely to be related to a negative impact on fishing recourses or to the stock's detriment. This attests to the effectiveness of the system as well as attitude of the harvesters toward the resource. Fishers provide information through mandatory reporting as well as voluntarily through such programs as on board and port sampling. Industry programs attest to responsible stewardship.</p> <p>However, while some evidence exists, there is no strong evidence that supports a high degree of confidence that fishers comply with the management system under assessment, including, providing information of importance to the effective management of the fishery; and therefore, the Argentine hoki (<i>Macrurus magellanicus</i>) bottom and mid-water trawl fishery meets with SG80 for this SI.</p>		
d	Systematic non-compliance			
	Guided post		There is no evidence of systematic non-compliance.	
	Met?		YES	
	Justification	<p>Although sanctions with non-compliance exist and are thought to provide effective deterrence, there is no evidence of systematic noncompliance.</p> <p>The Argentine hoki (<i>Macrurus magellanicus</i>) bottom and mid-water trawl fishery meets the SG80 level of performance for this SI.</p>		
References	Law N° 25.470, Federal Fisheries Law N° 24.922 and Federal Decree N° 748/1999. CFP Resolutions N° 22/2009 and N° 2/2013.			

OVERALL PERFORMANCE INDICATOR SCORE:

85

Evaluation Table for PI 3.2.4 – Monitoring and management performance evaluation

PI 3.2.4	There is a system of monitoring and evaluating the performance of the fishery-specific management system against its objectives. There is effective and timely review of the fishery-specific management system.		
Scoring Issue	SG 60	SG 80	SG 100
a	Evaluation coverage		
Guided post	There are mechanisms in place to evaluate some parts of the fishery-specific management system.	There are mechanisms in place to evaluate key parts of the fishery-specific management system	There are mechanisms in place to evaluate all parts of the fishery-specific management system.
Met?	YES	YES	YES
Justification	<p>As it is shown in same section of this report, the fishing administration system has in place permanent mechanisms to review the evolution of any fishery and to introduce corrective actions, if necessary.</p> <p>The performance of the management system against the stated objectives is constantly monitored through the fishing season by the industry and INIDEP in the Comisión de Análisis y Seguimiento de la Pesquería de Merluza de Cola (<i>Macruronus magellanicus</i>).</p> <p>Key parts of the management system are subject to regular internal review from the Ministerio de Agroindustria – Internal Audit Unit and occasional external reviews from the Sindicatura General de la Nación and the Auditoría General de la Nación. Also, any decision of the administration affecting the rights of third parties requires a control and legal opinion prior to its sanction. Such control is carried out by a statutory body external to the agency that promotes the sanction of the rule. All these procedures are established by an Administrative Procedure Law N° 19.549 and its Regulatory Federal Decree N° 1.759/1972.</p> <p>The fishery has in place mechanisms to evaluate key parts of the management system composed by a full internal review of the performance of the fishery against stated goals takes place more than an annual year meeting that is attended by the interested parties as mention above and some meetings at INIDEP with the enterprises. Presentations are made on the status of the stock, management measures used and operational issues, as well as on an overview of the monitoring of the fishery by the surveillance program for the previous year; adjustments are made subsequently to the management system as required.</p> <p>On board inspectors produce a report forwarded to specific department from the Application Authority, to assess the performance of the inspector.</p> <p>Frequently workshops are conducted with all interested parties to participate the issues prior to the decision-making, even when there is no so much record reporting the use of such methodology in Argentine hoki fishery. However, the same is of current use of both the administration and research systems, so it can be used if necessary.</p> <p>Fishery statistics are also published in the websites of CFP and the Subsecretaría de Pesca y Acuicultura (SSPyA), like the positioning of fishing vessels, which is updated twice a day (www.minagri.gob.ar).</p> <p>The way in which CFP publishes its sessions and decisions, like the Publishing of the INIDEP reports, imply the opportunity for all the stakeholders to assess the system (www.cfp.gob.ar).</p> <p>Therefore, the Argentine hoki (<i>Macruronus magellanicus</i>) bottom and mid-water trawl fishery complies with the SG100 level of performance for this SI.</p>		
b	Internal and/or external review		

	Guided post	The fishery-specific management system is subject to occasional internal review.	The fishery-specific management system is subject to regular internal and occasional external review.	The fishery-specific management system is subject to regular internal and external review.
	Met?	YES	YES	NO
	Justification	<p>As it was said in PI 3.2.4 a), the fishery specific management system is subject to regular internal and occasional external review. It must be remembered that Argentina is a republic, so the Auditoria General de la Nación (Constitution Organization) and Auditoria General de la Nación (depending on the Congress), are considered instances out of the management system (Directive GSA4.10.1).</p> <p>Therefore, the Argentine hoki (<i>Macruronus magellanicus</i>) bottom and mid-water trawl fishery complies with the SG 80 level of performance for this SI.</p>		
	References	Law N° 19.549 and Regulatory Federal Decree N° 1759/1972.		
OVERALL PERFORMANCE INDICATOR SCORE:				90

Appendix 1.2 Conditions

In relation to the previous assessment, one condition is maintained open and 5 conditions were closed in the fourth surveillance. For further information, see section 4.2.b.

In the re-assessment process, although the fishery achieved the minimum pass mark of 60 in all scoring issues of performance indicators, some of them did not reach 80 and so, 3 conditions have been raised for PI 1.2.2 and 2.2.1. One of these conditions was related to a previously raised condition.

Table A1.3: Condition 1

<p>Performance Indicator</p>	<p>PI 1.2.2 - There are well defined and effective harvest control rules (HCRs) in place.</p> <p>SI a) Well defined HCR's are in place that ensure that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock fluctuating around a target level consistent with (or above) MSY.</p>
<p>Score</p>	<p>SI a): 65. <i>The score was adjusted in the peer reviewer process.</i></p>
<p>Rationale</p>	<p>The harvest control rule available for hoki fishery been described by the technical fishery advisor (INIDEP) in the INIDEP Invest. Report N° 23/2017 and was adopted by management body according the CFP Act N° 14/2017 in order to establish it before the stock declines below B_{MSY} (<i>i.e.</i> Limit Reference Point).</p> <p>The condition specified below is carried over from a previous assessment, and particularly from the 4th annual surveillance. At that time, the assessment team considered that the progress of condition 1 was not sufficient and the status of this condition was “behind target”.</p> <p>Therefore, this condition was not closed in the fourth surveillance (2016) and the assessment team expressed that before the expiry date of the current MSC Sustainable Fishing Certificate, the client should provide evidence that the selection of the harvest control rules considers the main uncertainties. It was expressed that the client should provide written evidences that rules that will ensure that the exploitation rate is reduced as limit reference points are approached, are agreed upon. Also, the assessment team expressed that before the expiry date discussion of potential harvest control rules when recruitment is low have finalized and harvest control rules towards precaution in years when productivity can be low, have been defined.</p> <p>The INIDEP Investigation Report N° 23/2017 (approved in April 2017) was received as evidence to demonstrate that potential HCR has being described. The proposed HCR aims to contribute to good fishing practices and be applied in the event of unfavorable changes that jeopardize the sustainability due to changes in the ecosystem or alterations in the biology of the species. It has been based on the reference biological points and associated fishing mortalities.</p> <p>This proposal was submitted to management authority and was made available through CFP Act N° 12/2017. Also, it was discussed in the Follow-up Commission as first instance. In the CFP Act N° 14/2017, the management body decided to adopt the HCR described and the assessment team considered that the HCR available is generally understood. However, there is no evidence provided by the client that the HCR proposed ensures that the stock is likely to fluctuate around a B_{MSY} level.</p> <p>The assessment team, considering peer reviewer comments, agrees that the client group must review the action plan to achieve SG80 level of this condition.</p>
<p>Condition</p>	<p>By the 1st annual surveillance, the client group must provide evidence that there are well defined HCRs that ensure that the exploitation rate is reduced as the PRI (Limit</p>

	Reference Points) is approached. Also, the client group must provide evidence that the HCR should also ensure that the stock is likely to fluctuate around a B_{MSY} level in the long term.								
Milestones	Written evidence of the full achievement of the condition must be provided to the CAB at the time of the first annual surveillance. Evidence must show that the HCR described is achieved by the inclusion of a B_{MSY} consistent with reference point as a trigger in the HCRs, ensuring that the stock is likely to fluctuate around a B_{MSY} level in the long term. If progress of this milestone is considered “on target”, the team will re-score this PI, giving an interim score of 75. Final score will be done when Condition 2 will be closed.								
Client action plan	<p>Year 1: By the first annual surveillance, the fishery will have into the management regulation a ‘Harvest Control Rule (HCR)’. If the stock biomass falls below the Target Reference Point ($0.4SSB_0$), the fishing mortality or fishing effort would be linearly reduced as a function of SSB. It acts as a trigger in which total allowable catches decline in order to rebuilt the reproductive stock. Near the Limit Reference Point, a rebuild plan will be implemented, which will trigger management actions, reducing drastically the TAC as described in the HCR. Fishing mortality would diminish up to SSB rebuild at least 50% of the rate that would exist in the absence of fishing over a five years period: F_{reb}.</p> <p>According to the last stock assessment, $SSB_0= 492.240$ t; $SSB_{2015}= 206.312$ t; Target Reference Point is $0.4SSB_0= 196.891$ t; Limit Reference Point is $0.25SSB_0= 123.060$ t.</p> <table border="1"> <thead> <tr> <th>Stock status</th> <th>Total Allowable Catches (or F)</th> </tr> </thead> <tbody> <tr> <td>$SSB \geq 0.4SSB_0$</td> <td>Annual TACs should be set at $F=F_{obj}$</td> </tr> <tr> <td>$0.25SSB_0 < SSB < 0.4SSB_0$</td> <td>Annual TACs should be set at $F=\rho * F_{obj}$, where ρ is $SSB/0.4SSB_0$, so F is a rate of F_{obj}</td> </tr> <tr> <td>$SSB \leq 0.25SSB_0$</td> <td>A rebuilding plan is trigger. Annual TACs should be set at $F=F_{rec}$, where F_{rec} is the fishing mortality that allows an increase of the stock biomass not less than 50% of the rate that would exist without fishing.</td> </tr> </tbody> </table> <p>A process of simulation test using an operating model would be developed in order to evaluate uncertainties in the stock assessment and the performance of HCR implemented.</p>	Stock status	Total Allowable Catches (or F)	$SSB \geq 0.4SSB_0$	Annual TACs should be set at $F=F_{obj}$	$0.25SSB_0 < SSB < 0.4SSB_0$	Annual TACs should be set at $F=\rho * F_{obj}$, where ρ is $SSB/0.4SSB_0$, so F is a rate of F_{obj}	$SSB \leq 0.25SSB_0$	A rebuilding plan is trigger. Annual TACs should be set at $F=F_{rec}$, where F_{rec} is the fishing mortality that allows an increase of the stock biomass not less than 50% of the rate that would exist without fishing.
Stock status	Total Allowable Catches (or F)								
$SSB \geq 0.4SSB_0$	Annual TACs should be set at $F=F_{obj}$								
$0.25SSB_0 < SSB < 0.4SSB_0$	Annual TACs should be set at $F=\rho * F_{obj}$, where ρ is $SSB/0.4SSB_0$, so F is a rate of F_{obj}								
$SSB \leq 0.25SSB_0$	A rebuilding plan is trigger. Annual TACs should be set at $F=F_{rec}$, where F_{rec} is the fishing mortality that allows an increase of the stock biomass not less than 50% of the rate that would exist without fishing.								
Consultation on condition	<p>Programa de Pesquerías de Peces Demersales Australes y Subantárticos (INIDEP) (see agreement note provided below).</p> <p>Autoridad de Aplicación Pesquera (CFP) (CFP Resolutions and Acts)</p>								

Table A1.3: Condition 2 (continued)

Performance Indicator	PI 1.2.2 - There are well defined and effective harvest control rules (HCRs) in place. SI b) The HCRs are likely to be robust to the main uncertainties.
Score	SG 80 was not achieved
Rationale	Recent progresses in the knowledge of the Argentine hoki stock has permitted to identify some of the main uncertainties and in some cases to include them into the management of the fishery particularly into the annual TAC. (e.g. two scenarios of

	<p>future recruitment in the assessment model).</p> <p>However, the main HCR in place (TAC) that effectively impacts on the state of the stock does not consider other important uncertainty like the degree of connectivity and interdependency between the southeast Pacific and the southwest Atlantic stocks. This is a particularly relevant issue should the existence of a unique population unit along the cone of south America be confirmed. The degree of connectivity and interdependency between the southeast Pacific and the southwest Atlantic stocks need to be clarified. The current assessment model assumes that there exists a single stock in the Atlantic and does not consider alternative hypotheses about the stock structure in the Atlantic and Pacific waters, and no structurally different models have either been explored.</p> <p>The condition specified below is related to condition 1 from the 4th annual surveillance (2016). It must be noted that condition 1 in the 4th annual surveillance was identified as “The selection of the harvest control rules takes into account the main uncertainties” but in practice the client group was not specifically requested by the assessment team to take into account the uncertainty related to the stock structure.</p> <p>Therefore, this issue now emerges as a new condition.</p>
<p>Condition</p>	<p><i>The assessment team established a timeline for 2 years to close this condition. However, the client, in consultation with INIDEP researchers, requested to extent the timeframe to satisfy the compliance in realistic period (see notes provided below). According this argument, team members granted a one year of extension.</i></p> <p>By the 3rd annual surveillance, the client group must provide evidence that the HCR’s are likely to be robust to the main uncertainties and to the uncertainties related to the stock structure.</p> <p>In this respect, and without prejudice of other considerations, the client group must consider that annual TAC is the main HCR in place and that the stock structure is one of the main uncertainties.</p>
<p>Milestones</p>	<p>By the 1th annual surveillance the client group must provide evidence that work to take into account the main uncertainties and in particular the uncertainties related to the stock structure is in progress.</p> <p>If progress of this milestone is considered “on target”, the team will re-score this PI, giving an interim score of 75.</p> <p>By the 3th annual surveillance written evidence of the full achievement of the condition must be provided to the CAB, namely that design of the HCR’s takes into account the main uncertainties and HCR’s are likely to be robust to these uncertainties.</p> <p>If progress of this condition is considered “on target”, the team will re-score this PI, giving a final score of 85, and the condition will be closed.</p>
<p>Client action plan</p>	<p>Year 1: Provide first results in relation with the stock unity or the degree of stock mixing between the South Pacific and South Atlantic distributions, using different holistic techniques (a) in relation with somatic and otolith morphology, (b) parasitology, (c) position in food web in the South Atlantic distribution stock structure respect to the whole distribution. All the results will be combining to identify whether more than one population is present in the wide distribution of <i>Macruronus magellanicus</i>.</p> <p>Year 2: Provide final report analyzing the results. Reformulate the HCR in order to be robust in case that new information show evidences that different uncertainties would</p>

	<p>be necessary incorporated.</p> <p>Year 3: Provide a comparative analysis of the historical management in relation to the HCR. Iterative processes will be developed to introduce different type of uncertainties such as the variability in population processes or stock unit, fishing characteristics and the uncertainties of observations/estimation.</p>
Consultation on condition	<p>Programa de Pesquerías de Peces Demersales Australes y Subantárticos (INIDEP) (see agreement note provided below).</p> <p>Autoridad de Aplicación Pesquera (CFP) (CFP Resolutions and Acts)</p>

Table A1.3: Condition 3

Performance Indicator	<p>PI 2.2.1 The UoA aims to maintain secondary species above a biologically based limit and does not hinder recovery of secondary species if they are below a biologically based limit.</p> <p>SI a) Main secondary species stock status.</p>
Score	Revised score 75
Rationale	<p>There are not target or limit reference points to more properly assess the stock status of <i>M. australis</i> and the assesment team considers that the only measure currently in place (<i>i.e.</i> TAC) has not the merits to state that the fishery is managed.</p> <p>The latest stock assessment (Giussi & Zavatteri, 2016) concludes that total and spawning biomasses have remained relatively stable since 1992, but there is uncertainty about the actual level of biomass since estimations varied significantly depending on the natural mortality values.</p>
Condition	<p><i>The assessment team established a timeline for 2 years to close this condition. However, the client, in consultation with INIDEP researchers, requested to extent the timeframe to satisfy the compliance in realistic period (see notes provided below). According this argument, team members granted a one year of extension.</i></p> <p>By the 3th annual surveillance, the client group must provide evidence that <i>Merluccius australis</i> (main secondary species) is highly likely to be above biologically based limits or if below biologically based limits, there is either evidence of recovery or a demonstrably effective partial strategy in place such that the UoA does not hinder recovery and rebuilding.</p>
Milestones	<p>By the 1st annual surveillance the client group must provide evidence that work to determine the stock status of <i>M. australis</i> is in progress or that evidences of population recovery are being collected.</p> <p>If progress of this condition is considered “on target”, the team will re-score this PI, giving an interim score of 75.</p> <p>By the 3rd annual surveillance written evidence of the full achievement of the condition must be provided to the CAB.</p> <p>If progress of this condition is considered “on target”, the team will re-score this PI, giving a final score of 80, and the condition will be closed.</p>
Client action plan	<p>Year 1: Discussion and improve knowledge on Southern hake: (1) stock distribution and structure, (2) accuracy of abundances indexes, and (3) migratory movements.</p>

	<p>Year 2: Implementation and comparison of different alternatives of improved stock assessment methods, incorporating hypothesis of higher stock complexity and uncertainties.</p> <p>Year 3: Analyze the relationship between the stock status of <i>M. australis</i> and their biologically based limits. If the value is below the biologically based limits, we will provide analysis showing if the species is being recovering and if there is a strategy for this purpose. Moreover, in this case, we will provide evidences that the UoA does not hinder recovery and rebuilding, or there is a management strategy to avoid this problem.</p>
Consultation on condition	<p>Programa de Pesquerías de Peces Demersales Australes y Subantárticos (INIDEP) (see agreement note provided below).</p> <p>Autoridad de Aplicación Pesquera (CFP) (CFP Resolutions and Acts)</p>

External parties involved in the meeting of the conditions.

The relevant researchers of INIDEP have been consulted and agreed that these actions will comply to meet the raised conditions (see agreement note provided below). They have committed to assist the fishery in undertaking the actions specified in the action plan. Letters of these commitments are shown below.

Also, in consultation with INIDEP relevant researchers, the client group requested to OIA extent the timeframe of milestones to satisfy the compliance in realistic period. According this argument, team members granted a one year of extension for conditions 2 and 3. Adjustements were presented above.

Moreover, the client group sent to OIA written evidence relating to the condition not closed (PI 1.2.2) in the previous assessment period. The assessment team accepted them as relevant evidence and the fishery should be certified as MSC Sustainable Fishing. It was recognised that achieving of performance level of 80 may take longer than the period of certification, due that it is classified as 'exceptional circumstances' (*i.e.* (1) natural ecological functions and response times and (2) time required for relevant research to be funded, undertaken and published exceeded the current certification period 2012-2017). OIA has verified that this condition is on target and should be assessed the achievement in the year that condition is expected to be closed (first re-certification period).

12 MAY 2017

ACTION PLAN FOR ARGENTINE HOKI FISHERY – RE-CERTIFICATION PROCESS

Companies involved in the Action Plan:
 EMPRESA PESQUERA DE LA PATAGONIA Y ANTÁRTIDA S.A. (PESANTAR)
 ESTREMAR S.A.
 SAN ARAWA S.A.

Action Plan proposed was developed according milestones established by the assessment team. Timelines proposed for Condition 2 and 3 to achieve milestones and condition were modified in consulting with relevant researchers.

Although it was tried to set action plan according timeframe established, it was considered convenient to request an extension for these conditions to improve the quality of results, including the deepening and detail discussion of same. An abruptness result could lead to involuntary mistakes that could possible negatively influence in the management. Also, results obtained could generate new uncertainties that should be dissipated in the same direction.

In the case of condition 2, software should be developed appropriate to biological-fishing aspects of species and its associated variables, which would involve iterative processes, the delay of which could involve more than the expected time.

Condition 1:

Performance Indicator	<p>PI 1.2.2 - There are well defined and effective harvest control rules (HCRs) in place.</p> <p>SI a) Well defined HCR's are in place that ensure that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock fluctuating around a target level consistent with (or above) MSY.</p>
Score	SI a) : 60
Rationale	<p>In the last 18 years the TAC steadily diminished from 300,000 to 80,000 t, paralleling in general terms the trend of the stock abundance, but there is no explicit evidence that this occurred as a result that limit reference points were approaching.</p> <p>Therefore there is no accurate evidence that the exploitation rate has been reduced as the limit reference point (PRI) is approaching. Over the last 11 years, exploitation rate has varied between 26% to 38%, with an average of 32%. No rules aimed to reduce the exploitation rate when the abundance of the stock is approaching the limit levels have been defined. On the other hand, there are no explicit and precautionary HCR's to be applied in years of low productivity of the stock.</p> <p>The condition specified below is carried over from a previous assessment, and particularly from the 4th annual surveillance. At that time the assessment team considered that the progress of condition 1 was not sufficient and the status of this condition was "behind target".</p> <p>Therefore, this condition was not closed in the fourth surveillance (2016) and the assessment team expressed that before the expiry date of the current MSC Sustainable Fishing Certificate, the client should provide evidence that the selection of the harvest control rules takes into account the main uncertainties. In particular, it was expressed that the client should provide written evidences that rules that will ensure that the exploitation rate is reduced as limit reference points are approached, are agreed upon. Also, the assessment team expressed that before the expiry date discussion of potential harvest control rules when recruitment is low have finalized and harvest control rules towards precaution in</p>

Page 1

	<p>years when productivity can be low, have been defined.</p> <p>As of the date of this re-assessment report, no evidences of the above have been provided to the CAB. However INIDEP scientists have unofficially informed that work on these issues is currently in progress.</p>
Condition	By the 1st annual surveillance, the client group must provide evidence that there are well defined HCR's that ensure that the exploitation rate is reduced as the PRI (Limit Reference Points) is approached. Also the client group must provide evidence that HCR's to be applied in years when productivity is low have been designed.
Milestones	Written evidence of the full achievement of the condition must be provided to the CAB at the time of the first annual surveillance.
Client action plan	Year 1: By the first annual surveillance, the fishery will have into the management regulation a "Harvest Control Rule (HCR)". If the stock biomass falls below the Target Reference Point, the TAC would be linearly reduced as a function of biomass as well as the fishing mortality or fishing effort. Near the Limit Reference Point a rebuild plan will be implemented, which will trigger management action, reducing drastically the TAC as described in the HCR.
Consultation on condition	Programa Pesquerías de Peces Demersales Australes y Subantárticos (INIDEP). Autoridad de Aplicación Pesquera (CFP).

Condition 2:

Performance Indicator	<p>PI 1.2.2 - There are well defined and effective harvest control rules (HCRs) in place.</p> <p>SI b) The HCRs are likely to be robust to the main uncertainties.</p>
Score	SG 80 was not achieved
Rationale	<p>Recent progresses in the knowledge of the Argentine hoki stock has permitted to identify some of the main uncertainties and in some cases to include them into the management of the fishery particularly into the annual TAC. (e.g. two scenarios of future recruitment in the assessment model).</p> <p>However, the main HCR in place (TAC) that effectively impacts on the state of the stock does not take into account other important uncertainty like the degree of connectivity and interdependency between the southeast Pacific and the southwest Atlantic stocks. This is a particularly relevant issue should the existence of a unique population unit along the cone of south America be confirmed. The degree of connectivity and interdependency between the southeast Pacific and the southwest Atlantic stocks need to be clarified. The current assessment model assumes that there exist a single stock in the Atlantic and does not consider alternative hypotheses about the stock structure in the Atlantic and Pacific waters, and no structurally different models have either been explored.</p> <p>The condition specified below is related to condition 1 from the 4th annual surveillance (2016). It must be noted that condition 1 in the 4th annual surveillance was identified as "The selection of the harvest control rules takes into account the main uncertainties" but in practice the client group was not specifically requested by the assessment team to take into account the uncertainty related to the stock structure.</p> <p>Therefore, this issue now emerges as a new condition.</p>
Condition	By the 2 nd annual surveillance, the client group must provide evidence that the HCR's are likely to be robust to the main uncertainties and in particular to the uncertainties related to the stock structure. In this respect, and without prejudice of other considerations, the client group must consider that annual TAC is the main HCR in place and that the stock structure is one of the main uncertainties.

Milestones	<p>By the 1st annual surveillance the client group must provide evidence that work to take into account the main uncertainties and in particular the uncertainties related to the stock structure is in progress.</p> <p>By the 2nd annual surveillance written evidence of the full achievement of the condition must be provided to the CAB, namely that design of the HCR's takes into account the main uncertainties and HCR's are likely to be robust to these uncertainties.</p>
Client action plan	<p>Year 1: Provide first results in relation with the stock unity or the degree of stock mixing between the South Pacific and South Atlantic distributions, using different holistic techniques (a) in relation with somatic and otolith morphology, (b) parasitology, (c) position in food web in the South Atlantic distribution stock structure respect to the whole distribution. All the results will be combining to identify whether more than one population is present in the wide distribution of <i>Macruronus magellanicus</i>.</p> <p>Year 2: Provide final report analyzing the results. Reformulate the HCR in order to be robust in case that new information show evidences that different uncertainties would be necessary incorporated.</p> <p>Year 3: Provide a comparative analysis of the historical management in relation to the HCR. Iterative processes will be developed to introduce different type of uncertainties such as the variability in population processes or stock unit, fishing characteristics and the uncertainties of observations/estimation.</p>
Consultation on condition	<p>Programa Pesquerías de Peces Demersales Australes y Subantárticos (INIDEP).</p> <p>Programa Observadores a bordo de Buques Comerciales (INIDEP).</p>

Condition 3:

Performance Indicator	<p>PI 2.2.1 The UoA aims to maintain secondary species above a biologically based limit and does not hinder recovery of secondary species if they are below a biologically based limit.</p> <p>SI a) Main secondary species stock status.</p>
Score	60
Rationale	<p>There are not target or limit reference points to more properly assess the stock status of <i>M. australis</i> and the assessment team considers that the only measure currently in place (i.e. TAC) has not the merits to state that the fishery is actually managed. The latest stock assessment (Giussi & Zavatteri, 2016) concludes that total and spawning biomasses have remained relatively stable since 1992, but there is uncertainty about the actual level of biomass since estimations varied significantly depending on the natural mortality values.</p>
Condition	<p>By the 2nd annual surveillance, the client group must provide evidence that <i>Merluccius australis</i> (main secondary species) is highly likely to be above biologically based limits or if below biologically based limits, there is either evidence of recovery or a demonstrably effective partial strategy in place such that the UoA does not hinder recovery and rebuilding.</p>
Milestones	<p>By the 1st annual surveillance the client group must provide evidence that work to determine the stock status of <i>M. australis</i> is in progress or that evidences of population recovery are being collected.</p> <p>By the 2th annual surveillance written evidence of the full achievement of the condition must be provided to the CAB.</p>
Client action plan	<p>Year 1: Discussion and improve knowledge on southern hake (1) stock distribution and structure, (2) accuracy of abundance indexes, (3) migratory movements.</p> <p>Year 2: Implementation and comparison of different alternatives of improved</p>

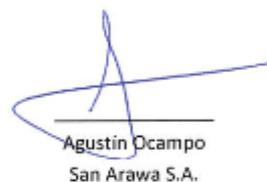
	<p>stock assessment methods, incorporating hypothesis of higher stock complexity and uncertainties.</p> <p>Year 3: Analyze the relationship between the stock status of <i>M. australis</i> and their biologically based limits. If this value is below the biologically based limits, we will provide analysis showing if the species is being recovering and if there is a strategy for this purpose. Moreover, in this case we will provide evidences that the UoA does not hinder recovery and rebuilding, or there is a management strategy to avoid this problem.</p>
Consultation on condition	<p>Programa Pesquerías de Peces Demersales Australes y Subantárticos (INIDEP)</p> <p>Programa Observadores a bordo de Buques Comerciales (INIDEP)</p>



Alan Mackern
Estremer S.A.



Fabián Carrasco
PESANTAR



Agustín Ocampo
San Arawa S.A.



*Ministerio de Agroindustria
Instituto Nacional de Investigación
y Desarrollo Pesquero*

"2017 – AÑO DE LAS ENERGÍAS RENOVABLES"

Mar del Plata, 11 de mayo de 2017

SEÑOR DIRECTOR:

Por la presente me dirijo a Ud. con el fin de que tome conocimiento acerca del compromiso del Instituto Nacional de Investigación y Desarrollo Pesquero (INIDEP) de participar en el proceso de Recertificación de la Pesquería de Merluza de Cola bajo el estándar del MSC. De esta manera, el INIDEP avala que colaborará en el cumplimiento de las condiciones y metas propuestas por el grupo cliente en el Plan de Acción presentado ante OIA.

Por otra parte, el INIDEP expresa que los plazos indicados por el equipo de evaluación para las Condiciones 2 y 3 deben ser revisados dado que el cumplimiento de las mismas no es alcanzable durante el período especificado. Por lo anterior, el Plan de Acción propuesto se plantea con una extensión de un año más para cada una de las condiciones mencionadas.

Finalmente, el INIDEP firmará próximamente un convenio con las empresas que solicitaron la certificación de la pesquería citada, comprometiéndose a trabajar en los temas propuestos y acordados en el Plan de Acción.

Sin otro particular, saluda a usted atentamente.



Dr. OTTO C. WÖHLER
DIRECTOR
INSTITUTO NACIONAL DE INVESTIGACIÓN
Y DESARROLLO PESQUERO
INIDEP

SEÑOR DIRECTOR TÉCNICO
ORGANIZACIÓN INTERNACIONAL AGROPECUARIA (OIA)
Ing. Agr. Pedro A. Landa
S/D

Buenos Aires, 11 de mayo de 2017

Organización Internacional Agropecuaria (OIA)
Av. Santa Fe 830, B1641ABN Acassuso, Bs. As., Argentina.
Atte. Ing. Pedro A. Landa

**Asunto: extender plazos en el plan de acción
para la recertificación de merluza de cola argentina**

Estimado Ing. Landa,

Mediante la presente le solicitamos la extensión de algunos plazos propuestos en el plan de acción presentado. En concreto:

Condición 2

Desde nuestro punto de vista, es altamente improbable cerrar esta condición en el plazo de dos años, no sólo por las tareas locales requeridas sino porque comprende investigación internacional, con todas las sensibilidades y dificultades que ello implica. Consideramos que mínimo necesitaremos de un año más.

Condición 3

En este caso, es muy difícil conseguir las muestras necesarias debido a que tiene una amplia distribución (bioceánica) y principalmente lo que necesitamos es analizar la parte que no está en nuestro territorio. Además, se incorporó una actividad nueva, como es la evaluación de la trama trófica, ya que lo consideran importante como otra herramienta para la identificación de la unidad poblacional. Siendo conscientes de esta complejidad, los científicos del INIDEP nos han pedido un año adicional para poder cumplir con los requisitos de esta nueva condición.

Quedamos atentos a una respuesta favorable.

Saludamos a Ud. cordialmente,



ALAN MACKERN
Apoderado
ESTREMAR S.A.



FABIAN CARRASCO
Commercial Department
EMPRESA PESQUERA DE LA
PATAGONIA Y ANTARTIDA S.A.
(PESANTAR)



SANARAWA SA
AGUSTIN OCAMPO

Buenos Aires, 5 de mayo de 2017

Organización Internacional Agropecuaria (OIA)
Av. Santa Fe 830, B1641ABN Acassuso, Bs. As., Argentina.
Atte. Ing. Pedro A. Landa

Estimado Ing. Landa,

Mediante la presente, queremos informarle que hemos avanzado en el cierre de la condición pendiente del proceso de evaluación anterior, al definir con el INIDEP una Regla de Control de Captura, que según el cronograma establecido por las autoridades, será presentada públicamente en la reunión de la comisión de seguimiento de la especie merluza de cola el próximo 10 de mayo del corriente y a continuación, el 17 de mayo, tratada en el Consejo Federal Pesquero para su implementación.

Saludamos a Ud. muy atte.


ESTREMER

PESANTAR


SAN BRAWA

July 14th, 2017

ARGENTINE HOKI ACTION PLAN – AMENDMENT CONDITION 1

Companies involved in the Action Plan:
 EMPRESA PESQUERA DE LA PATAGONIA Y ANTÁRTIDA S.A. (PESANTAR)
 ESTREMAR S.A.
 SAN ARAWA S.A.

To comply with peer reviewer comments and the assessment team revision, the action plan for Condition 1 was adjusted, in consulting with INIDEP researchers, in order to achieve milestone established and SG80 level in the first certification period.

Condition number	Condition	Performance Indicator	Related to previously raised condition? (Y/N/NA)
1	By the 1 st annual surveillance, the client group must provide evidence that there are well defined HCRs that ensure that the exploitation rate is reduced as the PRI (Limit Reference Points) is approached. Also, the client group must provide evidence that the HCR should also ensure that the stock is likely to fluctuate around B_{MSY} level in the long term.	1.2.2 SI a)	YES

Performance Indicator	<p>PI 1.2.2 - There are well defined and effective harvest control rules (HCRs) in place.</p> <p>SI a) Well defined HCRs are in place that ensure that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock fluctuating around a target level consistent with (or above) MSY.</p>
Score	SI a): 65. <i>The score was adjusted in the peer reviewer process.</i>
Rationale	<p>The harvest control rule available for the hoki fishery has been described by the technical fishery advisor (INIDEP) in the INIDEP Invest. Report N° 23/2017 and was adopted by the management body according to CFP Act N° 14/2017 in order to establish it before the stock declines below B_{MSY} (i.e. Limit Reference Point).</p> <p>The condition specified below is carried over from a previous assessment, and particularly from the 4th annual surveillance. At that time, the assessment team considered that the progress of condition 1 was not sufficient and the status of this condition was "behind target".</p> <p>Therefore, this condition was not closed in the fourth surveillance (2016) and the assessment team expressed that before the expiry date of the current MSC Sustainable Fishing Certificate, the client should provide evidence that the selection of the harvest control rules takes into account the main uncertainties. In particular, it was expressed that the client should provide written evidences that rules that will ensure that the exploitation rate is reduced as limit reference points are approached, are agreed upon. Also, the assessment team expressed that before the expiry date discussion of potential harvest control rules when recruitment is low have finalized and harvest control rules towards precaution in years when productivity can be low, have been defined.</p> <p>The INIDEP Investigation Report N° 23/2017 (approved in April 2017) was received as evidence to demonstrate that potential HCR has been described. The proposed HCR aims to contribute to good fishing practices and will be applied in the event of unfavorable changes that jeopardize the sustainability due to changes in the</p>

	<p>ecosystem or alterations in the biology of the species. It has been based on the reference biological points and associated fishing mortalities.</p> <p>This proposal was submitted to management authority and was made available through CFP Act N° 12/2017. Also, it was discussed in the Follow-up Commission as first instance. In the CFP Act N° 14/2017, the management body decided to adopt the HCR described and the assessment team considered that the HCR available is generally understood. However, there is no evidence provided by the client that the HCR proposed ensures that the stock is likely to fluctuate around a B_{MSY} level.</p> <p>The assessment team, considering peer reviewer comments, agrees that the client group must review the action plan in order to achieve SG80 level for this condition.</p>								
Condition	By the 1 st annual surveillance, the client group must provide evidence that there are well defined HCRs that ensure that the exploitation rate is reduced as the PRI (Limit Reference Points) is approached. Also, the client group must provide evidence that shows that the HCR should also ensure that the stock is likely to fluctuate around a B_{MSY} level in the long term.								
Milestones	<p>Written evidence of the full achievement of the condition must be provided to the CAB at the time of the first annual surveillance. Evidence must show that the HCR described is achieved by the inclusion of a B_{MSY} consistent with reference point as a trigger in the HCRs, ensuring that the stock is likely to fluctuate around a B_{MSY} level in the long term.</p> <p>If progress of this milestone is considered "on target", the team will re-score this PI, giving an interim score of 75. Final score will be assigned when Condition 2 becomes closed.</p>								
Client action plan	<p>Year 1: By the first annual surveillance, the fishery will have into the management regulation a 'Harvest Control Rule (HCR)'. If the stock biomass falls below the Target Reference Point ($0.4SSB_0$), the fishing mortality or fishing effort would be linearly reduced as a function of SSB. It acts as a trigger in which total allowable catches decline in order to rebuild the reproductive stock. Near the Limit Reference Point, a rebuild plan will be implemented, which will trigger management actions, reducing drastically the TAC as described in the HCR. Fishing mortality would diminish up to SSB rebuild at least 50% of the rate that would exist in the absence of fishing over a five year period: F_{reb}. According to the last stock assessment, $SSB_0 = 492.240$ t; $SSB_{2015} = 206.312$ t; Target Reference Point is $0.4SSB_0 = 196.891$ t; Limit Reference Point is $0.25SSB_0 = 123.060$ t.</p> <table border="1"> <thead> <tr> <th>Stock status</th> <th>Total Allowable Catches (or F)</th> </tr> </thead> <tbody> <tr> <td>$SSB \geq 0.4SSB_0$</td> <td>Annual TACs should be set at $F = F_{obj}$</td> </tr> <tr> <td>$0.25SSB_0 < SSB < 0.4SSB_0$</td> <td>Annual TACs should be set at $F = \rho * F_{obj}$, where ρ is $SSB/0.4SSB_0$, so F is a rate of F_{obj}</td> </tr> <tr> <td>$SSB \leq 0.25SSB_0$</td> <td>A rebuilding plan is trigger. Annual TACs should be set at $F = F_{reb}$, where F_{reb} is the fishing mortality that allows an increase of the stock biomass not less than 50% of the rate that would exist without fishing.</td> </tr> </tbody> </table> <p>A process of simulation test using an operating model would be developed in order to evaluate uncertainties in the stock assessment and the performance of HCR implemented.</p>	Stock status	Total Allowable Catches (or F)	$SSB \geq 0.4SSB_0$	Annual TACs should be set at $F = F_{obj}$	$0.25SSB_0 < SSB < 0.4SSB_0$	Annual TACs should be set at $F = \rho * F_{obj}$, where ρ is $SSB/0.4SSB_0$, so F is a rate of F_{obj}	$SSB \leq 0.25SSB_0$	A rebuilding plan is trigger. Annual TACs should be set at $F = F_{reb}$, where F_{reb} is the fishing mortality that allows an increase of the stock biomass not less than 50% of the rate that would exist without fishing.
Stock status	Total Allowable Catches (or F)								
$SSB \geq 0.4SSB_0$	Annual TACs should be set at $F = F_{obj}$								
$0.25SSB_0 < SSB < 0.4SSB_0$	Annual TACs should be set at $F = \rho * F_{obj}$, where ρ is $SSB/0.4SSB_0$, so F is a rate of F_{obj}								
$SSB \leq 0.25SSB_0$	A rebuilding plan is trigger. Annual TACs should be set at $F = F_{reb}$, where F_{reb} is the fishing mortality that allows an increase of the stock biomass not less than 50% of the rate that would exist without fishing.								
Consultation on condition	<p>Programa de Pesquerías de Peces Demersales Australes y Subantárticos (INIDEP) (see agreement note provided below).</p> <p>Autoridad de Aplicación Pesquera (CFP) (CFP Resolutions and Acts).</p>								



Appendix 2. Peer review reports

Summary of Peer Reviewer Opinion I

<i>Has the assessment team arrived at an appropriate conclusion based on the evidence presented in the assessment report?</i>	No	CAB Response
<p><u>Justification:</u></p> <p>A major issue is that the two UoA should be scored separately with explicit scoring rationales for each, especially in P2. It is possible to have different scores for the two UoA. Where there is a requirement for conditions, these should be specific to the UoA (even if they are the same). On that basis, I cannot conclude that the assessment team has arrived at an appropriate conclusion. In addition, throughout the report the audit team fails to respond explicitly to all scoring issues as required by FCM 7.10.6.</p> <p>I suspect that the fishery meets the MSC standard, however the audit team needs to strengthen the rationale for such a determination.</p>		<p>The assessment team agrees with the general comment of the reviewer. Scores and rationales were reviewed in order to adjust them with reviewer comments.</p>

<p><i>Do you think the condition(s) raised are appropriately written to achieve the SG80 outcome within the specified timeframe?</i></p> <p><i>[Reference: FCR 7.11.1 and sub-clauses]</i></p>	Yes	CAB Response
<p><u>Justification:</u></p> <p>The required score at each annual milestone should be incorporated e.g. Year 1: Discussion and improve knowledge on Southern hake: (1) stock distribution and structure, (2) accuracy of abundances indexes, and (3) migratory movements. Required score = 60.</p>		<p>The assessment team agrees with the reviewer and the required score will be incorporated at each annual milestone.</p>

If included:

<i>Do you think the client action plan is sufficient to</i>	Yes	CAB Response
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<i>close the conditions raised?</i> <i>[Reference FCR 7.11.2-7.11.3 and sub-clauses]</i>		
<i>Justification:</i>		Not applicable.

Performance Indicator Review

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification	CAB Response
1.1.1	NO	NO	NA	<p>Sia. "According to Figure, annual BR's would have been for a long time well above or close above (in most recent years) the Limit Reference Points". I agree that SG100 is met, but I cannot see how it can be found that the BR has been "close above" the LRP in recent years.</p> <p>Sib. Note the MSC requirements to score PI 1.1.1 Sib.</p> <p>"GSA 2.2.2 In considering PI 1.1.1 scoring issue (b) and SA2.2.2, teams should provide a clear rationale by which it is argued that the SG80 or 100 levels are met, including the details of the time period over which this is assessed. Such rationale should take into account the specific biology of the species and the stock status in recent years".</p> <p>and</p>	<p>SI a): When stating that BR has been "close above" the LRP in most recent years the team takes into account the confidence intervals of the BR/BRo curve. In the last 4-5 years, lower limits of the confidence interval were much closer to the LRP than in previous years.</p> <p>Anyway, in order to avoid confusion with the words "close above", they have been deleted in the text.</p> <p>SI b): According to the recently defined Reference Points, and if credit is given to these points, 0.4 PBRO is a proxy of MSY. This being the case, during the period 1985-2015 the stock has been above or at a level consistent with MSY (Figure 16). Mean value of reproductive biomass over the last 6 years (generation time estimated as 5.5 years) is 227,827 t, a value that is not less than 90%</p>



				<p><i>“Examples of situations that may be regarded as “fluctuating around a level consistent with MSY” and thus able to achieve an 80 score for PI 1.1.1 scoring issues (b) (include) - A recent series of estimates of stock size that has a median or mean value over the last one generation time that is not less than 90%BMSY, and which has a trend that is consistent with an expectation that the future biomass will continue to fluctuate around BMSY”.</i></p> <p><i>“A consistent downward trend over recent years to levels below BMSY would not be consistent with this expectation unless accompanied by projections or other information suggesting that the trend will soon be reversed (e.g., due to incoming strong recruitment or recent reductions in exploitation level). The time series may include estimates that are less than 90%BMSY, so long as these are shown to be part of a long-term fluctuation around BMSY”.</i></p> <p>The rationale should refer to the biology of hoki and respond to the <i>“A significant and consistent decrease of the BR is observed since 2000, with the exception of 2015 when a light increase occurred”.</i></p>	<p>BMSY (i.e. 177,206 t).</p> <p>Although reproductive biomass has shown a consistent decrease since 2000, values have not reached levels below B_{MSY} and in the last years reproductive biomass has stopped the downward trend.</p> <p>Arguments presented above will be incorporated in the text of the rationale.</p> <p>The assessment team considers that this scoring issue meets the 80 score.</p>
1.1.2	NA	NA	NA	<p>If a review leads to a score of less than 80 for PI 1.1.1 (i.e. it is determined that PI 1.1.1 does not meet Sib SG80), the CAB will be required to score PI 1.2.2</p>	<p>This PI does not require to be score.</p>



1.2.1	NO	NO	NA	<p>MSC FCR states “7.10.6 To contribute to the scoring of any PI, the team shall verify that each scoring issue is fully and unambiguously met. 7.10.6.1 A rationale shall be presented to support the team’s conclusion. 7.10.6.2 The rationale shall make direct reference to every scoring issue and whether or not it is fully met”.</p> <p><u>Sia.</u></p> <p>What is the harvest strategy? If this is not defined it is not possible to score PI 1.2.1.</p> <p>The rationale for Sia does not consider SG60.</p> <p>The rationale for SG80 does not consider “if the harvest strategy is responsive to the state of the stock”, nor whether “the elements of the harvest strategy work together towards achieving stock management objectives”. Instead the rationale simply restates the scoring guideline and lists the identified elements of the harvest strategy; which, in reality should be covered elsewhere.</p> <p>GSA 2.4 requires “The elements of the harvest strategy need to work together. CABs should therefore consider the overall performance of the harvest strategy, and how its elements contribute to allowing the management system to be responsive to the state of the stock.</p> <p>Key elements of harvest strategies include: the control rules and tools in place, including the ability of the management</p>	<p>SI a): Certainly harvest strategy is a management framework comprising several elements (i.e. monitoring program, HCR’s, regulation tools, stock assessment, reference points). In reality harvest strategy is not always formally and explicitly stated in written format, but an act in practice (regulations in place for hoki are compiled in CFP Resolution N° 22/2012).</p> <p>The assessment team considers that harvest strategy is responsive to the state of the status and the elements work together to achieve objectives. Catch limits, control of access, protection of juveniles, minimum legal size, spatial restrictions to some vessels, on board monitoring, and several actions aimed to strengthen enforcement and compliance, among others, are all responsive to the stock status and are directed to achieve the management objectives.</p> <p>Actual annual catches represent about 80% of the TAC; removals are strictly controlled by the authority and removals carried out by the Argentine fleet over the last 11 years (2005-2015) average 32% (range 26%-38%) of the estimated annual reproductive biomass.</p> <p>SI b): The yearly catch is limited by mean of the TAC established by CFP following the advise of INIDEP, and as such it can be concluded that there is evidence that the harvest strategy exists and it is achieving its</p>
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				<p>system to control effort, taking into account issues such as overcapacity and its causes; the information base and monitoring stock status and the responsiveness of the management system and fleet to stock status”.</p> <p><u>Sib</u></p> <p>No rationale is provided to support the meeting of SG60 or SG80. The cut and paste of the scoring guideline is not evidence. What is the evidence to show that the harvest strategy is likely to work? What is the evidence that the harvest strategy is meeting its objectives?</p> <p><u>Sic</u></p> <p>As there is no definition of the harvest strategy it is not possible to consider whether it is working. I presume that the harvest strategy is based on a healthy stock; the evidence provided under Sic SG60 is linked to monitoring and as such is probably not relevant.</p> <p><u>Sid</u></p> <p>The harvest strategy comprises a number of elements. The rationale for the fishery meeting SG100 is limited to consideration of one of those elements.</p>	<p>objectives.</p> <p>SI c): Please see comments on Si a) and Si b).</p> <p>SI d): The peer reviewer is correct when saying that only one element of the harvest strategy was considered in scoring Si d). In fact, as part of the HS, biological reference points were recently revised, a HCR has been also recently designed and approved (CFP Resolution N° 14/2017), and a hoki fishery Follow-up Commission regularly reviews and discusses the regulation tools.</p> <p>Amendements were made to the text of the different rationales by incorporating the above arguments.</p>
1.2.2	NO	NO	YES	<p><u>Sia</u></p> <p>Are the HCRs “generally understood”? What is the rationale for concluding that SG60 is met?</p>	<p>SI a): As known, HCRs may adopt different designs. In this fishery, TAC is the main management tool in place. This tool has been implemented since long and it is based</p>



			<p>Note GSA 2.5 <i>“The values adopted for ... reference points are critical to the performance of the HCR, and CABs should ensure that the interaction between the rules of the HCR and the reference points is part of their assessment”</i>. The CAB does not consider this point.</p> <p>While it seems likely that the fishery meets SG60; in finding that the fishery does not meet SG80 the CAB <i>“would be expected to explicitly include the conditions under which the technical measures in the fishery would be expected to be revised in the future”</i> (GSA 2.5).</p> <p><u>Sic</u></p> <p>Note MSC FCR 7.10.6 (above)</p> <p>The CAB does not explicitly consider whether the fishery meets SG60 and SG80. Are the HCRs available appropriate? Which HCRs are in use?</p> <p>No evidence is presented to justify the effectiveness of HCRs in achieving the total exploitation rate (i.e. the UoA plus other elements of the national fleet plus the activities of non-Argentinian vessels. See FCM <i>“tools would include management measures like total allowable catches (TACs) and fishing limits, and arrangements for sharing TACs between participants in the fishery, including between states in shared stock fisheries”</i>.</p> <p>There is not an analysis of fishing mortality. See FCM <i>“teams examine the current</i></p>	<p>upon the technical recommendation of INIDEP. Recently, the fishery has instituted a HCR related to the TAC (CFP Resolution N° 14/2017), but this control rule does not include an agreed trigger reference point or specifics indicating when, what, or the magnitude of actions that will be taken when the stock is approaching the PRI. Because of this, the fishery meets SG60, but not SG80.</p> <p>SI c): The HCR now available is explicitly based on reference points and states that catch will be gradually reduced when the stock status falls below the target reference point. It also states that a recovery process will be triggered if the stock status is below the limit reference point (PRI). The assessment team deemed that the HCR in its present design is only generally understood and so meets SG60.</p> <p>Over the last 10 years, catches made by the foreign fleet represented a minor fraction of the total harvest (average 15%) and the management system applied to these vessels is outside the regulatory framework of Argentina. In the view of the assessment team, the major contributor to the exploitation rate of hoki in the South Atlantic area is the domestic Argentinean fleet. Annual TAC and access control (licensing is required) are the principal and traditional tools used in controlling exploitation of hoki. Official catch statistics show that these tools are appropriate to this</p>
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				<p><i>exploitation levels in the fishery, as part of the evidence that the HCRs are working”.</i></p>	<p>purpose. Fishing is halted as soon as the TAC is reached. TAC is shared between the national participants (ITQ system) and the clients fleet account for most of the national annual catches.</p> <p>In respect to fishing mortality (F), Canales (2016) shows the evolution (1993-2015) of F in the hoki fishery. According to the author, fishing mortalities in 2014 and 2015 were equal or less than F_{MSY} ($=0.3$), with values of 0.3 and 0.27, respectively. However, in previous years (<i>i.e.</i> 2012, 2013), F values were above F_{MSY}.</p> <p>New rationales are provided for both scoring issues.</p>
1.2.3	NO	NO	NA	<p>Note MSC FCR 7.10.6 (above). The CAB does not use the required approach in the rationale for scoring PI 1.2.3. SG100 is not considered.</p> <p>While research has been carried out to identify stock structure, what information has been forthcoming from this work and how has it been used to support the harvest strategy?</p> <p><u>Sic</u></p> <p>What is the information available to INIDEP on removals by the foreign fleets?</p>	<p>SI a): Research on stock structure, in particular about the existence of one or more units in the South Atlantic, is still ongoing. Alternative hypothesis within the stock assessment model should be explored when conclusions become available. Environmental information (<i>i.e.</i> physical variables) has been collected and analyzed, but it is not conclusive.</p> <p>SI c): Information on removals by the foreign fleet is available to INIDEP through the official fisheries statistics and FAO database. Data about the length composition of the foreign catches is also available to INIDEP.</p> <p>Amendments were made to the text of rationales, incorporating the above</p>

					arguments.
1.2.4	NO	YES	NA	Note MSC FCR 7.10.6 (above) . <u>Sic</u> Which uncertainty is taken into account to allow the fishery to meet SG80?	SI c): SG60 is met because the major sources of uncertainties have been identified (although not necessarily (all) taken into account). The following sources of uncertainties are taken into account: observation uncertainty (catch data, CPUE indexes), process uncertainty (magnitude of future recruitments, magnitude of current total and reproductive biomass). That explains why the fishery meets SG80. Amendments were made to the text of the rationale.
2.1.1	NO	NO	NA	<u>Sia</u> While it is the case that there are no main primary species, nevertheless Sia must be scored. The rationale for determining that there are no such species should be presented. <u>Sib</u> Is the CAB claiming there are no minor primary species i.e. any species that meets the requirements for being considered primary but of which there is a limited catch? (see MSC FCR Figure GSA 4).	SI a) and SI b): The assessment team clearly stated that there are not primary species (neither main nor minor). Then the automatic PI 2.1.1 score is 100. Rationales for determining that there are not such species are included. The designation of primary species follows SA 3.1.3 and has to do mainly with the existence of management regulations intended to achieve management objectives reflected in either limit or target reference points.
2.1.2	NO	NO	NA	<u>Sia.</u> A rationale is not presented for the fishery	SI a), SI b) and SI c): If the concept 'if necessary' is used, the default score should be 80.



				<p>failing to meet SG100.</p> <p><u>Sib.</u></p> <p>A rationale is not presented for the fishery failing to meet SG100.</p> <p><u>Sic.</u></p> <p>A rationale is not presented for the fishery failing to meet SG100.</p> <p><u>Sie.</u></p> <p>SG60 and SG80 are relevant, but the fishery meets them as there are no main primary species. The scoring of SG100 should be reviewed if there are minor primary species.</p>	<p>Si e): There are not minor primary species, so there is no need to review the scoring.</p>
2.1.3	NO	NO	NA	<p>This PI should be scored. The justification for Sia is straightforward; less so the justification for Sib SG100 if there are some minor primary species.</p>	<p>PI 2.1.3 was scored in order to provide evidence that the available information support scores of PI 2.1.1 and PI 2.1.2.</p>
2.2.1	NO	NO	YES	<p>Note MSC FCR 7.10.6 (above) .</p> <p><u>Sia.</u></p> <p>It is unclear why the team conclude that <i>Merluccius australis</i> does not meet SG80. Rationale must be provided.</p> <p>The rationale for sea birds is misleading; does the degree of monitoring have a bearing on the status of sea birds? SG60 and SG80 require explicit consideration.</p> <p><u>Sib.</u></p> <p>Minor secondary species covers all the species that are not considered target or</p>	<p>SI a): The assessment team considers that it would not be precautionary to state that “it is highly likely” (SG80) that the species is within the BBLs for over the last 3 years. The annual landings have been somewhat above the recommended TAC; catches made by foreign fleet are not fully accurate; and there is not an independent abundance index for the last years. Therefore (and considering the historical biomass trend), it is deemed that species is only likely within the BBL.</p> <p>A paragraph was included in the rationale of</p>



				primary, including Osteichthyes (see MSC FCR Figure GSA 4).	<p>this scoring issue.</p> <p>In regard to seabirds, the reviewer is correct that the monitoring does not have a bearing on the status of these species. The assessment team reconsidered the scoring and a score of 80 was assigned.</p> <p>SI b): The assessment team identified and analyzed 3 fishes as minor secondary species. A paragraph concerning a group of 34 osteichthyes identified as secondary minor species was included in the rationale.</p>
2.2.2	YES	NO	NA	<p>Note MSC FCR 7.10.6 (above) .</p> <p><u>Sib.</u></p> <p>It is not clear if the fishery meets SG80 (see b met – no).</p>	<p>SI b): The fishery meets SG80. The error was corrected in the evaluation table.</p>
2.2.3	YES	NO	NA	<p>Note MSC FCR 7.10.6 (above) .</p> <p><u>Sic.</u></p> <p>It is not clear if the fishery meets SG80 (see c met – no).</p>	<p>SI c): The fishery meets SG80. The error was corrected in the evaluation table.</p>
2.3.1	YES	NO	NA	<p>Note MSC FCR 7.10.6 (above) .</p> <p>The analysis could be clarified by explicitly considering each ETP species individually with emphasis of the potential catch in the UoA. The potential for the total catch to include up to 50 % of ETP species seems to be inappropriate.</p> <p><u>Sic.</u></p> <p>What are the indirect effects and where</p>	<p>SI a): The assessment team agrees with the peer review' comment respect to national limits established for ETP species. Maximum limits mentioned in the rationale refers of general landing catch of skates and sharks (CFP Resolution N° 7/2013). There are no specific limits for <i>Lamna nasus</i>. Therefore, it is followed the FCRv2.0 and this scoring issue was not scored.</p>



				have these been considered? (The existing rationale concentrates on strategy and not outcome.	SI c): The indirect effects of the fishery in assessment were focused in post-capture survival of sharks and seabird depredation on hoki.
2.3.2	YES	NO	NA	Note MSC FCR 7.10.6 (above) . <u>Sic.</u> Why is SG100 not considered? <u>Sid.</u> SG80 should be scored. It is difficult to see how the fishery meets SG100 if it does not meet SG100 for Sic. <u>Sie.</u> SG80 should be scored.	SI c): The fishery not comply with SG100 level of performance due strategy (<i>i.e.</i> use of LEPs) to reduce incidental catch of seabirds is recently implemented. So, there are no high of confidence that this strategy will work in short-terms. SI d): According rationale provided in SI c), the assessment team adjusted the rationale to scoring level to SG80. SI e): SG80 was scored.
2.3.3	NO	NO	NA	Note MSC FCR 7.10.6 (above) . <u>Sia.</u> I am a bit confused by the SG100 scoring rationale.	SI a): The rationale was modified in order to clarify evidence that the fishery meets with SG80.
2.4.1	NO	NO	NA	Note MSC FCR 7.10.6 (above) . Habitat impact is a key example of why the UoAs must be treated separately. <u>Sia.</u> What are the commonly encountered habitats? <u>Sib</u> The key question to be answered in the scoring justification is the degree of overlap	SI a): A paragraph related with different habitat encountered was introduced in the rationale. Score level was reduced. SI b): Hoki fishery does not overlap with VMEs (FAO, 2016. Vulnerable Marine Ecosystems: Processes and Practices in the High Seas, by Anthony Thompson, Jessica Sanders, Merete Tandstad, Fabio Carocci and Jessica Fuller, eds. FAO Fisheries and Aquaculture Technical Paper No. 595. Rome,



				<p>between the fishery area and VMEs and not the proportion of the EEZ.</p> <p>Sic.</p> <p>How is the team defining minor habitats?</p>	<p>Italy). However, Gaitán & Mari (2016) described taxa indicators of VMEs in hoki area. Score level was reduced.</p> <p>SI c): There are no descriptions of minor habitats. Gaitán & Mari (2016) described 3 types of benthic habitats defined in relation with biota. Two of them are of medium or high frequency of visits by the fleet. The remaining type is heterogeneous and with low fishing intensity. However, the assessment team does not find reasons to consider such regions as minor habitat.</p>
2.4.2	YES	YES	NA	Note MSC FCR 7.10.6 (above) .	This aspect was reviewed.
2.4.3	NO	NO	NA	<p>Note MSC FCR 7.10.6 (above) .</p> <p>Sia.</p> <p>No evidence is provided to justify the fishery meeting SG80 and SG100. GSA 3.13.2 requires “When determining which benthic habitats are impacted by the UoA, the team should consider habitats on the basis of the substratum, geomorphology, and (characteristic) biota (SGB) characteristics”. The rationale is largely limited to biota. It states that INIEP started to explore – it does not provide the findings of the research.</p> <p>Sib.</p> <p>To a large part, the scoring rationale is limited to repeating the scoring guideline with providing supporting evidence.</p> <p>Sic.</p>	<p>SI a): It was introduced using complement literature not previously cited. INIDEP research group decides to concentrate the effort in the biota affected by trawling. However, the score level was reduced as precautionary approach.</p> <p>SI b): The rationale describes the existing research plan oriented to analyze the impact of the fishery on the seafloor.</p> <p>SI c): The assessment team considered relevant this point due to the information has been collected, but not already analyzed. The information of benthic components and fishing effort is geo-referenced. Then, the spatial scale and intensity of the fishery could indirectly indicate additional risk.</p>



				What is the relevance of the second paragraph. Additional risk may be detected by a change in fishing patterns and the scale of activity.	
2.5.1	NO	NO	NA	Note MSC FCR 7.10.6 (above) . The rationale provides limited response to the scoring guideline.	The rationale was clarified.
2.5.2	NO	NO	NA	Note MSC FCR 7.10.6 (above) . If it is found that the fishery meets PI 2.5.1 SG 80, then it could be concluded that measures and a partial strategy are not needed.	<p>Complexity of the Patagonian Shelf Large Marine Ecosystem (PSLME) requires research, discussion and management measures (oriented to produce a management plan) with consensus of the interested parts. Two aspects (between others) that support the need of a strategy are:</p> <p>-For several years, CFP oriented the management of the fisheries to Ecosystemic Approach. In this sense, the strategy to manage fisheries should include a strategy for the ecosystem.</p> <p>-The SW Atlantic is a part of the world where does not exist large time series of oceanographic or biologic data. To dispense with a management strategy without decadal time series of data could be not recommended.</p>
2.5.3	NO	NO	NA	Note MSC FCR 7.10.6 (above) . What are the key elements of the ecosystem?	<p>SI b): The rationale was modified.</p> <p>SI c): The ecosystem of Patagonia is dominated by high primary and secondary</p>



				<p><u>Sib.</u> The scoring rationale is not clear.</p> <p><u>Sic.</u> What are the main functions of the different components?</p> <p><u>Sie.</u> Additional risk may be detected by a change in fishing patterns and the scale of activity.</p>	<p>productivity produced by the Malvinas Current. Frontal systems related to MC contribute he 23 % of the total productivity of the Patagonian sea. Phytoplankton in the frontal system is the basis supporting the food web of the ecosystem.</p> <p>SI e): It was added.</p>
3.1.1	NO	NO	NA	<p>Note MSC FCR 7.10.6 (above) .</p> <p><u>Sib.</u> Are there any examples of the dispute resolution mechanism being tested?</p> <p><u>Sic.</u> Component 3.1 refers to the overarching legal framework and not the UOA. Accordingly, evidence should be provided to justify a score of 100.</p>	<p>SI b): An example of a dispute resolution mechanism was provided in the rationale.</p> <p>SI c): In Argentina’s jurisdiction where the fishery is developed, there are no aboriginal and indigenous people dependent on fishing for food or livelihood. The rationale was modified to clarify this issue.</p>
3.1.2	YES	YES	NA	<p>Note MSC FCR 7.10.6 (above) .</p> <p>Component 3.1 refers to the overarching legal framework and not the UOA.</p>	<p>The rationale was adjusted, referring to the overarching legal framework.</p>
3.1.3	NO	NO	NA	<p>Note MSC FCR 7.10.6 (above) .</p> <p><u>Sia.</u> No evidence is presented to show that the precautionary approach is REQUIRED, especially as P1 and P2 must be taken into consideration.</p>	<p>SI a): The precautionary approach is also present in the stock assessment models and in the technical recommendations of biologically acceptable capture. This is included in the Law N° 24.922 expressed in its Article 8° of its Regulatory Federal Decree N° 748/99: “It must be understood as</p>



					<p>Maximum Sustainable Yield (MSY) of a species, the maximum biomass that can be captured annually without affecting its conservation”.</p> <p>Also, in the management plan is established long-term political objectives, specifically for Argentine hoki fishery (CFP Resolution N° 22/2012). The main objective of the fishery is to maintain sustainability of on target species, seabirds and chondrichthyes, including improvement of information and measures to reduce unwanted catch.</p>
3.2.1	YES	YES	NA	Note MSC FCR 7.10.6 (above) .	The assessment team was reviewed the rationale to support the given score.
3.2.2	NO	NO	NA	Note MSC FCR 7.10.6 (above) . <u>Sib.</u> Is there evidence to justify a score of 100 i.e. ALL issues?	SI b) The assessment team reviewed the rationale provided and agrees with peer reviewer about SG80 level is meet. This SI complies with SG80 level of performance. The score of PI 3.2.2 was reviewed (85).
3.2.3	YES	YES	NA	Note MSC FCR 7.10.6 (above) .	The assessment team was reviewed the rationale to support the given score.
3.2.4	YES	YES	NA	Note MSC FCR 7.10.6 (above) .	The assessment team was reviewed the rationale to support the given score.

General Comments on the Peer Review Draft Report

1. There are limited issues with the written English in the report, but this does not impact its understandability to a wide range of stakeholders.

CAB Response: The report was reviewed to improve the wording.

2. A major issue is that the two UoA should be scored separately with explicit scoring rationales for each, especially in P2. It is possible to have different scores for the two UoA. Where there is a requirement for conditions, these should be specific to the UoA (even if they are the same).

CAB Response: The assessment team unified the assessment of both UoAs, due the fleet uses both fishing gears in a same trip (bottom trawl and mid-water trawl nets), difficulting the determination of the P2 components impact separately. However, the team considered the precautionary approach with available information to determine the effect of both gears in the Principle 2.

3. Page 6: Para. 2. Review comment on retained and by catch species.

CAB Response: It was reviewed retained and bycatch species concept.

4. Page 11. While the subject is covered in the Executive Summary (end page 7 and pages 57 - 63), I think that the following should be explicit justification of why the fishery can enter the reassessment process when one condition remains open. MSC FCR “7.24.2.2 Take into account all surveillance reports, outcomes, and evaluate progress against certification conditions. Unless exceptional circumstances apply (7.11.1.3) or paragraph (b) applies, the fishery shall have met all conditions and milestones”.

CAB Response: It was provided an explicit justification in order to recommend that fishery can enter in reassessment process.

5. Page 11. It is stated that Antártida S.A. is part of the client group; but the company is not included in analysis in the remainder of the report (e.g. number of companies in the client group (3); list of vessels (table 1)).

CAB Response: “EMPRESA PESQUERA DE LA PATAGONIA Y ANTÁRTIDA S.A. (PESANTAR)” is included in the analysis of the remainder report. In Table 1, can be seen that is part of the client group using the vessel ‘Echizen Maru’ and also, is included in Tables 4 and 5 as PESANTAR.

6. Page 11. Would it be better to exactly define the difference between a UoA (i.e. includes other eligible fishers) and a UOC (i.e. the client group)?

CAB Response: UoA and UoC definitions were improved.

7. Page 15: Fig. 1. Which foreign vessels catch hoki? Does 2016 reflect zero catch or no data available?

CAB Response: Foreign fleet is composed by vessels operating in Malvinas’ area and outside the Argentine EEZ. At the moment of re-certification process, catch data of 2016 by this fleet was not available. Recently, the assessment team incorporated this data in Figure 1.

8. Page 18. Section D. P1 covers the whole stock of the target species (SA 2.1.1). It is acknowledged that the stock of hoki is found in Argentinian waters, Chilean waters and international waters. Is it the case that hoki is a multi-stock fishery with individual stocks containing biological interactions but stocks are separately assessable (Box GSA 3 Page 385 MSC FCR)? Where is the evidence that the UoA covers a “biologically distinct unit” and the justification for the approach? This has implications for all P1 analysis and scoring justifications. If the team considers that the Argentinian fishery is distinct, is it appropriate for the Chilean fishery to form part of the scoring rationale for PI 1.2.2 SI b and PI 1.2.3 Sic?

CAB Response: The comment made by the reviewer can not be responded based upon the current knowledge/state of the art of the stock. This issue is precisely one of the major unknown matter and source of uncertainty of the fishery; research on this matter is still ongoing. At present, the team (as well as the experts with INIDEP) considers that the stock existing in the South Atlantic Ocean is separately assessable. To avoid misunderstanding, references to the Chilean fishery in PI 1.2.3 - Si c) rationale were deleted.

9. Page 19. “On the other hand, Canales (2016) estimated that fishing mortality corresponding to MSY was FMSY: 0.3 a value which is higher than the 2015 fishing mortality rate (F2015 < FMSY), as shown in the

Kobe plot presented by this author". What is the 2015 estimate of F and can the Kobe plot be included in the report?

CAB Response: The 2015 estimate of F is 0.27 (Canales, pers. com) and the Kobe plot was included.

10. Page 57. There is a statement that the client complied with the action plan; in fact, the client must comply with the milestones defined by the CAB to meet a condition.

CAB Response: The assessment team reviewed this statement.

11. Pages 64 (final paragraph) – 65. This reflects the approach required for an annual surveillance audit.

CAB Response: As the re-certification process, including on-site visit, was carried out at the same time last annual surveillance audit, the assessment team reviewed any changes in information to assess it in both processes.

12. Page 66. I don't think it is the case that the assessment identifies issues that may threaten sustainability in the future and thus conditions need to be set. Rather, the issue is that some Pis do not meet the MSC standard and where the weighted average score for each Principle is at least 80 conditions are applied to the certification in response to the identified shortcomings.

CAB Response: The reviewer is correct. The paragraph related to sustainability was amended.

13. Page 71. If it is considered that scoring of 2.1.3 is not needed (but see my comments above), should there be consideration of the weighting of the individual 2.1 Pis?

CAB Response: PI 2.1.3 was finally scored, following advises of an external MSC Consultant.



Summary of Peer Reviewer Opinion II

<p>Has the assessment team arrived at an appropriate conclusion based on the evidence presented in the assessment report?</p>	<p>Yes</p>	<p>CAB Response</p>
<p><u>Justification:</u></p> <p>There are several PIs and/or individual SIs where the reviewer does not fully agree with the scores set. (Please see the individual PIs for a full discussion). However, even though some of the scores assigned to particular PIs (or SIs within a given PI), are deemed too high, there is no PI where the minimum passing score is not reached. Therefore, the reviewer agrees with the conclusion by the assessment team that the fishery should be certified.</p> <p>The topics of disagreement are varied, but two of them can be shortly addressed here: one is the fact the CAB seems to deem the fishery to be fully compliant with the precautionary principle (as apparent by the score of 100 under PI 3.1.3). The reviewer disagrees. For instance, the fact that the assigned TAC (130,000 t) is considerably higher than the range advised by INIDEP (60,000 – 100,000 t) should have been reflected in the scoring. Besides, the reviewer considers that several conditions from the 1st assessment in 2012 were prematurely closed (although a couple of them could be deemed superseded by new conditions arisen from the re-assessment report) (see below).</p>		<p>The assessment team agrees with the general comment of the reviewer. Scores and rationales were reviewed in order to adjust them with reviewer comments.</p> <p>Respect to TAC assignation and the precautionary approach in scoring process, the assessment team reviewed technical recommendations and management tools considerations. For 2017, TAC was set in 80,000 t, considering INIDEP recommendation described in the Technical Report N° 40/2016), which range recommended was 60,000 – 100,000 t, an intermediate value which is 40% lower than the one set for 2016 (130,000 t – CFP Resolution N° 13/2015). For more information, please check page 20, “Stock assessment and current status”.</p> <p>The answer respecting conditions are detailed below.</p>
<p>Do you think the condition(s) raised are appropriately written to achieve the SG80 outcome within the specified timeframe?</p> <p>[Reference: FCR 7.11.1 and sub-clauses]</p>	<p>Yes</p>	<p>CAB Response</p>
<p><u>Justification:</u> Yes. “Old” Condition 1 from 2012 “the client group must provide evidence that the selection of the harvest control rules takes into account the main uncertainties” (p. 58) is adequate. It is not completely clear whether this old condition 1 from 2012 is now superseded by the “new condition 1” arisen from the reassessment report (p. 125). “New conditions” 2 and 3 are also deemed adequate. But five initial conditions set by the CAB in 2012 are now considered closed: “Old” Condition 2: “the client group must provide sufficient relevant information</p>		<p>In effect, the old condition 1 is now superseded by the new condition 1.</p> <p>The team agrees with comments regarding the “old” condition 2.</p> <p>Respecting “old” condition 4, the team agrees with peer reviewer. <i>Lamna nasus</i> is the most sensitive species. However, catches of this species are low frequent and represent a low percentage of the total catch (Waessle & Cortés, 2011). From 2013, the incidental catch decreased due to the surimi fleet was reduced to one vessel. The Chondrichthyan Research Group of INIDEP described how this species is manipulated on board and returned at sea</p>



related to the stock structure, stock productivity, fleet composition and other data available to support the harvest strategy". The stock structure is not yet fully characterized, nor is the stock productivity. This is partly due to the fact that since 2010 no fishery-independent data are collected. Insofar this condition is now superseded by the **new Condition 2** (as defined in p. 127 of the draft assessment), "By the 3rd annual surveillance, the client group must provide evidence that the HCR's are likely to be robust to the main uncertainties and in particular to the uncertainties related to the stock structure", the reviewer agrees.

-**"Old" Condition 4:** "the client group must provide evidence that the indirect effects [to ETP species] have been considered and that they are thought to be unlikely to create unacceptable impacts". (Although the reference to ETP species was not included in the original phrasing of the condition, from reading the draft report it is apparent that this condition was set for the ETP species). According to the wording of the condition, the requisite that there is evidence that the fishery does not create unacceptable impacts on the ETP species seems to be not yet fully accomplished: there are no stock assessments for the ETP elasmobranch species bycaught in the UoA (Table 11 in the draft report). Thus, strictly speaking, if the stock trends of these species are unknown, it can hardly be said that the fishery has no impact upon them. However, it is true that none of these species seem to be caught in great numbers in the UoA. Only in that sense could the condition be considered closed.

-**"Old" Condition 5:** "the client group must provide evidence that the strategy is being implemented successfully". In the opinion of the reviewer, the evidence that the strategy (for reducing impact on ETP species) is being implemented successfully, is still very weak and does not allow to consider the condition closed. Bycatch reduction measures are being implemented only on a voluntary basis until 2018. The current percent of vessels fully complying with these voluntary measures is not given. Therefore, the evidence is lacking.

By last, it is somewhat difficult to assess whether **"Old" Condition 6** has been fully met or not, due to its wording: "the client group must provide evidence that the nature, distribution and vulnerability of all main habitat types in the fishery area are known at a level of details relevant to the scale and intensity of the fishery". The problem lies mostly in defining what is a "relevant level of details". If by relevant it was meant that a thorough seabed mapping effort was conducted to assess the potential distribution of VMEs within the fishing grounds, it does not seem that the

during two experiences in commercial vessels. Also, they elaborated a logbook destined to identify sharks and rays by the crew and instructed them about good practices on board (Puliafito & Massa, 2015).

Moreover, *Lamna nasus* is a migratory species with an almost global geographical distribution. Therefore, the stock assessment is extremely difficult and the only acceptable measure is to reduce incidental catches.

About "old" condition 5, the assessment team agrees with reviewer opinion. There are results on the effectiveness of the implemented measures to mitigate the impact of the Argentine hoki fishery on seabirds, chondrichthyans and marine mammals, in compliance with National Action Plans (PAN-Aves, PAN-Tiburones and PAN-Mamíferos), federal regulations and international agreements. Even when the information collected is preliminary and non-conclusive, devices have been implemented and tend to minimize mortality of ETP species.

Respecting "old" condition 6, since 2012, ARA Puerto Deseado develops surveys on the Argentine Sea, on coastal and open water from Patagonia. Such surveys are intensive and diverse: 70 researchers and technician on board working on physical, biological and oceanographical issues. A mapping of the main habitat is been constructed since then, especially in Banco de Burwood and surrounding areas. The VMEs has not been described into the fishing area, but INIDEP Research Group has described the presence of species present in VME.



condition has been accomplished.

If included:

Do you think the client action plan is sufficient to close the conditions raised?
[Reference FCR 7.11.2-7.11.3 and sub-clauses]

Yes

CAB Response

Justification: Yes

- but see below –

Regarding the only condition still open (“old condition 1”) from the original 6 conditions set in 2012, the specific measures mentioned in the action plan (page 126) would seem enough to warrant that the condition will be met. Although it is not specified in the draft assessment report, it seems that this condition is now superseded by a “new” condition 1 (defined in p. 125).

However, please take into account the following:

Table A1.3 for Condition 1 states the following Action: “Year 1: By the first annual surveillance, the fishery will have into the management regulation a ‘Harvest Control Rule (HCR)’. If the stock biomass falls below the Target Reference Point, the TAC would be linearly reduced as a function of biomass as well as the fishing mortality or fishing effort. Near the Limit Reference Point a rebuild plan will be implemented, which will trigger management action, reducing drastically the TAC as described in the HCR.” (p. 126)

The TAC (130,000 t for 2016) has been set above the range scientifically advised (60,000-100,000 t), although the stock biomass is above (but very close) to the target reference point. This seems quite contrary to the spirit of the condition and certainly not precautionary, even though it does not directly contradict the wording of the condition or that of the suggested action. In other words, the letter of the condition is met, but not the spirit.

The **client actions** for **New condition 2** “By the 3rd annual surveillance, the client group must provide evidence that the HCR’s are likely to be robust to the main uncertainties and in particular to the uncertainties related to the stock structure.” (p. 127) and **New condition 3** “By the 3th annual surveillance, the client group must provide evidence that *Merluccius australis* (main secondary species) is highly likely

Respecting to action plan related with condition 1, the team agrees with the reviewer. However, some amendments were made to the action plan.

The reviewer comments on the TAC (130,000 t for 2016) were addressed elsewhere.

In relation with the action plan proposed for condition 2, the team also agrees with the reviewer.

In respect to other 2 fish species (*Micromesistius* and *Dissostichus*), they were important within Group 3 (Figure 4), but in these trawls, hoki was not the target species (representing <2 % of the total catch) and therefore, the Patagonian toothfish and Southern blue whiting were not considered as primary species of hoki fishery.



to be above biologically based limits or if below biologically based limits, there is either evidence of recovery or a demonstrably effective partial strategy in place such that the UoA does not hinder recovery and rebuilding.” (p. 128) are also deemed adequate.

However, please note that it is unclear whether *Micromesistius australis* and *Dissostichus eleginoides* should also be considered secondary species, and thus should have equivalent conditions raised as in condition 3 for *Merluccius australis*.

Performance Indicator Review

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
1.1.1	YES	YES	NA		Not applicable.
1.1.2	NA	NA	NA		Not applicable.
1.2.1	YES	NO	NA	There are inconsistencies found at three different levels in the scoring for this PI: -Level 1: The overall score given was 85. Score for SI(a) "Harvest strategy design" is set at the 80 level. However, the HS is missing a key component: There are no management-defined fishing mortality (F) reference points. This should preclude the awarding of the 80 SG. In fact, it could be	SI a): At a meeting with external experts, scientists of INIDEP agreed on the establishment of biomass-based reference points. The assessment team deems that the peer reviewer observation is worthy of consideration, but judges that these reference points are sufficient to assess the stock status. SI e): According to FCR, Shark finning must



				<p>argued that a condition should be raised that F reference points must be implemented within a given timeline.</p> <p>The reviewer also disagrees with SIs (e) and (f) being left unscored (levels 2 and 3). (continues in Annex I)</p>	<p>be scored only if sharks are the target species. (SA2.4.3 “ If the target species is a shark, the team shall score scoring issue (e)”.</p> <p>SI f): The assessment team shares the comments and view of the reviewer in that juvenile catch is an issue in this fishery. However, following the criteria indicated in GSA 3.5.3, the team interprets that there is no unwanted catch if all specimens of the target species are commercially utilized. Industry has declared that there are no discards of the target species, since all the caught fishes are utilized. Therefore, scoring issue e) is not scored.</p> <p>A paragraph was included in the rationale of this scoring issue.</p>
1.2.2	YES	YES	<p>YES “old” Condition 1 (or “new” condition 1, if it supersedes the older one), is likely to raise the fishery’s performance. And so is new Condition 2 from the reassessment process .</p>	<p>The CAB assigned an overall score of 65 to this PI, broken down in three subscores: 60 at Scoring Issue (a), 100 at SI(c), and apparently no defined score at SI(b) (“<i>the fishery not achieved the SG80 level of performance</i>”). The reviewer agrees with this overall score.</p> <p>However: Conditions#1 and #2 were raised in relation to this PI. “Old” Condition #1 (from 2012) is deemed by the CAB as not yet closed. The reviewer agrees, although it is not yet clear whether the old condition 1 is now replaced by the new condition 1.</p> <p>New Condition #2 (“By the 3rd annual surveillance, the client group must provide</p>	<p>Old condition 1 is now replaced by a new condition 1.</p>



				evidence that the HCR's are likely to be robust to the main uncertainties and in particular to the uncertainties related to the stock structure.") has been raised, and this is also agreed. (continues in Annex I)	
1.2.3	YES	YES	NA		Not applicable.
1.2.4	YES	NO	NA	The overall score of 85 for this PI seems overly generous given the fact that no fishery-independent data are available to inform the stock assessment. In fact, the necessity for fishery-independent information should be set as a Condition. Specifically, under the current circumstances, the score of 100 in S.I. (a) (" <i>Appropriateness of assessment to stock under consideration</i> ") seems excessive.	The lack of fishery-independent data (<i>i.e.</i> abundance index) was in some way considered in the scoring of SI c). Nevertheless, the team reconsidered the score of 100 in SI a) and a score of 80 was assigned.
2.1.1	YES	Unclear –see justification	NA	The CAB states that both SIs in this PI are " <i>Not applicable</i> " [because] " <i>There are no primary species.</i> " According to the profile of the UoA given in the draft report (pages 21-22), there are at least three species, which might fit in the definition of primary OR secondary species (" <i>Primary species will usually be species of commercial value to either the UoA or fisheries outside the UoA, with management tools controlling exploitation as well as known reference points in</i>	In respect to primary species (main and minor), the team follows the criteria and definitions set up in SA 3.1.3 and its sub-clauses. None of the species caught as bycatch in the hoki fishery meets the requirements to be assigned as primary species. A paragraph was included in rationales of SI a) and SI b). The assessment team identified the Southern hake as the only secondary main species. No reference points have been set



				<p>place”). They are the following: <i>Merluccius australis</i> (which represents up to 24% of catches in hauls from Group 2), <i>Micromesistius australis</i> (24% and 49% of catch in hauls from Group 2 and 3, respectively), and <i>Dissostichus eleginoides</i> (45% in hauls from Group 3). From the the draft report it can be concluded that the vessels encompassed by the UoA perform these three types of hauls. So the above species should be included in the assessment as main primary or secondary species. It must be ascertained whether they fall in the “primary” or “secondary” definition (continues in Annex I).</p>	<p>for this species and the regulation measure in place (catch limit) and has no enough merits to state that the fishery is actually managed.</p> <p>Regarding the other 2 fishes (<i>Micromesistius</i> and <i>Dissostichus</i>), they were certainly important within Group 3 (Figure 4), but in these trawls, hoki was not the target species (representing <2% of the total catch) and therefore, the Patagonian toothfish and Southern blue whiting were not considered as bycatch of the hoki fishery.</p>
2.1.2	YES (in principle)	YES (in principle)	NA	<p>The CAB states “If the intent of this PI is to assess the arrangements in place to manage the impact that the UoA has on the primary species to ensure that it does not pose a risk of serious or irreversible harm to them, the fishery does not need to have measures or a partial strategy in place, because there is no impact on primary species.”</p> <p>The key to the score of this PI lies on whether any of the three species mentioned above in PI 2.1.1 could be deemed primary species.</p>	<p>The team reaffirms that there are no primary species.</p>
2.1.3	Not scored	Not scored	NA	<p>As above -the question of whether this PI should be scored or not is directly linked to clarifying if the fishery has any primary</p>	<p>Certainly, PIs 2.1.1, 2.1.2 and 2.1.3 are all linked. In view of the assesment team, PI 2.1.3 should not be scored, but to</p>



				species or not.	accomplish with SA 3.3.1 rationales are presented for this PI with an alternative text
2.2.1	YES	YES	YES – but see justification	<p>According to the information and definitions gathered from the MSC’s matrix “Changes to the default tree, v1.3 to v2.0” (http://bit.ly/2rLsCmB), secondary species are defined thus:</p> <ul style="list-style-type: none"> • “Secondary species are those that are not covered under P1, are not primary, and are out of the scope of the programme but the definition of ETP is not applicable (e.g. non-ETP birds, mammals, reptiles etc) (see SA3.1.4 and sub-clauses)”. <p>See Annex I: if there are primary species, then the PIs 2.1.1, 2.1.2 and 2.1.3 would need to be re-assessed.</p> <p>If it’s finally agreed that there are no primary species, then the reviewer agrees with the scores relative to <i>Merluccius australis</i>. But in that case similar conditions as new Condition 3 (raised to address the bycatch of <i>Merluccius australis</i>) should also be raised for <i>Micromesistius australis</i> and <i>Dissostichus eleginoides</i>.</p>	<p>The identification of secondary species (main and minor) in the hoki fishery follows the criteria and definitions set up in SA 3.1.4 and its sub-clauses.</p> <p>On the other hand, the team reaffirms that there are no primary species.</p> <p>Please see also responses to general comments.</p>
2.2.2	YES	YES	YES	As in 2.2.1	See rationale provided above.
2.2.3	YES	YES	YES	As in 2.2.1	See rationale provided above.
2.3.1	YES	YES – but see	NA	The subscore for SI (b), “Direct effects”, has been set at 100, on the grounds that there	SI b): The assessment team agrees with peer review’s comment. The fishery not comply



		Justification		<p>is “<i>accurate and verifiable information of interactions with ETPs species</i>”. While this might be so, the SI specifically asks for the effects that the fishery might have on ETP species. Given that accurate stock assessments are lacking for many ETP species affected by the fishery (for instance, the elasmobranchs), the 100 score demanding a “<i>high degree of confidence that there are no significant detrimental direct effects of the UoA</i>” should not be awarded, since a “<i>high degree of confidence</i>” does not exist. A more precautionary score of 80 for this SI is recommended. As for marine mammals, the CAB states that “<i>Mandiola & Rodriguez (2013) provided a preliminary report indicating that the interaction of this group of species with the fishery is insignificant.</i>” However, it would be advisable to include a wider base of references (not just one report) before concluding that there are no impacts whatsoever on marine mammals, as they are known to get bycaught in bottom and mid water trawl fisheries elsewhere.</p>	<p>with SG100 level of performance due strategy (<i>i.e.</i> use of LEPs) to reduce incidental catch of seabirds is recently implemented. So, there are no high of confidence that this strategy will work in short-terms. Scoring issue was adjusted to comply with SG80.</p> <p>Respecting marine mammals interaction, the fishery activity is concentrated in high sea areas, where the presence of mammals is very limited at difference of coastal fisheries. So, the report developed by Mandiola & Rodriguez (2013) indicates that this fishery not interacts with these species.</p>
2.3.2	YES	YES – but see Justification	NA	<p>The subscore for SI (d) “<i>Management strategy implementation</i>” has been set at 100. This does not seem appropriate given that the corrective measures have been only recently started to be implemented. Moreover, until 2018, they will be implemented on a voluntary basis.</p>	<p>The assessment team agrees with the rationale provided by the peer reviewer and the justification of was modified in order to achieve with SG80 level.</p>



				Therefore, a score of 100 should not apply.	
2.3.3	YES	YES	NA		Not applicable.
2.4.1	NO	NO	NA	<p>The 95 score awarded by the CAB does not apply.</p> <p>Each one of the individual SIs should have been awarded more precautionarily:</p> <p>SI (a) “Commonly encountered habitat status”: The CAB bases the score of 100 on the reasoning that “the spatial distribution of trawling activity is patchy and trawling hotspots were small, comprising annually <5% of the shelf extension or <7% of the total trawlable area.”. However, it does not preclude the possibility that commonly encountered habitat within the fishing grounds might be seriously impacted by the gear. A precautionary lower score is recommended.</p> <p>SI (b) “VME habitat status” is also scored 100, and again this maximum score does not seem adequate: it’s justified on the basis that the areas affected by trawling are relatively small and that there are two areas closed to bottom trawling. But none of these two arguments preclude the possibility that VMEs exist within the fishing grounds where the fishery operates, and that they might be seriously impacted. In order to be able to apply the maximum of 100, a thorough seabed and VME mapping of the fishing grounds</p>	<p>SI a): The rationale was modified. Since 2014, a research program is carried out to analyse the impact on the habitat and benthic component. The preliminary results did not alert about a risk for the benthic habitat. Then, the assessment team agrees with a precautionary lower score for this SI.</p> <p>SI b): The rationale was modified. Hoki fishery does not overlap with VMEs (FAO. 2016. Vulnerable Marine Ecosystems: Processes and Practices in the High Seas, by Anthony Thompson, Jessica Sanders, Merete Tandstad, Fabio Carocci and Jessica Fuller, eds. FAO Fisheries and Aquaculture Technical Paper No. 595. Rome, Italy). However, Gaitán and Mari (2016) described taxa indicators of VMEs in hoki area. A precautionary score was set for this SI.</p>



				should be carried out.	
2.4.2	YES	YES	NA		Not applicable.
2.4.3	YES	YES (overall score)	NA	<p>An overall score of 80 or 85 seems adequate to this PI. However, the score of 100 awarded to SI (a) <i>“Information quality”</i> does not apply, since the requirement for reaching 100 is that <i>“The distribution of all habitats is known over their range, with particular attention to the occurrence of vulnerable habitats”</i>. A thorough benthic mapping of the area fished has not yet been undertaken; therefore a 100 score cannot be met.</p> <p>Besides, not all the specimens harmed by a bottom trawl tow are hauled on board: most are left on the seabed, and remain unidentified and unrecorded. Thus, the most efficient way to describe the benthic habitats being impacted by bottom trawl activities is by attaching underwater videocameras to the gear and analysing the footage thus obtained. This has not yet been tried within the UoA. At most, an score of 80 or 85 is recommended for this SI.</p>	SI a): This issue was considered, modifying the score level for this SI.
2.5.1	YES	YES	NA		Not applicable.
2.5.2	YES	YES	NA		Not applicable.



2.5.3	YES	YES (overall score)	NA	<p>SI (a) <i>“Information quality”</i> is awarded an 80 score, implying that <i>“Information is adequate to broadly understand the key elements of the ecosystem.”</i> As stated by the CAB in the reasoning for PI 2.5.1, the PSLME is a huge ecosystem, and as such, the current status of knowledge about its functioning should be deemed preliminary. So, the rationale to consider that it currently allows to “broadly understand the key elements” is somewhat blurred. It mostly depends on what we interpret as “broadly understand”. There is no doubt that the UoA is implementing appropriate steps towards achieving this broad understanding, but it still has severe handicaps. One of them is the lack of fishery-independent surveys, which would help collecting information relevant not only to the target stock but also to other elements of the ecosystem. Perhaps a score of 80 should not be awarded until such research surveys are reassumed. This is valid for all the remaining SIs within this PI: SI(b), SI(c), SI(d) and SI(e). Maybe a lowering of the overall score to 75 should be contemplated.</p>	<p>The OBO Program implemented to collect information of fishery (catch, effort, sampling of target and non-target species) is efficient in order to supply information of ecosystem and (in long term analysis) the impact produced by trawling.</p> <p>However, there are surveys focalized in describing several aspects of the entire ecosystem. Since 2012, ARA Puerto Deseado developed surveys on the Argentine Sea, on coastal and open water from Patagonia. Such surveys are intensive and diverse: 70 researchers and technicians on board working on oceanography, benthos and plankton.</p> <p>Operations of the research vessel are controlled by CONICET (Consejo Nacional de Investigacion Cientifica y Tecnologica – National Council of Cientific and Technologic Research)</p>
3.1.1	YES – but with doubts, see justification.	YES	NA	<p>In reference to the statement “Moreover, Argentina approved other binding and non-binding international instruments relating indirectly to conservation as it is reviewed in the background”, the reviewer understands that so far Argentina hasn’t</p>	<p>The assessment team considers that SI a) for this PI meets with SG 80 level of performance. Even if Argentina is not one of 46 member states that signed FAO’s Agreement, since 2008, it is adopted measures about illegal, unreported and</p>



				signed FAO's Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing. (http://www.fao.org/fishery/psm/agreement/en). Therefore, the overall 95 score seems inadequate, given this significant shortcoming.	unregulated fishing at it is described in the respective National Action Plan (PAN – IUU), that includes measures to prevent and monitor such practices and FAO recommendations. Therefore, it is demonstrated that Argentina commits internationally agreed measures. The rationale was modified in order to clarify it.
3.1.2	YES	YES	NA		Not applicable.
3.1.3	NO	NO	NA	The CAB assigned an overall score of 100 to this PI. However, the SG 100 for this PI states that “Clear long-term objectives that guide decision-making, consistent with MSC fisheries standard and the precautionary approach, are explicit within and required by management policy”. This is in contradiction with the fact that the TAC set for the fishery in 2016 (130,000 t, draft report p. 13) is higher than what was recommended by INIDEP “INIDEP recommended the fishing authority to set a TAC for 2017 in the range of 60,000 to 100,000 t.” (draft report p. 20). This seems hardly compatible with a score of 100 in this PI. TACs should be set according to the scientific advice. Any non-compliance should preclude the awarding of the maximum score.	As it is mentioned above, the management authority set TAC according to technical advice. Table 2 (p. 13) is presented TACs established for 2016 and 2017 (130,000 t and 80,000 t, respectively). For 2016, INIDEP recommended a range of exploitation between 96,000 to 127,000 t, and for 2017, this recommendation was lower (between 60,000 t to 100,000 t). Both TACs established was set in order to comply technical advisory and maintain stock status around target reference point. So, the assessment team considers that there are clear long-term objectives that guide decision-making, consistent with MSC fisheries standard and the precautionary approach.
3.2.1	YES	YES	NA		Not applicable.



3.2.2	NO	NO	NA	<p>The overall score of 95 should be lowered to reflect the fact that the precautionary approach is not strictly followed, as proven by the assigned TAC being larger than the range recommended by INIDEP.</p> <p>Specifically, SI (c) "Use of precautionary approach" -which is currently scored at 80-should be lowered to 60.</p> <p>Besides, there are no management-defined fishing mortality (F) reference points.</p> <p>All taken into account, the fishery should only be deemed fully compliant with the precautionary principle when a) TACs are strictly based on the scientific advice and b) F reference points are available and implemented. These two requirements should be raised into a new Condition or included within one of the existing.</p>	<p>The assessment team considers that the management authority (CFP) uses a precautionary approach based in the technical advice provided by INIDEP. TACs are based in technical recommendations. Even if there are not reference points defined in the fishing mortality index (F), as it is mentioned in the PI 1.1.1 rationale, the Argentine hoki fishery achieves at approximately 0.4 Bro as a proxy of MSY. Also, biological reference points defined are consistent with MSY. So, the assessment team concluded that the decision-making processes use the precautionary approach and are based on the best available information, and it is not necessary raised a new condition related with this scoring issue.</p>
3.2.3	YES	YES	NA		Not applicable.
3.2.4	YES	YES	NA		Not applicable.

General Comments on the Peer Review Draft Report

(cont. from PI 1.2.1).

-Level 2: the CAB dismissed SI 1.2.1 (e) (*shark fining*) under the reasoning that “*Sharks are not the target species, so this issue is not scored*” (page 81). However, the fact that sharks are not the target species does not exclude *per se* the possibility of shark fining occurring in the fishery, at least in an opportunistic basis. In fact, several shark species are caught, even if at low levels. In the opinion of the reviewer, shark fining should have been scored.

-Level 3: the CAB also dismissed SI 1.2.1 (f) (*Review of alternative measures*) because “*There is no unwanted catch of the target stock*”. However, there is unwanted catch of juvenile hoki, as it is clear from the references provided (e.g. Zavatteri et al. 2016). Unwanted catch of the target stock does constitute an issue in this fishery, since juveniles (size less than 57 cm) are often caught.

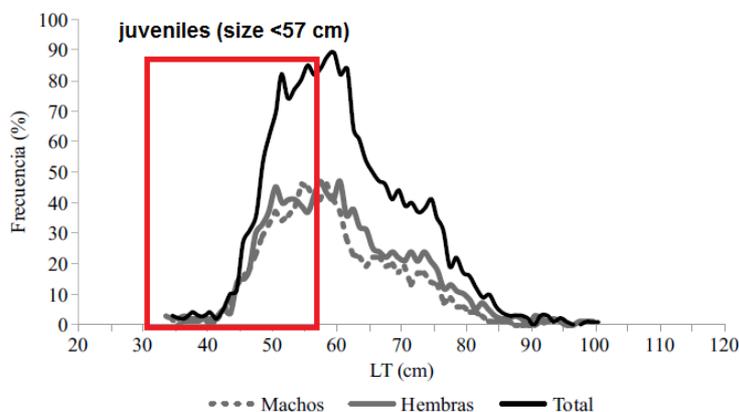


Figura 2. Distribución de frecuencia de longitud total (LT) de machos, hembras y ambos sexos combinados (total) de *Macruronus magellanicus* capturados por la flota comercial argentina.

Figure 2. Total length (LT) frequency distribution of *Macruronus magellanicus* males, females and both sexes combined (total) caught by the Argentine commercial fleet.

(From Zavatteri et al 2016)

Hence, it needs to be ascertained whether the existing measures addressing the unwanted juvenile catch are effective or not. The two main measures seem to be the minimum legal (landing) size “*The minimum legal size for the target species is 60 cm. in total length*” (draft report, page 80), and the rule that “*Proportion of juveniles in catches must be less than 50% (otherwise the vessel should move from the area, at least 5 nm from the original position)*” (draft report, page 80).

It is unclear whether the measures are effective in reducing the juvenile catch. In other words, in order to avoid sanctions for landing juveniles, whenever a haul brings in a catch with a high proportion of juveniles, the vessel might opt by discarding these fish. The practice of discarding (and slippage) is well known to happen in other fisheries. This phenomenon is known to occur whenever a fishery is operating under a TAC and ITQ system such as is the case of the UoA.

Therefore, it seems that unwanted catch should be recognized as an issue, and the review of alternative measures should have been scored.

CAB Response: The assessment team deeply appreciates the detailed review of the background information conducted by the peer reviewer and in general shares the concerns of the reviewer. Responses to the issues raised by the reviewer were provided earlier (peer reviewer evaluation table).

(from PI 1.2.2).

The Condition 2 set in 2012 “the client group must provide sufficient relevant information related to the stock structure, stock productivity, fleet composition and other data available to support the harvest strategy” is considered closed by the CAB since 2016 (draft report, page 59). However, the issue of whether the information on the stock structure and the stock productivity is sufficient to support the harvest strategy, is far from being clearly solved.

To start with the stock structure, from the reading of the draft report and the references therein included, there are solid indications that there is a single hoki stock in South America’s Southern Cone, distributed all

along the Pacific and the Atlantic coasts. However, it is still considered by each one of the main fishing countries (Chile and Argentina) as if there was a separated stock in each country's EEZ. It stands to reason that a proper harvest strategy should consider the stock as a unit, not as two ficticiously separated entities. In other words, a joint stock assessment and stock management is needed to be jointly developed between Argentina and Chile.

As for the stock productivity: the current certification seems to rely purely on fishery-dependent information. Fishery-independent abundance surveys were abandoned (presumably due to lack of funding by the government) at some point during the last years (it is unclear from the draft report text when exactly did the surveys stopped; perhaps 2010-11?) and apparently, they haven't been reassumed so far. And yet, the availability of fishery-independent information is crucial to acquire accurate indices of abundance, to assess the population dynamics, and to validate fishery-dependent information. This issue is relevant not just for PI 1.2.2 and 1.2.3, but also for 1.2.4.

Notwithstanding the above, it is noted that there is now a new Condition 2 (page 125), which has arisen in the re-assessment process. The wording of the new Condition 2 is as follows: "By the 3rd annual surveillance, the client group must provide evidence that the HCR's are likely to be robust to the main uncertainties and in particular to the uncertainties related to the stock structure. In this respect, and without prejudice of other considerations, the client group must consider that annual TAC is the main HCR in place and that the stock structure is one of the main uncertainties." It would seem to address the issues mentioned above.

CAB Response: The issue of the stock structure is one of the main uncertainties faced by the hoki fishery and research is ongoing to elucidate this matter. At present, and given the state of the art, the assessment team and the experts with INIDEP consider that the South Atlantic unit/stock may be separately assessed. Depending on the final conclusions, alternative hypothesis should be explored within the stock assessment model, including a joint assessment. As for the stock productivity, the team shares the concern of the reviewer. Abundance surveys conducted by INIDEP were suspended from 2010 onwards.

(From 2.1.1 and/or 2.2.1) Differentiation between primary and secondary species.

According to MSC's FCRv2.0 SA3.1.3, "The team shall assign primary species in P2 where all the following criteria are met:

- SA3.1.3.1 Species in the catch that are not covered under P1 because they are not included in the UoA;
- SA3.1.3.2 Species that are within scope of the MSC program as defined in FCR 7.4.1.1; and
- SA3.1.3.3 Species where management tools and measures are in place, intended to achieve stock management objectives reflected in either limit or target reference points".

As presented in the draft report (p. 21-22), three different haul profiles can be distinguished in the UoA. Group 1 hauls are majoritarilly composed by the target species and therefore can be deemed as having no primary species. But as described in Marí et al. 2015, the Argentinean hoki fishery presents also another 2 general haul profiles: Group 2 where *Merluccius australis* is present at a significant proportion (24%), and Group 3 where *Micromesistius australis* (49%) and *Dissostichus eleginoides* (45%) in fact represent the most frequent species, and where hoki is caught only in a small proportion.

Whether *Merluccius australis*, *Micromesistius australis* and *Dissostichus eleginoides* should be deemed "primary" or "secondary" species depends on whether they fulfill the following requirements from SA3.1.3.3.

Merluccius australis

Management tools and measures are in place: the fishery of *M. australis* is subjected to TACs, which in 2017 was set at 5,000 t (Resolución 4/17 – Captura Máxima Permisible de la Especie Merluza Austral). Reference points might also seem to be available (INIDEP, Informe Técnico Oficial N° 13. 12/04/2016. 11 p.).

Micromesistius australis

Management tools and measures are in place: there is a TAC of 30,000 t in 2017 (Resolución N° 18/16). However, there is no evidence that there are reference points (Informe Técnico Oficial N° 25. 20/11/2014. 22 p.)

Dissostichus eleginoides.

Management tools and measures are in place: There is a TAC of 1850 t for 2017 (Resolución N° 18/16), and there seems to be reference points available ("Informe Técnico Oficial N° 33. 21/11/2012. 19 p.").

The reviewer could not access the above mentioned reports, so the decision of considering these three species as primary or secondary falls ultimately in the certification team. However, it must be stressed that at the very least both *Micromesistius australis* and *Dissostichus eleginoides* seem to fulfill the conditions to be secondary species, although the draft report does not consider them.

CAB Response: The assessment team deeply appreciates the detailed review of the background information conducted by the peer reviewer.

In respect to the Southern hake, the most recent technical report available to the assessment team is that of Giusi & Zavatteri (2016) (which refers to abundance estimation) and no reference points were defined nor mentioned in this document. Therefore, the team reaffirms that the Southern hake should be assigned as secondary (main) species (see Section 3.4.1). Comments of Patagonian toothfish and Southern blue whiting were provided earlier (*i.e.* Performance Indicator Review table, PI 2.1.1).

Appendix 3. Stakeholder submissions

a. Summary of the information obtained from the stakeholder meetings, including the range of opinions.

Buenos Aires, 29 de Septiembre de 2016.

**Minuta sobre la reunión realizada con el GRUPO CLIENTE,
en el marco de la on-site visit de la Pesquería de Merluza de Cola.**

En el marco de la Reevaluación de Pesca Sustentable MSC de la Pesquería de Merluza de Cola, se realizó una reunión en la ciudad de Mar del Plata con el GRUPO CLIENTE, conformado por EMPRESA PESQUERA DE LA PATAGONIA Y ANTÁRTIDA, SAN ARAWA S.A. y el consultor OSCAR IRIBARNE, y se conversaron algunos temas claves para el proceso de reevaluación y los últimos trabajos realizados.

El Grupo Cliente señala (en r/c discrepancia entre CMP y capturas efectivas), que en últimos años ha disminuido el esfuerzo (naves) pues las operaciones se hacen poco convenientes, debido a la baja rentabilidad. Bajo precio del producto y dificultades operativas no son incentivos para pescar. También habría cambios en condiciones climáticas (> vientos, que generan olas de más de 11 m que dificultan la operatoria pesquera). Se señala que no evidencian problemas de disponibilidad del recurso. Industria estima que hay > interacción con aves que con conductivos y que no hay interacción con mamíferos marinos. Pruebas piloto con Líneas espantapájaros demostraron ser muy útiles, pero no en toda la flota se las ha podido probar; impacto con aves es > en arrastre de media agua que en arrastre de fondo (por ubicación de los cables sonda). Estudios llevados a cabo por OBO y ONGs (FVSA y Aves Argentinas) tienen datos para estimar tasa de mortalidad de aves. Una proporción de no más del 10% del área total de la distribución del recurso (este porcentaje al estar estimado de acuerdo a los cuadrantes de la FAO, tiende a sobredimensionar el área real) es el área arrastrada anualmente (borde del talud, principalmente); y siempre se arrastra en la misma área, por lo que el impacto ocurre siempre en el mismo lugar. Se señala que habría un solo stock en el cono sur de América y no se han encontrado áreas de reproducción en el Atlántico (Oscar y Exequiel); respecto a beneficios de la certificación, se indica que hay compradores que compran solo porque el producto está certificado (e.g. fishblock), pero no pagan un > precio. Una parte del Mercado ni siquiera sabe que existe el MSC. Industria considera positivo que exista la comisión de análisis y seguimiento de Merluza de Cola. Disposición de que surimeros solo puedan operar al sur de los 49° LS, obedecería a “separar” la flota espacialmente, dejando naves con mayor poder de pesca en el sur, sin que interfieran con resto de la flota (e.g. congeladores). Industria dice que no tienen descarte, pues procesan todo.

Buenos Aires, 29 de Septiembre de 2016.

**Minuta sobre la reunión realizada con el INIDEP,
en el marco de la on-site visit de la Pesquería de Merluza de Cola.**

En el marco de la Reevaluación de Pesca Sustentable MSC de la Pesquería de Merluza de Cola, se realizó una reunión en la ciudad de Mar del Plata con el INIDEP, conformado por GRUPOS DE INVESTIGACIÓN DE DIVERSAS ÁREAS y se conversaron algunos temas claves para el proceso de reevaluación y los últimos trabajos realizados.

No se han identificado, por el momento, áreas de reproducción en Atlántico (hay documento de Payá y Guissi). Se estima que el área de desove es la que existe en Chile. El efectivo que está en el Atlántico se desplazaría desde el Pacífico. Se estima que la captura 2016 de flota argentina sería de app. 30mil ton, lo que subiría hasta app 50 mil si se incluye flota extranjera (i.e. Malvinas y otras flotas en el Atlántico fuera de la ZEE). La nueva evaluación de stock utiliza un solo modelo y se considera periodo 1985-2015. Además, los puntos de referencia biológicos (límite como objetivo) fueron modificados: objetivo: $0.4BR_v$ ó $0.5BR_{1985}$; límite: $0.25BR_v$ ó $0.3BR_{1985}$. Según estructura de edades de las capturas, la pesquería sería principalmente de juveniles (especialmente individuos de 2 a 4 años). Se han efectuado, además, estudios merísticos y de morfometría para intentar dilucidar estructura del stock. Estudios preliminares, concluyen que no hay diferencias entre sexo y existiría mezcla entre grupos (muestras) norte, centro y sur del Atlántico. Se están efectuando estudios de microquímica de otolitos (del Atlántico, Pacífico y Malvinas) con Universidad de Nueva Zelanda, pero aún no hay resultados.

Las campañas del INIDEP se extendieron solo hasta el 2009. Ahora, en nuevo modelo, se da > peso a la CPUE. Redes de media agua tienen menos frecuencia de operación en la pesquería de Merluza de Cola, aunque son de mayores dimensiones. Desde 2012 la flota, o el área de pesca, se ha desplazado más al sur, donde hay mayor abundancia (en parte esto se debe a la cuotas) y a su vez el área de captura ha disminuido concentrándose en estas zonas.

INIDEP quiere establecer como una medida obligatoria, para toda la flota, un device para mitigar mortalidad de tiburones y ETP, en general, lo que aparentemente no tendría oposición por parte de la flota. En muestras de bentos se han identificado 130 taxa. Las mismas han sido obtenidas con redes de fondo provenientes de área 52° a 56° LS y se identificaron 88 taxa de invertebrados. INIDEP ha tenido en cuenta tanto las condiciones como las recomendaciones. Respecto de la definición de Harvest Control Rules cuando la biomasa del stock se acerca a los PBR límites y frente a periodos de bajo reclutamiento (= baja productividad) se señaló que aún no se ha logrado cumplir bien con estas condiciones, pero que se realizará un curso de capacitación técnica a fines de 2016 con un experto de USA. Sobre captura incidental de Tiburón sardinero (*Lamna nasus*), se menciona (Collonello) captura de ejemplares de esta especie, pero no se aportaron datos que la cuantifiquen. Si bien las capturas de la flota hacia estas especies de condriktios no superan el 1%, no hay estimación del impacto sobre las poblaciones de condriktios ni tampoco se ha podido cuantificar el nivel de solapamiento con esta especie a nivel global. Se está llevando a cabo un estudio internacional para poder estimar este nivel de impacto. De todos modos, los expertos del programa condriktios insisten en seguir llevando a cabo medidas de mitigación obligatoria para poder devolver vivos los tiburones antes de que caigan al pozo (uso de rejillas).

Buenos Aires, 29 de Septiembre de 2016.

**Minuta sobre la reunión realizada con el FUNDACIÓN VIDA SILVESTRE ARGENTINA,
en el marco de la on-site visit de la Pesquería de Merluza de Cola.**

En el marco de la Reevaluación de Pesca Sustentable MSC de la Pesquería de Merluza de Cola, se realizó una reunión en la ciudad de Mar del Plata con el INIDEP, conformado por el EQUIPO DEL PROGRAMA MARINO y se conversaron algunos temas claves para el proceso de reevaluación y los últimos trabajos realizados.

Si bien no se tiene una estimación del impacto que pueda generar la captura incidental de especies ETPs en la pesquería de Merluza de Cola, se acuerda que, en calidad de recomendación, se mantenga la implementación de medidas de mitigación de la mortalidad de especies ETP (principalmente Lamna nasus y aves, petreles). Verónica García plantea su inquietud respecto de la forma en que INIDEP ha enfrentado la evaluación de stock de Merluza de Cola y la estimación de los PBR límites y objetivo. Se le presenta al equipo de evaluación una tabla del reporte de Cortés & Waessle (2016), identificándose que la captura incidental acumulada de esta especie por la flota surimera fue de 489 toneladas durante 2006-2012.

b. Explicit response from the team to stakeholder submissions.

Contact Information Make sure you submit your full contact details at the first phase you participate in within a specific assessment process. Subsequent participation will only require your name unless these details change.

Contact Name	<i>First</i> Leandro	<i>Last</i> Tamini
Title	Licenciado	
On behalf of (organisation, company, government agency, etc.) – if applicable		
Organisation	<i>Please enter the legal or registered name of your organisation or company.</i> Aves Argentinas – BirdLife International	
Department	Conservation	
Position	<i>Please indicate your position or function within your organisation or company.</i> Marine Program Coordinator	
Description	<i>Please provide a short description of your organisation.</i> Aves Argentinas (the BirdLife partner in this country) is a non-profit organization whose mission is to conserve native birds and their habits throughout research, education and divulgation.	
Mailing Address, Country	Matheu 1246, Ciudad Autónoma de Buenos Aires, Argentina	

Phone	Tel	+ 54 223 467 4589	Mob	+ 54 11 5849 7151
Email		tamini@avesargentinas.org.ar	Web	www.avesargentinas.org.ar

Assessment Details

Fishery	ARGENTINE HOKI (<i>Macrurus magellanicus</i>) BOTTOM AND MID-WATER TRAWL FISHERY IN ARGENTINE SEA
CAB	Organización Internacional Agropecuaria

Assessment Stage* Clicking on the section numbers will bring you to the appropriate section for providing input to the respective assessment stage. It is only necessary to complete those sections corresponding to stages where you wish to comment.

	Fishery announcement and stakeholder identification—go to section 1 Opportunity to indicate that you are a stakeholder and identify other stakeholders.
	Defining the assessment tree—go to section 2 Opportunity to review and comment on the assessment tree in relation to the fishery if a modified tree is used.
	Information gathering and stakeholder meetings—go to section 3 Opportunity to engage with and provide information to the CAB about the specific details and impacts of the fishery.
X	Public review of the draft assessment report—go to section 4 Opportunity to review and comment on the draft report, including the CABs draft scoring of the fishery.
	Annual surveillance—go to section 5 Opportunity to provide information to the CAB about any changes in the fishery since certification and/or the achievements made towards conditions.

* Note, to register an objection following the publication of the Final Report and Determination, please see www.msc.org/get-certified/fisheries/assessment/objections

• SECTION 4 • [Return to Page 4](#)

Assessment Stage	Fishery	Date	Name of Individual/Organisation Providing Comments
<input checked="" type="checkbox"/> Public review of the draft assessment report ¹ Opportunity to review and comment on the draft report, including the draft scoring of the fishery.	Argentine Hoki Bottom and Mid-water trawl	17/08/2017	Leandro Luis Tamini / Aves Argentinas – BirdLife International

I wish to comment on the evaluation of the fishery against specific Performance Indicators.
A table with these indicators and the scores and rationales provided by CABs can be found in Appendix 1 of the draft assessment report.

¹ MSC Fisheries Certification Requirements, v2.0 section 7.15

Nature of comment *(Please insert one or more of these codes in the second column of the table below for each PI.)*

1. I do not believe all the relevant information² available has been used to score this performance indicator *(please provide details and rationale)*.
2. I do not believe the information and/or rationale used to score this performance indicator is adequate to support the given score³ *(please provide details and rationale)*.
3. I do not believe the condition set for this performance indicator is adequate to improve the fishery's performance to the SG80 level⁴ *(please provide details and rationale)*.
4. Other *(please specify)*

² MSC Fisheries Certification Requirements, v2.0 section 7.10

³ MSC Fisheries Certification Requirements, v2.0 section 7.10

⁴ MSC Fisheries Certification Requirements, v2.0 section 7.11

Performance Indicator	Nature of Comment Indicate relevant code(s) from list above.	Justification Please support your comment by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	CAB Response
2.2.1	3	<p>Confronting the information on Table 10, the species captured by this fishery and the IUCN vulnerability category are: <i>Diomedea sanfordi</i> (EN), <i>Diomedea epomophora</i> (VU), <i>Thalassarche chrysostoma</i> (EN), <i>Thalassarche melanophris</i> (NT), <i>Macronectes halli</i> (LC), <i>Macronectes giganteus</i> (LC). This information are in Tamini et al., 2016.</p> <p>Adding mid-water and bottom trawl and over 5308.6 trawl hours of effort, we record mortality rates of 0,82 birds/day for <i>Thalassarche melanophris</i>, 0,13 birds/day for <i>Diomedea epomophora</i> y 0,15 birds/day for <i>Thalassarche chrysostoma</i> (Tamini, et al., unpublsh data).</p> <p>In this report was not check the seabird interactions information available in Tamini, L.L., Chavez, L.N., Góngora, M.E., Yates, O., Rabuffetti, F.L. & Sullivan, B. 2015. Estimating mortality of black-browed albatross (<i>Thalassarche melanophris</i>, Temminck, 1828) and other seabirds in the Argentinean factory trawl fleet and the use of bird-scaring lines as a mitigation measure. <i>Polar Biology</i> DOI 10.1007/s00300-015-1747-3.</p>	<p>The Table 10 was reviewed according IUCN redlist published in the website. However, the study provided by stakeholder according seabirds captured was carried out on the <i>Merluccius hubsi</i> fishery. The spatial distribution of the observations made with and without mitigation measures showed that in the area of hoki fishery mitigation measures prevailed, which are not considered in the study.</p> <p>Results showed that the mitigation measures (using the specific device) reduce the number of collisions.</p> <p>Observations were done among 2008–2010. After that PAN Aves was implemented with several preventive measures synthetized in Table 13.</p>
2.3.1	4 (general comments)	<p>In this report was not recommended the voluntary use of tori-lines (according Resolution CFP 03/17) nor a work plan to reduce the seabirds mortality in the third cable. Aves Argentinas and Fundación Vida Silvestre Argentina have requested the implementation of mitigation measures. Specifically, the Albatross Task Force of Aves Argentinas have been work in this fishery for 7 years for reduce the incidental capture of seabirds.</p>	<p>Voluntary use of tori-lines was not included in recommendations due management authority (CFP) established in its Resolution N° 3/2017, that seabirds management measures must be adopted voluntarily from May 2017, and mandatorily since April 2018, with well described technical specifications were:</p> <ul style="list-style-type: none"> -All freezer vessels with bottom trawl net shall implement two streamer lines (<i>i.e.</i> one in port and other one in starboard). -Streamer lines (LEPs) shall be used at the moment when otter boards are submerged until the beginning of the overtuning of the net in each fishing hauls.

Contact Information Make sure you submit your full contact details at the first phase you participate in within a specific assessment process. Subsequent participation will only require your name unless these details change.

Contact Name	<i>First</i> Guillermo	<i>Last</i> Cañete
Title	MSc (Ecology)	
On behalf of (organisation, company, government agency, etc.) – if applicable		
Organisation	<i>Please enter the legal or registered name of your organisation or company.</i> Fundación Vida Silvestre Argentina	
Department	Marine Program	
Position	<i>Please indicate your position or function within your organisation or company.</i> Marine Program Coordinator	
Description	<i>Please provide a short description of your organisation.</i> Associated to World Wildlife Foundation, Fundación Vida Silvestre Argentina is an environmental, non-profit organization created in 1977 to propose and implement solutions for nature conservation, promote the sustainable use of natural resources and an environmentally responsible behavior.	
Mailing Address, Country	Córdoba 2910 4B Mar del Plata, Argentina (B7602CAD)	
Phone	Tel (+ 54 223) 493-1877	Mob + 54 223 155 205 742
Email	guillermo.canete@vidasilvestre.org.ar	Web http://www.vidasilvestre.org.ar/

Assessment Details

Fishery	ARGENTINE HOKI (<i>Macrurus magellanicus</i>) BOTTOM AND MID-WATER TRAWL FISHERY IN ARGENTINE SEA
CAB	Organización Internacional Agropecuaria

Assessment Stage* Clicking on the section numbers will bring you to the appropriate section for providing input to the respective assessment stage. It is only necessary to complete those sections corresponding to stages where you wish to comment.

	Fishery announcement and stakeholder identification—go to section 1 Opportunity to indicate that you are a stakeholder and identify other stakeholders.
	Defining the assessment tree—go to section 2 Opportunity to review and comment on the assessment tree in relation to the fishery if a modified tree is used.
	Information gathering and stakeholder meetings—go to section 3 Opportunity to engage with and provide information to the CAB about the specific details and impacts of the fishery.
X	Public review of the draft assessment report—go to section 4 Opportunity to review and comment on the draft report, including the CABs draft scoring of the fishery.

Annual surveillance—go to [section 5](#)

Opportunity to provide information to the CAB about any changes in the fishery since certification and/or the achievements made towards conditions.

* **Note, to register an objection following the publication of the Final Report and Determination, please see www.msc.org/get-certified/fisheries/assessment/objections:**

• **SECTION 4** • [Return to Page 4](#)

Assessment Stage	Fishery	Date	Name of Individual/Organisation Providing Comments
<input checked="" type="checkbox"/> Public review of the draft assessment report⁵ Opportunity to review and comment on the draft report, including the draft scoring of the fishery.	ARGENTINE HOKI BOTTOM AND MID-WATER TRAWL FISHERY (Macrurus magellanicus)		Fundación Vida Silvestre Argentina

I wish to comment on the evaluation of the fishery against specific Performance Indicators.
A table with these indicators and the scores and rationales provided by CABs can be found in Appendix 1 of the draft assessment report.

Nature of comment (Please insert one or more of these codes in the second column of the table below for each PI.)

1. I do not believe all the relevant information⁶ available has been used to score this performance indicator (please provide details and rationale).
2. I do not believe the information and/or rationale used to score this performance indicator is adequate to support the given score⁷ (please provide details and rationale).
3. I do not believe the condition set for this performance indicator is adequate to improve the fishery's performance to the SG80 level⁸ (please provide details and rationale).
4. Other (please specify)

⁵ MSC Fisheries Certification Requirements, v2.0 section 7.15

⁶ MSC Fisheries Certification Requirements, v2.0 section 7.10

⁷ MSC Fisheries Certification Requirements, v2.0 section 7.10

⁸ MSC Fisheries Certification Requirements, v2.0 section 7.11



Performance Indicator	Nature of Comment Indicate relevant code(s) from list above.	Justification Please support your comment by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	CAB Response
1.1.1	2	<p>Several improvements regarding stock status have been made since the first hoki certification. First, there were studies to determine the stock structure of hoki that indicate that hoki from the Pacific and the Atlantic could be the same population. Second, stock assessment is now performed using a statistical catch at age model implemented in the AD Model Builder Platform, which is a better alternative to Sequential Population Analysis (SPA) with ADAPT used previously. Third, natural mortality was considered prior as 0.3 based on maximum age Hoening's method and now it is estimated using four methods which give a range of 0.27 to 0.37 although for stock assessment a fix value of 0.35 is used. Fourth, Biological Reference Points (BRPs) have been established based on virgin biomass and the fishery mortality corresponding to MSY was identified. The external peer review (Paya 2014, Canales 2016 op. cit.) has contributed significantly to the improvement of the stock assessment and several statistics and graphs, used in most well managed fisheries, have been developed for first time for hoki. It is still pending to find spawning or reproductive areas of hoki and to estimate biomass with fishery independent data. Fishery-independent surveys are not conducted since 2010. Abundance index based on fishery depending data could not reflect current trends as hyperstability is commonly found for demersal stocks (Harley et al. 2001).</p> <p>According to the new stock assessment, the hoki stock is above limit BRP and close to Bmsy, which is desirable. However, it should be noticed that the modifications made in the new stock statement led to a decrease in biomass estimation of more than 50%. As an example, in the stock assessment for 2012, total</p>	<p>The team greatly acknowledges the comments from FVSA which denote an in depth analysis of the information.</p> <p>Indeed, the lack of fishery independent abundance indexes is one of the uncertainties of the fishery, but in the case of hoki there is no evidence of hyperstability.</p> <p>As stated by FVSA the use of a new stock assessment model resulted in changes of the biomass estimations, with current abundances lower than former estimates. Any way we note that this should play in favour of the resource by the setting of lower TAC's hereafter.</p>



		<p>biomass estimation for 2011 was between 843,000 and 1,130,000 tons (Giussi et al. 2012). For the same year, biomass estimation of the new stock assessment is between 419,223 and 451,597 tons (Giussi et al. 2016). The resource is not now the most abundant fish stock of Argentina, as we used to read in INIDEP reports (e.g. Giussi et al. 2012).</p> <p>The peer reviewed estimations of biomass probably reflect actual values, as Vida Silvestre noticed in previous certification of hoki. The fact that in 2008 CMPs (189000 tons) were much higher than total hoki catches (142281 tons) meant that CMPs were very high and that the fleet operating at maximum capacity were not able to reach it in the calendar year. The high values of the recommended catch by INIDEP and the TACs determined by the Consejo Federal Pesquero were based on biomasses that did not existed reflecting why hoki biomass was constantly decreasing in spite of actual catches did not achieved the TAC (e.g. Table 8 in Giussi et al. 2016).</p>	
2.3.1	2	<p><i>Lamna nasus</i> is a vulnerable species (IUCN) at global scale and it is not evaluated in South Atlantic Ocean. It is also in Apendix II of CITES and in the Convention on the Conservation of Migratory Species of Wild Animals, approved by Argentina. The species is regularly caught in hoki fishery as Cortés and Waessle (2016) state “Using on-board observer data, we have demonstrated that <i>L. nasus</i> was usually caught as bycatch by the surimi trawl fleet operating in the southern limits of the Southwestern Atlantic (51°S-57°S), representing an important part of the reported catch for the Atlantic Ocean” (Cortés and Waessle 2016). Authors claim for the “Adoption of further precautionary management measures to mitigate the porbeagle bycatch” (Cortés and Waessle 2016).Repost Final Report</p> <p>Maximum population growth rate for <i>Lamna nasus</i> is very low</p>	<p>The assessment team agrees with stakeholder comment in that the population size of <i>Lamna nasus</i> in the South Atlantic is difficult to estimate due to the highly migratory nature of this ETP species. However, there are evidences provided that the hoki fishery probably does not hinder population recovery:</p> <p>-Cortés & Waessle (2016) estimated an incidental catch of <i>Lamna nasus</i> in surimi fleet of 489 t during 2006-2012. However, these authors indicated that unwanted catch of <i>L. nasus</i> has had a relatively stable trend.</p> <p>-Other aspect observed by Cortés & Waessle (2016) is that incidental catch of <i>L. nasus</i> decreases when fishing gear is over 500 m of depth. As it is described by Mari <i>et al.</i> (2015), 71% of fishing operations were carried out mainly with bottom trawl nets in a wide range of depths (50 to 1,600 m); while other hauls were concentrated at 400-1,600 m employing mid-water trawl net.</p>



		<p>(e.g. in Northwestern Atlantic ranges from 0,032 to 0,061; Campana 2012). This rate is more similar to marine mammals (average= 0.08) than fish (0.43) (Hutchings et al. 2012). The fact that population size of <i>Lamna nasus</i> is difficult to estimate (as occur with all chondrichthyans species) and that the effect of the incidental mortality cannot be determined do not preclude to apply precautionary principle. Moreover, most of the individuals caught incidentally in hoki fishery are between 140 and 200 cm, which indicate that many of them are probably immature; this means that they already did not reproduce when incidental catch occurred.</p>	<p>-Moreover, <i>Lamna nasus</i> is a top predator that habits in temperate and cold pelagic zone of the North Atlantic, and along temperate and cold waters formed by the Southern Atlantic, Indian and Pacific Oceans, and the Northern zone of the Antarctic Ocean (Compagno, 2001). Therefore, even if the fishery reports unwanted catch of this species, the fishing operations are very local (i.e. between 51°-56° S) in comparison with the wide distribution, due to the highly migratory nature of this ETP species and the hoki fleet mainly uses bottom trawl net in a wide range of depths (50 to 1,600 m).</p> <p>The assessment team provided these evidences in the rationale to support its conclusion and determined that the score do not need to be modified.</p>
<p>2.3.2</p>	<p>3</p>	<p>The Final Report considers that “there is quantitative data that supports the success of the strategy (Tamini et al., 2016, Pulifiato & Massa, 2016), but there are measures recently implemented (i.e. use of streamer lines) that there is no high of confidence that this strategy will work in short terms due to these requirements are set as voluntary until 30th April 2018. So, the fishery not achieves with SG100 level, scoring 80 por this SI.”</p> <p>Vida Silvestre considers that there are no quantitative data supporting the success of the strategy for <i>Lamna nasus</i> and also that the strategies are not place. Giussi et al. 2014 state that “There are no implemented or tested strategies to mitigate the impact of the fishery on chondrichthyans” (Giussi et al. 2014).</p> <p>In the same document that OIA cites to support the score, Pulifiato and Massa (2016) state that “Observer data report that most sharks caught by this fleet (freezer and factory vessels) are discards with little or no capacity to survive” (Pulifiato and Massa 2016). Some devices are being testing to avoid the entry of sharks into the well of the vessel but are not being implemented (Pulifiato and Massa 2016). Those sharks that enter into the well</p>	<p>The assessment team reviewed the CFP Resolutions N° 15/2010, N° 22/2012, N° 4/2013 related with management measures for Chondrichthyans. The main measures established are; the prohibition to catch them as target species and shark finning practices, and return live individuals that exceeds the body size of 160 cm. Also, Pulifiato & Massa (2016) identified that individuals placed in the deck of the ship are generally returned alive to the sea, even if they are maintained 20-25 min out off. This aspect corroborates that these species have a high post-capture survival as it is observed by Stobutzki <i>et al.</i> (2002).</p> <p>As it is mentioned by the stakeholder, there are devices tested by INIDEP Chondrichthyan Program in order to reduce catch mortality of those individuals that fall into the hold using chains as strainer, becoming effective (Pulifiato & Massa, 2016). Even if they are not implemented yet, this alternative measure is being tested with the collaboration of fishers as it is mentioned by authors.</p> <p>Therefore, the assessment team determined that rationales must be reinforced but the score does not need to be modified in order to set a condition. However, results of the alternative measure provided by INIDEP Chondrichthyan Program and the client group will be reviewed in the next surveillance audits as new information for the certification</p>



		<p>cannot be realised and the individuals that remain in the deck are left 20-25 minutes before release them (Pulifiato and Massa 2016).</p> <p>A condition that contemplates the capacitation of the crew regarding good handling practices to realise sharks alive as well as the implementation of devices to avoid the entry of sharks into the well should be added. INIDEP already elaborated material to develop this capacitation process as well as the design of selectivity devices (Massa and Colonello 2015).</p>	<p>assessment as it is required by MSC Fisheries Certification Requirements.</p>
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Comment	Nature of Comment	Justification Please attach additional pages if necessary	CAB Response
<p><input checked="" type="checkbox"/> I wish to comment on other portions of the report (e.g. background information, species biology, peer review reports and CAB responses, list of consultees, etc.).</p>	2	<p>According to the Kobe plot (pag. 20, Final Report) actual biomass (2015) is 0.25 of Bmsy (estimated as 177,206 tons following Final Report, pag.79). This corresponds to a value of 44,301 tons. Kobe plots are useful tools for show easily the stock regarding management objectives; however, Vida Silvestre alerts that the plot is mistaken or the actual biomass is well below Bmsy.</p>	<p>The Kobe plot is the result of a preliminary analysis conducted by Canales (2016). The author indicates that the biomass that would produce the MSY equals 0.28 BRo (virginal reproductive biomass).</p> <p>To be consistent, legend of the horizontal axis of the Koke graph should read BR/BRo.</p> <p>On the other hand, confusion arises from page 79 of the Final Report. In fact, 177,206 tons correspond to 90% of the Target Reference Point (=0.4 BRo; =196,860 tons), which is a conventional proxy of MSY and not to the estimate of BMSY itself.</p> <p>In table of page 79, instead of referring to BMSY, the assessment team should have said <i>proxy of MSY</i>.</p>
	2	<p>The comment in pag 181 of Public Report state that “Verónica García...Muestra una tabla con capturas incidentales de <i>Lamna nasus</i> por año, para un periodo de 6 años, que muestra que el total acumulado de ejemplares es de app. de 478 animales”. The</p>	<p>The assessment team modified the meeting summary with FVSA, including data provided in this comment. Also, this analysis was incorporated in the rationale provided in the SI b) of Evaluation Table for PI 2.3.1 – ETP species outcome.</p>



comment was misinterpreted by OIA team as it was presented a table showing incidental catch of *Lamna nasus* in surimi fleet where the estimation of incidental catch was 489 tons during 2006-2012 (Cortés and Waessle 2016). This biomass would correspond to a minimum of 3623 individuals, taking into account a maximum body weight of 135 kg.

Citations

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www.msc.org



Marine House
1 Snow Hill
London EC1A 2DH
United Kingdom
Tel: +44 (0)20 7246 8900
Fax: +44 (0)20 7246 8901

Date: 17/08/2017

SUBJECT: MSC Review and Report on Compliance with the scheme requirements

Dear Enrique Mario Mo

Please find below the results of our partial review of compliance with scheme requirements.

CAB	Organización Internacional Agropecuaria (OIA)
Lead Auditor	Enrique Mario Morsan
Fishery Name	Argentine hoki (<i>Macruronus magellanicus</i>) bottom and mid-water trawl fishery
Document Reviewed	Public Comment Draft Report

Ref	Type	Page	Requirement	Reference	Details	PI
27227	Minor	13, 68, 69, 70	FCR_7.12.1.3 v.2.0	7.12.1 The CAB shall determine if the systems of tracking and tracing in the UoA are sufficient to ensure all fish and fish products identified and sold as certified by the UoA originate from the appropriate Unit of Certification (UoC). 7.12.1.3 The CAB shall document the risk factors outlined in the "MSC Full Assessment Reporting Template", identifying any areas of risk for the integrity of certified products and how they are managed and mitigated.	The vessel "Tai An" is owned by client group member San Arawa, and is a surimero. The implication is that this vessel will be producing surimi on-board. Table 15 describes the risks and mitigation for mixing and substitution for H&G and filleting of hoki. But table 15 does not describe how this vessel will address the substitution and mislabelling risks associated with surimi production, which is important given hake is a main secondary species. The mixing risks and the associated mitigation between certified (hoki) and non-certified (retained species) are likely to be different on-board "Tai An".	

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Page 1 of 2



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27231	Guidance	67	FCR_7.6.1.2 v.2.0	The CAB shall nominate a date from which product from a certified fishery is eligible to be sold as MSC certified or bear the MSC ecolabel (the eligibility date). This shall be either: The date of the certificatio of the fishery; or The publication date of the first Public Comment Draft Report	Setting the eligibility date as date of certification may result in a gap during which hoki cannot be kept as under-assessment fish. The current certificate has been extended to 21 October, and the fishery may not be recertified by this date. As a result, hoki caught after 21 October and before the fishery is recertified cannot be stored by the client group as under-assessment (as per section 5.6 in the CoC Standard v4.0)
27234	Guidance	70	FCR_7.12.1.1 v.2.0	Systems shall allow the UoA to trace any fish or fish products sold as MSC-certified back to the UoC	The following sentence should be revised, as it is currently miselading: "Parte Final de Pesca clearly identifies the hoki eligible to be certified as MSC. This document supports the origin of fish stating if the fish belongs to UoA". Only product from the UoC (i.e. client group vessels in table 1) is eligible to be sold as MSC.

This report is provided for action by the CAB and ASI in order to improve consistency with the MSC scheme requirements; MSC does not review all work products submitted by Conformity Assessment Bodies and this review should not be considered a checking service. If any clarification is required, please contact the relevant FAM for more information.

If you have any questions regarding this response, please do not hesitate to contact the relevant Fisheries Assessment Manager for this fishery.

Marine Stewardship Council

cc: Accreditation Services International

CAB responses:

MSC comments		CAB specific response
Ref.	Details	
27227	<p>p. 13, 68-70: The vessel "Tai An" is owned by client group member San Arawa, and is a surimero. The implication is that this vessel will be producing surimi on-board.</p> <p>Table 15 describes the risks and mitigation for mixing and substitution for H&G and filleting of hoki. But table 15 does not describe how this vessel will address the substitution and mislabelling risks associated with surimi production, which is important given hake is a main secondary species. The mixing risks and the associated mitigation between certified (hoki) and noncertified (retained species) are likely to be different on-board "Tai An".</p>	<p>It was incorporated the mixing risks and the associated mitigation for surimi production in the Table 15.</p>
27231	<p>p. 67: Setting the eligibility date as date of certification may result in a gap during which hoki cannot be kept as under-assessment fish.</p> <p>The current certificate has been extended to 21 October, and the fishery may not be recertified by this date. As a result, hoki caught after 21 October and before the fishery is recertified cannot be stored by the client group as under-assessment (as per section 5.6 in the CoC Standard v4.0).</p>	<p>The CAB agrees with this comment. At the moment, timeline of assessment process considers the date of expiry of current certificate. If there is a delay that affects the eligibility date, the CAB will take the actions according the FCRv2.0 and CoC Standard v4.0.</p>
27234	<p>p.40: The following sentence should be revised, as it is currently mislanding: "Parte Final de Pesca clearly identifies the hoki eligible to be certified as MSC. This document supports the origin of fish stating if the fish belongs to UoA".</p> <p>Only product from the UoC (i.e. client group vessels in table 1) is eligible to be sold as MSC.</p>	<p>The sentence was modified in order to comply that "only product from the UoC is eligible to be sold as MSC".</p>

Appendix 4. Surveillance Frequency

The surveillance level has been determined according to MSC FCRv2.0, considering, among other, these criteria: assessment tree used, if conditions were raised on outcome PIs, number of conditions, principle level scores, client and stakeholder input, fishery reports, government documents, stock assessment reports and/or other relevant reports; information appropriate to determinate Principles 1 and 2 requirements, transparency of the management system, and UoA aspects.

Based on this analysis, the assessment team has determined that a Surveillance Level 6 (Default Surveillance) is appropriate, and surveillance audit shall be undertaken annually.

Table 4.1. Surveillance level rationale

Year	Surveillance activity	Number of auditors	Rationale
Year 1 to 3 (2018 to 2020)	On-site audit	1 or 2 auditors on-site, with remote support from 1 auditor if needed.	From client action plan it can be deduced that information needed to verify progress towards conditions 1.2.2 and 2.2.1 can be provided every year. Considering that milestones indicate that most conditions will be closed out in year 3, the CAB proposes to have an on-site audit with 1 or 2 auditors on-site with remote support – this is to ensure that all information is collected and because the information can be provided remotely.
Year 4 (2021)	On-site surveillance audit & Re-certification	2 auditors on-site with remote support from 1 auditor if needed.	For reasons described above and the complexity of a re-certification process.

Table 4.2. Timing of surveillance audit

Year	Anniversary date of certificate	Proposed date of surveillance audit	Rationale
Year 1 to 4	One year after re-certification	To be confirmed	Reasons described above, depending on the on-going development of the fishery during the certification period.

Table 4.3. Fishery surveillance program

Surveillance Level	Year 1	Year 2	Year 3	Year 4
Level 6	On-site surveillance audit	On-site surveillance audit	On-site surveillance audit	On-site surveillance audit & re-certification site visit

Appendix 5. Objections Process

(REQUIRED FOR THE PCR IN ASSESSMENTS WHERE AN OBJECTION WAS RAISED AND ACCEPTED BY AN INDEPENDENT ADJUDICATOR)

The report shall include all written decisions arising from an objection.

(Reference: FCR 7.19.1)



ORGANIZACIÓN INTERNACIONAL AGROPECUARIA (OIA)

Av. Santa Fe 830 - Acassuso (B1641ABN) · Buenos Aires · Argentina

Tel/Fax: (+54) 11 4793-4340 · oia@oia.com.ar · www.oia.com.ar