



Surveillance Report

**Assessment against MSC Principles and Criteria for:
ARGENTINE ANCHOVY FISHERY
(*Engraulis anchoita*)**

Certificate code: F-OIA-P-0200

November 13rd, 2013

AUTHORS: *Dr. Leszek Prenski (Team Leader), Lic. Raúl Bridi and Eng. Carolina Medina Foucher (OIA Technical)*

CLIENTS: *Centauro S.A., Delicias S.A., Alleloccic S.A./Nuevo Viento S.R.L. and Otesa S.A.*



SECOND SURVEILLANCE VISIT

Assessment against MSC Principles and Criteria for

ARGENTINE ANCHOVY FISHERY

(*Engraulis anchoita*)

November 13rd, 2013

CLIENTS:

Delicias S.A.

Contact: Martin Di Scala

Address: San Salvador 3235, (7600) Mar del Plata, Prov. Buenos Aires. Argentina

Tel: (+54 0223) 489 2814

Centauro S.A.

Contact: Ricardo José Angeleri

Address: Diagonal Garibaldi 4825, (7600) Mar del Plata, Prov. Buenos Aires. Argentina

Tel: (+54 0223) 480 6979

Alleloccic S.A. / Nuevo Viento S.R.L.

Contact: Pablo Esteban Ciccolella

Address: Posada 347, (7600) Mar del Plata, Prov. Buenos Aires. Argentina

Tel: (+54 0223) 480 8565

Otesa S.A.

Contact: Héctor Alejandro Sais

Address: Azcuénaga 2154, (7600) Mar del Plata, Prov. Buenos Aires. Argentina

Tel: (+54 0223) 493 5606

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

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1. General background about the fishery.

The Argentinean Bonaerense anchovy fishery was certified according MSC Principles and Criteria in August 2011 after an assessment process that commenced in December 2010.

Notice of the first annual surveillance scheduled for August 2012 was first announced on the MSC website on 3rd July 2012. Direct mails notification was also sent to stakeholders that had previously been identified for this fishery. Onsite activities were ended in August 17th, 2012 with stakeholders' meetings attendees in Mar del Plata and Buenos Aires.

The certification was subject to satisfactory implementation of 7 conditions by client group. The client group's response to the conditions of certification was set out in an Action Plan, which was appended to the Final Report. Action on this was examined as part of the first surveillance completed in August 2012 and this report achieved until 16th October 2013.

The Client Group was met in Mar del Plata, where information on the surveillance process as well as the timescales and milestones of Action Plan were presented. DELICIAS S.A., CENTAURO S.A., ALLELOCCIC S.A., NUEVO VIENTO S.R.L and OTESA S.A. have supported and collaborated in the accomplishing of conditions.

The MSC requires certified fisheries to be audited periodically against MSC standard to ensure that the certification is in place and the fishery is complying with the conditional requirements imposed by the Assessment Team in the full-assessment process.

Table 1. Summary of fishery and vessels certified

| | | | |
|--------------------------------|---|---------------|---------------------|
| Species | Argentine anchovy (<i>Engraulis anchoita</i>) | | |
| Location | Southwest Atlantic (Argentine and Uruguayan seas) | | |
| FAO statistical area | 41 | | |
| Fishing method | Semi-pelagic Mid-water trawl | | |
| Vessels | 01401 | RAFFAELA | Delicias S.A. |
| | 0145 | ATREVIDO | Centauro S.A. |
| | 0142 | ARGENTINO | Centauro S.A. |
| | 0177 | DESAFÍO | Centauro S.A. |
| | 0482 | CENTAURO 2000 | Centauro S.A. |
| | 01741 | ALDEBARAN | Alleloccic S.A. |
| | 01449 | NUEVO VIENTO | Nuevo Viento S.R.L. |
| | 01566 | CALLEJA | Otesa S.A. |
| Number of fishery | 1 | | |
| Actual eligibility date | November 5 th , 2010 | | |

The fishery has completed the second annual surveillance since certification. The surveillance team finds that the Argentine anchovy fishery still complies with the MSC standard and therefore recommends maintaining the MSC Fishing Sustainable Certificate.

2. Assessment process.

2.1 Determination of the surveillance level

Table 2. Criteria to determine surveillance score (Table C3, 27.22.1.1 – MSC CR v1.2)

| Criteria | Surveillance Score |
|----------------------------------|--------------------|
| 1. Default Assessment Tree used? | 0 |
| 2. Number of conditions | 2 |
| 3. Principles Level Scores | 0 |
| 4. Conditions on outcomes Pls? | 2 |
| Total scoring: | 4 |

2.2 Date(s) of the surveillance visit

Table 3. Surveillance level and summary of certification

| | |
|--|---|
| Certification Date | May 22 th , 2012 |
| Expiry date of certification | May 21 th , 2017 |
| Surveillance score (from Table C4, MSC CR v1.2 – 27.22.1.3) | 4 (Normal Surveillance) |
| Surveillance stage (from Table C4, MSC CR v1.2 – 27.22.1.3) | Year 2 – On site visit surveillance audit |
| On –site visit activities | October 1 st to 2 nd , 2013 in Mar del Plata October 16 th , 2013, in Mar del Plata |
| Reference of the MSC requirements used in the surveillance | MSC Certification Requirements version 1.3, 14 th January, 2013 |

2.3 Surveillance team

The surveillance team selected with knowledge of stock assessment, ecosystem impact and management framework applicable to Argentine hoki fishery, has been part in the certification process.

Dr. L. B. Prenski, Team Leader, Principles 1 and 2 expert

Dr. Prenski is a fishery scientist, with over thirty years of experience in policy and management fishery issues. Among many others, he has been a Technical Director of CAPECA (Argentinean Freezers Fishery Association), Demersal and Inland Fisheries Research Area Coordinator, Research at INIDEP (National Fishery Research and Development Institute, Argentina) and actively participates at ICSEAF (International Commission for the Southern Atlantic Fishery, Poland).

He has been a member of the Animal Health and Food Sanitary Service (SENASA), administration council in representation of the fishery sector, external adviser in Foreign Office of Commission of Joint Marine Front between Argentina and Uruguay, and technical coordinator on CCAMLR (Commission for the Conservation of the Marine Living Resources). Actually, he is Assistant in FAO Argentina.

Dr. Prenski has served as team member in Argentine anchovy (*Engraulis anchoita*) (2011), Patagonian scallop (*Zygochlamys patagonica*) and Argentine hoki (*Macruronus magellanicus*) (2012) certification processes against Principles and Criteria of the MSC.

Lic. R. J. Bridi, Principle 3 expert

Lic. Bridi holds the position of Natural Resources General Director of Río Negro Province, Argentina. He has almost 20 years experience and the practical knowledge on both fisheries policy and fisheries management and enforcement under Argentinean legislation. He has integrated the main Argentine

fishing authority – Federal Fishing Council (CFP) – and has worked as Fisheries Director of Río Negro Province for eight years between 1992 and 1999, as Secretariat of Fishing, and lead assessor in Argentinean Fishing and Aquaculture National Sub secretariat and Río Negro Province Congress.

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

Lic. Bridi has previously been involved in MSC assessment for Patagonian scallop fishery (2006 and 2012), Argentine anchovy fishery (2011), Argentine hoki fishery (2012) and Argentine Patagonian toothfish (actually) certification assessment.

2.3.1 OIA technical

Eng. C. Medina Foucher, OIA Technical and MSC's standards expert

Eng. Medina Foucher is Aquaculture Engineer and is in charge of OIA Sustainable Systems' Department since 2011. She is responsible for the technical implementation of all certification standards for fisheries products in Argentina and being qualified to perform pre-assessment, certification process and CoC audits. She participated in certification process and annual surveillances audits against MSC Principles and Criteria as theirs respective chain of custody of the following Argentinean fisheries: Argentine anchovy (*Engraulis anchoita*), Patagonian scallop (*Zygochlamys patagonica*), Argentine hoki (*Macruronus magellanicus*) and Argentine Patagonian toothfish (*Dissostichus eleginoides*).

2.4 Description of the audit process

The purpose of the surveillance audit was to review any changes in the management of the fishery, including stock assessment, regulations and changes in key management or scientific staff; and to evaluate the progress of the fishery against conditions raised during the full-assessment process. The results of the team's findings, including conclusions, are set out below.

This report represents the second annual surveillance, after OIA has notified stakeholders and client group where and when the Annual Surveillance Visit would take place. All stakeholders who had expressed interest and contributed to the Full-Assessment process were directly contacted by email and later by telephone. The intention to conduct on-site visit was posted on the MSC and OIA websites.

The surveillance audit was carried out following the Marine Stewardship Council (MSC) Certification Requirements version 1.3, January 2013. It was documented progress of conditions as "on target", "ahead of target" or "behind target", as well as its rationale for such a judgement. If progress against the measurable outcomes, expected results or milestones specified when setting the condition is judged to be "behind target", it will specify the remedial action, and any revised milestone, that are required to bring process on track at the next surveillance audit to achieve the original condition by the original deadline.

The Surveillance Team reviewed the fishery status analyzing whether the fishery was complied with the required conditions set forth in the original certification report, and whether current scenarios compromises the performance of the fishery in regard to the MSC Standard.

The annual surveillance audit process was comprised of the following parts:

- **Provision of information:** The Audit Program, the Conditions established by the Surveillance Team for Certification and the Action Plan elaborated by the Client Group and its experts, were provided to all stakeholders, including the Client Group, fisheries management authorities and scientist previously to the meetings.

- Meetings:** Individual meetings started with the Client Group and followed with scientists and NGOs, amongst other stakeholders; wherein an exchange of relevant information and documents regarding the first surveillance audit took place. All interesting parties were invited to consultation with assessment team in Mar del Plata, on October 1st and 2nd, 2013. The meetings were conducted by the Surveillance Team and focused on the ongoing activities associated with the certification conditions established on the fishery as well as the eventual changes occurred after the achievement of MSC Sustainable Fishing Certification. In addition, stakeholders provided with responses to questions regarding the following issues:
 - Any potential or actual changes in the management systems.
 - Any changes or additions/deletions to regulations.
 - Any changes in the science, management and industry staff to evaluate impact of the management of the fishery.
 - Any potential changes in the scientific base of information, including stock assessments.
- Documentation:** Relevant documents in regard to the progress of the Action Plan add related issues were provided to Assessment Team by Client Group and stakeholders prior and during the meetings. After these, follow up emails were sent to stakeholders to request additional information. All relevant documents analyzed by Assessment Team were listed in section 6. "REFERENCES".

The Surveillance Audit ended on October 16th, 2013, within stakeholders' consultation and additional information received. For more information, you can find meetings from Appendix section. The information received allowed the Surveillance Team to assess the advances in the implementation of the Action Plan made by the Client in order to comply with the conditions established for certification.

Table 4. Outline of surveillance activities

| | |
|--|---|
| Stakeholders notification: surveillance visit scheduled | July 3 rd , 2013 |
| Surveillance year 2: visit on-site | Mar del Plata, October 1 st and 2 nd , 2013 |
| MEETING ATTENDEES AND ORGANIZATIONS | |
| <i>Day 1: October 1st, 2013</i> | |
| <i>Opening surveillance meeting with Client Group</i> | |
| Name | Affiliation |
| <i>Eng. Rocío González</i> | <i>Delicias S.A.</i> |
| <i>Méd. Vet. Laura Martínez Souto</i> | <i>Centauro S.A.</i> |
| <i>Mr. Martin Di Scala</i> | <i>Delicias S.A.</i> |
| <i>Mrs. Marisol Di Scala</i> | <i>Delicias S.A.</i> |
| <i>Mrs. Alicia Abren</i> | <i>Nuevo Viento S.R.L / Alleloccic S.A.</i> |
| <i>Individual meeting</i> | |
| Name | Affiliation |
| <i>Dr. Diego Rodríguez</i> | <i>UNMdP - CONICET</i> |
| <i>Lic. Agustina Mandiola</i> | <i>IIMyC (UNMdP – CONICET)</i> |
| <i>Day 2: October 2nd, 2013</i> | |
| <i>Group meeting</i> | |
| Name | Affiliation |
| <i>Dr. Marcelo Pájaro</i> | <i>Chief of Pelagic Fisheries and Environment Program, INIDEP</i> |
| <i>Lic. Gabriel Blanco</i> | <i>Chief of Observer On Board of Commercial Vessel and Sampling Program, INIDEP</i> |
| <i>Lic. Jorae Colonello</i> | <i>Chondrichthvans Fisheries Program. INIDEP</i> |

| | |
|---|---|
| <i>Lic. Natalia Hozbor</i> | <i>Chondrichthyans Fisheries Program, INIDEP</i> |
| <i>Lic. José Luis Flaminio</i> | <i>Research Member of Observer On Board Program, INIDEP</i> |
| <i>Individual meeting</i> | |
| Name | Affiliation |
| <i>Lic. Guillermo Cañete</i> | <i>Fundación Vida Silvestre Argentina</i> |
| <i>Lic. Verónica García</i> | <i>Fundación Vida Silvestre Argentina</i> |
| <i>Individual meeting</i> | |
| Name | Affiliation |
| <i>Mrs. Alejandra Cornejo</i> | <i>CEDEPESCA</i> |
| <i>Day 3: October 16th, 2013</i> | |
| <i>Individual meeting</i> | |
| Name | Affiliation |
| <i>Dr. Juan Pablo Seco Pon</i> | <i>IIMyC (UNMdP – CONICET)</i> |
| <i>Dra. Rocío Mariano y Jelich</i> | <i>IIMyC (UNMdP – CONICET)</i> |

2.4.1 Scope and history of assessment

The full-assessment process followed the MSC Fisheries Certification Methodology (FCM) v.6.1 and the Risk Based Framework on the Outcome Indicators for retained, by-catch, habitat and ecosystem components, while the MSC default narrative and metric, including the Scoring Guideposts (SGs), were applied to the rest of the Performance Indicators (PIs) (MSC Fisheries Assessment Methodology (FAM) v.2.1).

The fishery was certified as an MSC Sustainable Fishery in August 2011 and this is the second surveillance audit after certification, conducted under the MSC Certification Requirements (CR) v.1.3 and MSC Fisheries Standard v.1.1.

2.4.2 A statement on the fishery's position in relation to the scope criteria

Tasks to comply with the conditions (established at certification and accepted by the Client through its Action Plan) are still in progress. No re-scoring of the performance indicators where conditions were established was required.

Table 5. Summary of Performance Indicators with conditions

| | <i>1st Annual Surveillance</i> | <i>2nd Annual Surveillance</i> |
|-------------------------------|---|---|
| <i>Performance Indicators</i> | <i>Status of conditions</i> | <i>Status of conditions</i> |
| 1.2.1 | <i>Ahead of target</i> | <i>On target</i> |
| 1.2.2 | <i>Ahead of target</i> | <i>On target</i> |
| 1.2.4 | <i>On target</i> | <i>Behind target</i> |
| 2.2.3 | <i>On target</i> | <i>On target</i> |
| 2.3.1 | <i>On target</i> | <i>On target</i> |
| 2.3.2 | <i>On target</i> | <i>On target</i> |
| 2.3.3 | <i>On target</i> | <i>On target</i> |

3. Results, conclusions and recommendations.

3.1 Discussion of findings and statement confirming the status of the certification

a) Principle 1 – Stock status and harvest strategy

Summary of the INIDEP Technical Report N 15/2013

As known, the biological reference points (BRPs) are conventional values on the status of an exploited resource. These are obviously associated with different fishing mortality rates, where it may be required to define the desirable situations (Objective BRPs) or others needed to be avoided (Limit BRPs or Thresholds).

The Assessment Team involved in the Bonaerense anchovy (*Engraulis anchoita*) certification process had established conditions requiring capture levels to be based explicitly on both limit and objective biological reference points (Prenski *et al.*, 2011). Previous to certification, the “Annual Biologically Acceptable Catch (BAC)” for the Bonaerense anchovy fishery had been exclusively established in terms of a threshold point; determined as the highest rate of exploitation which, if maintained in the long term, would not cause more than 10% of risk of reducing the spawners’ biomass to less than the Limit BRP established as 33% of the highest parental historical biomass.

The Assessment Team involved in the Bonaerense anchovy certification had considered that the strategy in place was not responding directly to the state of the current spawning stock. Additionally, they had agreed that an implicit objective BRP (resulting from applying the same exploitation rate consistently over the years) was implicitly included; but which would have been valid always the demand will not be increased by new market conditions.

After certification, there have been defined formal biological reference points based on the spawning biomass of age groups 2 and older (BR2+) identified through analysis of reproductive biomass (BR) per recruit (R): *i.e.* BR/R (Goodyear, 1993 *fide* Hansen *et al.*, 2013). To achieve these reference points, the INIDEP research group considered historical (1990-2012) averages of a special factor, named $\gamma(M)_t$; which incorporates seasonal catch pulses of less than a year and natural mortalities associated (Mertz and Myers, 1996 *fide* Hansen *et al.*, 2013). In the report 15/2013, it has remained the criterion described by Hansen *et al.* (2012), consisting of define formal benchmarks considering the spawning biomass of the ages 2 and higher.

During 2012, the Bonaerense anchovy fishery season has had an unusual seasonal pattern. Anchovy landings in 2012 reached about 14763 tons for the Bonaerense Stock, the value is low the lowest of last decade. The fishery did not begin until July, with very modest catch records, to establish itself as relatively high only in August and peaking in the last quarter year. For this reason the value of the parameter $\gamma[M]_{2012}$ was 0.799 seasonality, within the range between 0.735 and 0.845 observed during the beginning of the period in 1990, in which estimates averaged 0.805 and its standard deviation was 0.028..

Most fishing activity was developed in the late winter and spring, for ice chilled vessel fleets and high coastal fleet operated from the port of Mar del Plata (Garciaarena *et al.*, 2013). The information provided by the companies about the low capture was that the fleet for technical and commercials reason in spring, took the time to catch hake to complete their quota.

The statistical model showed a good fit to the total catch and catch proportions per age, particularly for the most exploited groups which ranges from 2 to 4 years.

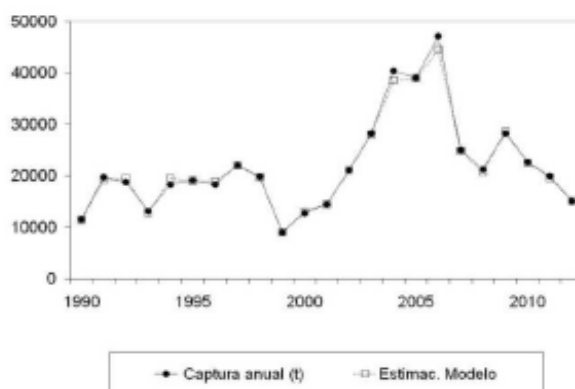


Fig. 1. Annual catch and model estimations

The adjustment to the direct assessment of both the total biomass obtained by acoustic survey and the total biomass derived from the spawners' egg production method is not so tight. The latest direct assessments on the abundance of the Bonaerense anchovy stock (Acoustic and/or daily egg production methods) were obtained from the spring campaign in 2008.

The current results, having implemented a different model, suggest a total biomass reaching values between 0.9 and 4.8 million tons in mid-October, depending on the relevant year, with an average of 2.1 million tons. As well, the fraction of mature individuals for the different breeding seasons was estimated between 0.8 and 3.5 million tons, averaging 1.67 million tons (Hansen *et al.*, 2013).

As stated in the methodology, the future evolution of the population to various hypothetical values of fishing mortality was simulated considering, among other parameters, the central value and standard deviation of the total biomass at the beginning of last year fishing. The estimated model this time were: $\hat{B}_{2012} = 1.618.700$ ton and with a standard deviation $SB2012 = 492,290$ (C.V. = 30.4%). The likelihood profiles corresponding to this amount and other values estimated by the ADMB and their approximations Normal and Markoff chains generated, noting in each case that these different ways of plotting the reliability of estimates did not show large discrepancies among themselves. Neither there were trends in the history of estimations evaluated and discarding first 500, the average of the outputs 501-1500 had less than 1% difference with corresponding to the interval 1501-2500.

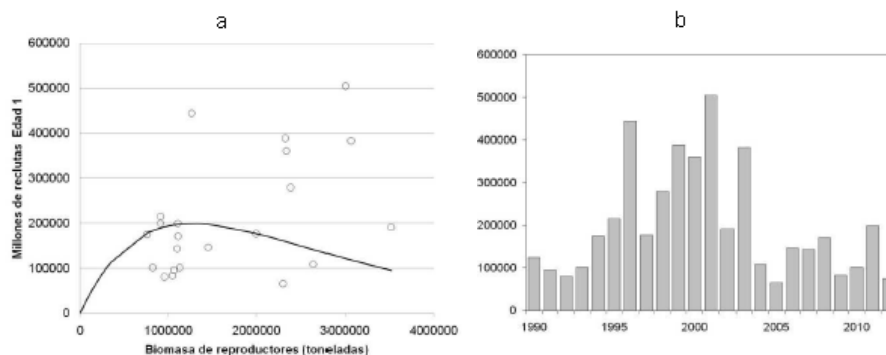


Fig. 2. Dispersion of annual recruitment.

The above figure a shows the wide dispersion of annual recruitments around the theoretical curve fitting, while the next figure b shows the sequence thereof during the period 1990-2012, highlighting that corresponding to recent years are among the lowest in the series. The average of their

logarithms in the final five years ($= 1 \ln N 11,6682$) and its standard deviation ($\ln N1 = \sigma 0,4356$) values were also incorporated into the projections.

The Assessment Team for the certification of this fishery had recommended, in addition to the explicit target and limit reference points, extraction control rules, risk analysis and BACs to ensure that the rate of exploitation would be reduced should values close to the Limit Reference Points be reached or when there were periods of low productivity (Prenski *et al.*, 2011). Before the certification, the operating strategy had been based on recommending "Annual Biologically Acceptable Catch" (CBA) based purely in the forecast long-term abundance of spawners in relation to a limit set of 33% of the largest historical parental biomass. After certification, the INIDEP research group has determined a limit reference point BR40 and a target reference point BR66, as mentioned above. A harvest control rule similar to the one applied in the Australian fisheries (SESSF, 2010), which should be agreed with fishery managers and stakeholders, is under consideration. These rules have been proposed during the meetings between fishery clients, INIDEP and stakeholders.

$$F_{obj} = 0, \text{ if current BR} \leq \text{BR40}$$

$$F_{obj} = F66, \text{ if current BR} \geq \text{BR66}$$

$$F_{obj} = F66 \times [(\text{Current BR} / \text{BR40}) - 1], \text{ if current BR66} \geq \text{BR} \geq \text{BR40}$$

For further analysis, the INIDEP Technical Report N 14/2012 can be consulted.

The INIDEP research group concluded that:

- (a) The F_{safe} yield predicted in the medium term is 160,000 t
- (b) The F_{safe} outweighs by around four times the highest historical total (including Uruguay) annual landings over the resource. Additionally, Uruguayan fleets are not currently targeting anchovy.
- (c) It should be encouraged a gradual and controlled development of exploitation levels below the potentiality of the resource (Berkes *et al.*, 2001, Caddy and Mahon, 1995; FAO, 1995 *vide* Hansen *et al.*, 2013).

For the reasons exposed, the INIDEP suggests, as did since 1994, the maximum biological acceptable catch of anchovy in 120,000 t for the present year.

As a result of the analysis of BR/R, the spawning biomass of age groups 2 and older (age 2+) generated per each recruit at age 1, in the absence of fishing, was estimated in $[BR / R]_{F=0} = 6.000$ g. For different fishing mortality rates, the results were $[BR / R]_{F=66\%} = 0.99$ g and $[BR / R]_{F=40\%} = 4.13$ g.

Age 2 and older spawner biomass, assuming the reproductive biomass per recruit for F66 and the current average recruitment estimated by the statistical model from the last five years in 126,137,000 individuals, conducted to an Objective Reference Point $BR_{66} = 499,550$ t for this population. Under the same conditions of recruitment, the biomass corresponding to the limit reference point was calculated in 303,000 t. For October 2012, this value has been estimated from the statistical model as $[BR_{2+}] = 917,000$ t, *i.e.* almost triple the figure limit and almost double the target.

Extraction control rule, risk analysis and Biologically Acceptable Catch

In last year's report (Hansen *et al.*, 2013) and according to recommendations made by the external evaluation team related certification of this fishery (Prenski *et al.*, 2011) reposed a Control Rule Screenshots should be agreed with administrators and stakeholders in the fishery. Basically, the proposal was similar to the rule used in fisheries Australian (SESSF, 2010):

$$F_{Obj} = 0; \quad \text{if } BR \text{ actual} \leq BR40$$

$$F_{Obj} = F_{66}; \quad \text{if } BR_{actual} \geq BR_{66}$$

$$F_{Obj} = F_{66} * [(BR_{actual} / BR_{40}) - 1]; \quad \text{if } BR_{66} \geq BR_{actual} \geq BR_{40}$$

He punctuated further that the adoption of this F_{Obj} be justified only if the risk that Spawning Biomass (BR_{2+}) in the first year projected to fall below cutoff point BR_{40} was less than or equal to 10%. Otherwise, the highest rate is determined (F_{safe}) as not to cause this effect:

$$F_{final} = F_{Obj}; \quad \text{if } F_{Obj} \Rightarrow (\text{Risk } BR_{2+, y+1} < BR_{40}) \leq 0.10$$

$$F_{final} = F_{safe}; \quad \text{if } F_{Obj} \Rightarrow (\text{Risk } BR_{2+, y+1} < BR_{40}) > 0.10$$

Being biologically acceptable catch the resulting performance of this rate Final action on the stock earlier this year which relates the recommendation, that is: $BAC_{y+1} = Y(F_{final}; B_{y+1})$ (CBA Captura Biologicamente Aceptable, BAC biologically acceptable catch)

According to this analysis, the spawning stock biomass in October 2012 (1.09 million t) would be above the target level $BR_{66} = 499,550$ t. Therefore accept the proposed rule indicate $F_{obj} = F_{66} = 0.99$. This rate, according to projections incorporated uncertainty (on the current biomass, the future recruitment and seasonality of exploitation) that cause either over 10% of cases reproductive biomass in 2013 falls below BR_{40} limit level = 303,000 t. Predicted capture would be about 299,000 t for the year, having a risk associated approximately 9%.

Of course, before any significant increase in the exploitation with respect to the holding current levels of stock are forecast reductions in the first or two years, and a subsequent stabilization in the event of keeping the average recruitment.

BAC crude estimates for the first year of the projection made in this time were significantly higher than those obtained previously (Hansen *et al.*, 2013). It can be shown that the difference was due primarily to a different recruitment estimate for 2011, much higher now than in the above analysis. The optimistic capture value for 2013 is due primarily intended for performance at age 3, recruited precisely in 2011.

Since then, estimates related to the younger age groups are more reliable. The older cohorts can be followed, especially if factors of exploitation of the early ages are so low. In addition, the reliability of the current estimates is compromised by the lack of direct index of abundance after the year 2008.

In any case, consistently applying the estimate of $F_{66} = 0.99$ yields tend to stabilize around 200,000 tons in the medium and long term, which is a much higher magnitude than the higher historical annual resource landings. Furthermore, it is prudent that fisheries operated below its potential, they can develop only in a gradual and controlled manner (Berkes *et al.*, 2001, Caddy and Mahon, 1995; FAO, 1995). This leads to the recommendation that it should maintain the fisheries below the amount of 120,000 t established since 1994 as the maximum annual catch of Bonaerense anchovy.

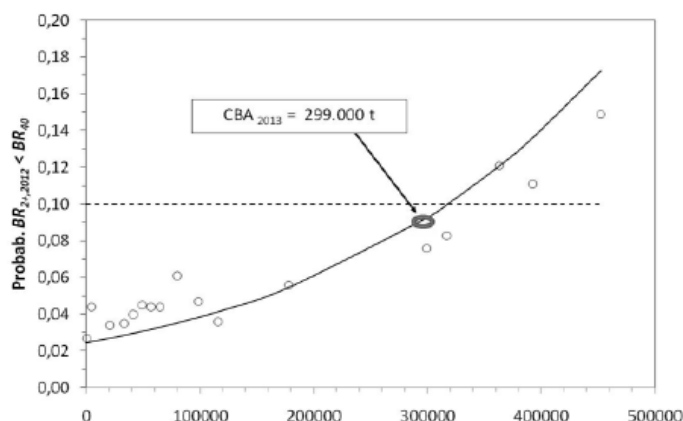


Fig. 3. BAC 2013 \square Projected Average – Adjusted. Risk curve rising rates depending on future fishing mortality, which would determine the catch in 2013 indicated on the abscissa. The risk is the probability that Spawning Biomass in the year (BR_{2+} , 2013) is less than limit value BR_{40} . The yield is indicated corresponding to the F66, the risk lies below 10%, meeting the suggested condition to set the Annual BAC.

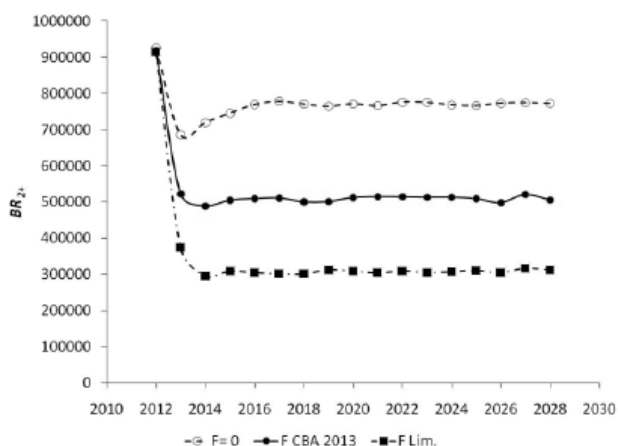


Fig. 4. Simulated evolution of annual average spawning biomass BR_{2+} different rates based on constant fishing mortality rates: the absence of fishing ($F = 0$), the target level (F66) that yield the CBA 2013, and the limit level (F40).

Discuss the application of different models taking into account the ecological role of the stock as a low trophic level species

In reference to the development of new models is a condition that is not met, it can be considering two situations:

1) Referring to the absence of research surveys from 2008 onwards, although the positive part is that this situation was modified and in the late October 2013 it was realized. The non-realized surveys has the important part due that there are not information con the eggs and larvae concentration and no figures of its yield as from the adults due of the lack on the acoustic data which provide the acoustic biomass assessment. Both evaluation has the strength to show the anchovy situation related to the environmental situation and its impact in the ecosystem.

2) There are several studies that point to a comprehensive understanding of the structure of the anchovy and its trophic relationship.

The anchovy working group reports that it has begun work on trophic interactions between this species and other fisheries. In principle, there is carried out joint with researchers in charge of studying the nutritional aspects of the species Hake (*Merluccius hubbsi*).

Inf. Invest. INIDEP N° 57/2013. "Alimentación de *Engraulis anchoita* en la plataforma bonaerense y su relación con el frente del Río de la Plata", by Padovani et al., 2013.

The aim of the work is research on trophic activity coincides with previous studies in the coastal zone. Also agrees with the pattern described for anchovy trophic Buenos Aires, which indicates poor reproductive power in coastal area in contrast with high feeding activity trophic verified platform areas.

Inf. Invest. INIDEP N° 10/2013. "Análisis de las áreas de desove y crianza de Anchoita (*Engraulis anchoita*) utilizando modelos lineales generalizados", by Pájaro, 2013.

The aim of this paper is to analyze, in the period 1993-2008, the relationship between the abundance of anchovy eggs and larvae with certain physical variables, by using generalized linear models. This will seek to detect, using this methodology, which variables involved in spawning and rearing areas where there are higher concentrations of such early stages of development.

INIDEP N° 47/2013. "Edad y crecimiento diario de juveniles de (*Engraulis anchoita*) provenientes del Golfo San Matías", by Brown et al., 2013.

The work based on growth studies expresses the possibility of an independent population in Golfo San Matías

REV. INVEST. DESARR. PESQ. N° 21. "Comparación estacional de la condición nutricional de larvas de anchoita en la estación permanente de estudios ambientales (EPEA). Periodo 2008-2011", by Diaz et al., 2012.

A study on the seasonal variation of *Engraulis anchoita* larvae nutritional condition was performed. The material employed was collected at the Estación Permanente de Estudios Ambientales (EPEA) during the 2008-2011 period. In order to determine the morphological differences among individuals, the six morphometric variables measured for each larvae were analyzed using the Principal Component Analysis (PCA). Water temperature and salinity and density of the different ichthyoplankton components were also registered. The PCA revealed a larger larvae body width in Spring, which would indicate an improvement of nutritional condition during that season.

Mean abundance of eggs and larvae, higher in spring, was significantly lower than that recorded at the EPEA in previous studies. The moderate larvae density observed during the study period was related to a high availability of potential preys that would reduce intra-specific competition for food and explain the better larval condition at the EPEA

b) Principle 2 – Ecosystem impacts from fishing

Bonaerense anchovy and by-catch discards registered by on board observers in commercial fishing trips during 2012

The Bonaerense anchovy stock has been the sustain of the Mar del Plata "rada" fleet for decades; although since several years ago the main catches come from the ice-chilling fleets operating at sea and offshore from Mar del Plata port. These vessels operate trawl mid-water nets, targeting schools very close to the bottom; additionally catching other pelagic fish such as mackerel (*Scomper japonicus*) or "surel" (*Trachurus lathami*) as well as some demersal and benthic species.

Studies on landings of anchovy are conducted annually to estimate some population parameters, including average size and weight per age, and growth and total mortality rate (Garciarena, 2003 et seq.; Garciarena et al., 2011, 2012 and 2013; Garciarena and Hansen, 2007 et seq.). Occasionally, it has been analyzed the anchovy discarded by the commercial fleet (Garciarena, 2002, 2011, 2012, 2013). In the current studies, in addition to the capture and discard of anchovy; the accompanying fauna, both discarded and landed for their economic value, are considered as well. Details of the methodology and literature currently applied can be seen in Garciarena (2012 and 2013): INIDEP

Official Technical Report 05/2013. "Bonaerense anchovy catch and by-catch discards recorded by observers in commercial vessels during 2012".

During 2012, biological samples analyzed were obtained between August and November, to 8 of landing of long range ice chilled fleet, nine coastal and one harbor boat harbor. The same accounted for 13.3% of the catches of Bonaerence anchovy made during 2012.

| Captura media | Altura | Costero | Rada |
|-----------------|--------|---------|------|
| Por embarcación | 495,7 | 553,2 | 1,2 |
| Por viaje | 65,2 | 40,5 | 1,1 |

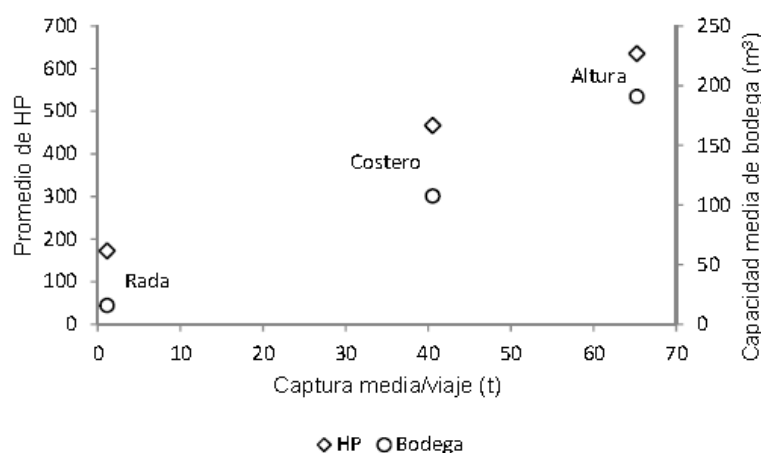


Fig. 5. Anchovy average catches (tonnes) per boat per trip, year 2012.

Average anchovy catch per trip (in tons), depending on the Machine average power (HP) and the average capacity of ship's hold each stratum fleet.

- The examined samples of the landings, of the Bonaerense stock, were integrated sexually mature individuals, mostly between 140 size classes and 175 mm and age groups 2 and 3.
- Landings were composed mainly of adult individuals (≥ 100 mm). The average length was 152.3 mm, while size classes more frequent (74.7%) were between 140 and 175 mm. Moreover, As seen in catches prevailed in groups age 2 and 3 (82.4%), resulting in the proportion of individuals of four years less than in other seasons (Garciaarena and Hansen, 2007 et seq.; Garciaarena et al., 2011 and 2012).
- Total or partial discard when a significant fraction of the catch from a haul was made up of species without commercial interest (usually "surel" or small mackerel).

In a few trips, some species normally discarded were retained, due to having been mixed with anchovy without previous segregation. These were the cases of butterfish and "surel" recorded. It is important to note that on board observers must perform multiple tasks. Besides recording the details of each haul, they estimate catch and discard levels, perform biological samples and census of birds, etc. The priority assigned to each task varies according to the information required to the observer. From the trips analyzed, it was privileged to record catches and discards of anchovy as well as size samples and in some hauls were a bird, mammals or chondrichthyes census was conducted. Registering accompanying fauna is included in the on board observers' tasks during the fishing trips, but due the great effort and magnitude of the task requested, they have serious problems in documenting the full impact according to the representative of the necessary information. It is

needed to an efficient recollection of data and to assist that collection with photo cameras or equipment incorporating data collection into digital form.

Observer program data of retained and by-catch species

Table 6. Catch and effort data by species. Fishing trip 169/12.

| Species | Catch (Kg) | By-catch (Kg) | % by-catch | Days | Hours | Sets |
|------------------------------------|------------------|---------------|------------|----------|-------------|-----------|
| <i>Loligo gahi</i> | 17 | 0 | 0 | 1 | 3.8 | 2 |
| <i>Squalus acanthias</i> | 0.2 | 0.2 | 100 | 1 | 1.4 | 1 |
| <i>Galeorhinus galeus</i> | 51 | 0 | 0 | 4 | 8.8 | 6 |
| <i>Mustelus schmitti</i> | 51 | 0 | 0 | 3 | 15.4 | 5 |
| <i>Squatina sp.</i> | 17 | 0 | 0 | 1 | 4.1 | 2 |
| <i>Rhinobatos horkelii</i> | 8.5 | 0 | 0 | 1 | 1.3 | 1 |
| <i>Discopyge tschudii</i> | 25.5 | 25.5 | 100 | 2 | 3.6 | 3 |
| <i>Callorhynchus callorhynchus</i> | 144.5 | 0 | 0 | 2 | 14.7 | 5 |
| <i>Engraulis anchoita</i> | 193,620 | 0 | 0 | 5 | 31.7 | 17 |
| <i>Acanthistius brasiliensis</i> | 153 | 0 | 0 | 2 | 13.1 | 4 |
| <i>Trachurus lathami</i> | 113.8 | 0 | 0 | 5 | 18.6 | 10 |
| <i>Pagrus pagrus</i> | 297.5 | 0 | 0 | 1 | 1.3 | 1 |
| <i>Cynoscion striatus</i> | 8.5 | 0 | 0 | 1 | 1.6 | 1 |
| <i>Cheilodactylus bergi</i> | 93.5 | 0 | 0 | 3 | 18.7 | 7 |
| <i>Pinguipes semifasciatus</i> | 68 | 0 | 0 | 1 | 8.2 | 2 |
| <i>Scomber japonicus</i> | 86,138.2 | 0 | 0 | 4 | 17.7 | 7 |
| <i>Xystreus rasile</i> | 8.5 | 0 | 0 | 1 | 1.6 | 1 |
| <i>Lagenorhynchus obscurus</i> | 100 | 100 | 100 | 1 | 1.2 | 1 |
| Total | 280,915.8 | 125.8 | 0 | 5 | 58.7 | 26 |

Table 7. Total catch data by fishing trip and area. Fishing trip 169/12.

| Area | Catch (Kg) | By-catch (Kg) | % by-catch | Days | Hours | Sets | Vessels |
|------|------------|---------------|------------|------|-------|------|---------|
| 3857 | 99,715 | 0 | 0 | 4 | 23.8 | 11 | 1 |
| 3858 | 58,905 | 0 | 0 | 2 | 5.7 | 4 | 1 |
| 3859 | 35,000 | 0 | 0 | 1 | 2.2 | 2 | 1 |

Table 8. Total catch and effort data by month. Fishing trip 169/12.

| Month | Catch (Kg) | Catch/Hour | Days | Hours | Sets |
|--------------|----------------|----------------|----------|-------------|----------|
| October | 114,905 | 10,738.3 | 2 | 10.7 | 18 |
| November | 78,715 | 3,748.3 | 3 | 21 | 8 |
| Total | 193,620 | 6,107.9 | 5 | 31.7 | 8 |

Table 9. Catch data by area-species-month. Fishing trip 169/12.

| Month | Area | Catch (Kg) | By-catch (Kg) | % by-catch | Days | Hours | Sets |
|-----------|--------------|----------------|-----------------|------------|----------|-------------|----------|
| October | 3857 | 21,000 | 7,500 | 0 | 1 | 2.8 | 2 |
| | 3858 | 58,905 | 10,334.2 | 0 | 2 | 5.7 | 4 |
| | 3859 | 35,000 | 15,909.1 | 0 | 1 | 2.2 | 2 |
| | Total | 114,905 | 10,738.8 | 0 | 2 | 10.7 | 8 |
| September | 3857 | 78,715 | 3,748.3 | 0 | 3 | 21 | 9 |
| | Total | 78,715 | 3,748.3 | 0 | 3 | 21 | 9 |

Table 10. Catch and effort data by species. Fishing trip 170/12.

| Species | Catch (Kg) | By-catch (Kg) | % by-catch | Days | Hours | Sets |
|---------------------------|------------|---------------|------------|------|-------|------|
| <i>Aequorea sp.</i> | 0.5 | 0.5 | 100 | 1 | 1.2 | 1 |
| <i>Pleoticus muelleri</i> | 0.2 | 0.2 | 100 | 1 | 3.1 | 1 |
| <i>Peltarion</i> | 7.5 | 7.5 | 100 | 2 | 20.3 | 6 |

| | | | | | | |
|------------------------------------|------------------|-----------------|------------|-----------|-------------|-----------|
| <i>Loligo gahi</i> | 44.5 | 44.5 | 100 | 3 | 22.1 | 8 |
| <i>Notorhynchus cepedianus</i> | 3 | 3 | 100 | 1 | 0.8 | 1 |
| <i>Squalus acanthias</i> | 16.5 | 16.5 | 100 | 4 | 6.8 | 6 |
| <i>Galeorhinus galeus</i> | 109 | 10 | 9.2 | 4 | 12.1 | 8 |
| <i>Mustelus schmitti</i> | 59.5 | 26.5 | 44.5 | 6 | 10.8 | 8 |
| <i>Squatina argentina</i> | 37 | 37 | 100 | 3 | 12.8 | 6 |
| <i>Dipturus chilensis</i> | 10 | 7 | 70 | 4 | 7.4 | 5 |
| <i>Psammobatis bergi</i> | 0.5 | 0.5 | 100 | 1 | 2.9 | 1 |
| <i>Sympterygia bonapartii</i> | 62.5 | 32.5 | 52 | 5 | 32.7 | 14 |
| <i>Atlantoraja castelnaui</i> | 2.5 | 2.5 | 100 | 1 | 1.6 | 1 |
| <i>Atlantoraja cyclophora</i> | 2 | 2 | 100 | 2 | 2.6 | 2 |
| <i>Discopyge tschudii</i> | 33 | 33 | 100 | 7 | 23.5 | 13 |
| <i>Callorhynchus callorhynchus</i> | 132 | 0 | 0 | 2 | 23.3 | 7 |
| <i>Engraulis anchoita</i> | 434,577 | 10,559.2 | 2.4 | 11 | 41.2 | 41 |
| <i>Merluccius hubbsi</i> | 17 | 17 | 100 | 1 | 11 | 3 |
| <i>Zenopsis conchifer</i> | 1 | 1 | 100 | 1 | 1.3 | 1 |
| <i>Prionotus nudigula</i> | 23 | 23 | 100 | 2 | 4.4 | 3 |
| <i>Acanthistius brasiliensis</i> | 338.5 | 206.5 | 61 | 6 | 37.8 | 17 |
| <i>Polyprion americanus</i> | 6.5 | 0.5 | 7.7 | 2 | 4 | 2 |
| <i>Dules auriga</i> | 13.7 | 13.7 | 100 | 2 | 23.3 | 7 |
| <i>Trachurus lathami</i> | 1,397 | 1,397 | 100 | 10 | 41.7 | 29 |
| <i>Brama brama</i> | 2 | 2 | 100 | 1 | 0.8 | 1 |
| <i>Pagrus pagrus</i> | 26 | 26 | 100 | 2 | 23.3 | 7 |
| <i>Cynoscion guatucupa</i> | 12.5 | 12.5 | 100 | 2 | 14.1 | 4 |
| <i>Mullus argentinus</i> | 128 | 29 | 22.7 | 2 | 23.3 | 7 |
| <i>Cheilodactylus bergi</i> | 282 | 282 | 100 | 3 | 27.2 | 11 |
| <i>Pinguipes semifasciatus</i> | 190 | 13.9 | 7.3 | 3 | 27.3 | 9 |
| <i>Pinguipes brasiliensis</i> | 0.5 | 0.5 | 100 | 1 | 0.4 | 1 |
| <i>Percophis brasiliensis</i> | 74 | 74 | 100 | 7 | 32.4 | 16 |
| <i>Scomber japonicus</i> | 135,010 | 830.4 | 0.6 | 6 | 29.7 | 18 |
| <i>Seriola lalandi</i> | 105 | 105 | 100 | 1 | 3.1 | 1 |
| <i>Stromateus brasiliensis</i> | 19 | 19 | 100 | 4 | 4.4 | 8 |
| <i>Xystreuris rasile</i> | 87.5 | 25.5 | 29.1 | 3 | 28.5 | 10 |
| <i>Paralichthys isosceles</i> | 11 | 11 | 100 | 2 | 2.9 | 2 |
| <i>Paralichthys patagonicus</i> | 4 | 4 | 100 | 1 | 2 | 2 |
| <i>Paralichthys orbignyanus</i> | 22.5 | 5.5 | 24.4 | 3 | 12.7 | 5 |
| <i>Genypterus blacodes</i> | 2 | 0 | 0 | 1 | 1.1 | 1 |
| <i>Spheniscus magellanicus</i> | 3 | 3 | 100 | 1 | 0.7 | 1 |
| <i>Arctocephalus australis</i> | 100 | 100 | 100 | 1 | 3.1 | 1 |
| Total | 572,972.9 | 13,984.4 | 2.4 | 11 | 41.7 | 48 |

Table 11. Total catch data by fishing trip and area. Fishing trip 170/12.

| Area | Catch (Kg) | By-catch (Kg) | % by-catch | Days | Hours | Sets | Vessels |
|------|------------|---------------|------------|------|-------|------|---------|
| 3857 | 110,682 | 0 | 0 | 3 | 17 | 12 | 1 |
| 3858 | 190,443 | 6,600 | 3.5 | 5 | 17.8 | 20 | 1 |
| 3859 | 133,452 | 3,959.2 | 3 | 3 | 6.5 | 9 | 1 |

Table 12. Total catch and effort data by month. Fishing trip 170/12.

| Month | Catch (Kg) | Catch/Hour | Days | Hours | Sets |
|--------------|----------------|---------------|-----------|-------------|----------|
| October | 317,625 | 19,019.5 | 7 | 16.7 | 21 |
| November | 116,952 | 4,773.6 | 4 | 24.5 | 1 |
| Total | 434,577 | 10,548 | 11 | 41.2 | 1 |

Table 13. Catch data by area-species-month. Fishing trip 170/12.

| Month | Area | Catch (Kg) | Catch/Hour | By-catch (Kg) | % by-catch | Days | Hours | Sets |
|-----------|--------------|----------------|-----------------|-----------------|------------|----------|-------------|-----------|
| October | 3857 | 45,870 | 8,821.2 | 0 | 0 | 1 | 5.2 | 3 |
| | 3858 | 138,303 | 27,660.6 | 6,600 | 4.8 | 3 | 5 | 9 |
| | 3859 | 133,452 | 20,531.1 | 3,959.2 | 3 | 3 | 6.5 | 9 |
| | Total | 317,625 | 19,019.5 | 10,559.2 | 3 | 7 | 16.7 | 21 |
| September | 3857 | 64,812 | 5,539.5 | 0 | 3 | 2 | 11.7 | 9 |
| | 3858 | 52,140 | 4,073.4 | 0 | 3 | 2 | 12.8 | 11 |
| | Total | 116,952 | 4,773.6 | 0 | 3 | 4 | 24.5 | 20 |

Background of by-catch and ETP species

During 2012, the ice chilled fleet faced a work stoppage for a little over 90 days. Many of the vessels that normally operate on the resource anchovy between the months of July to December directed their fishing trips to complete their respective shares of common hake which is not captured in the previous months.

Moreover, the 2012 anchovy harvest was much shorter than previous years. To comply with planned, attempted to board ships companies not participating in the certification, but could not become effective the shipment since ship owners argued lack of space on board to accommodate an observer, looking to land a crew hindered by issues union.

Despite these difficulties achieved three observers embark three vessels, one of which not carried out fishery operations and hence there was no input of information.

The data reported by the two remaining observers said it conducted 74 fishing operations, of which 14 were aimed at Mackerel in the statistical 40°60.1 and 40°60.3 quadrants .

By 2013, it is planned to cover with observers on 20 % of the catch, which involves the shipment of personnel for about 80 days of fishing. This has been calculated using the program OPTIMOX 2010. At the time of the meeting have been completed two fishing trips and other 2 are in progress.

Methodology has been implemented that observers take a sample of the final set of fishing and bring to INIDEP for analysis.

The anchovy working group reports that it has begun work on trophic interactions between this species and other fisheries. In principle, there is carried out joint with researchers in charge of studying the nutritional aspects of the species Hake (*Merluccius hubbsi*).

The mechanical work of the observers has been adapted to the needs of the research groups of Birds and Marine Mammals of the National University of Mar del Plata, who have trained themselves to observe the interaction of the fishery with these species. Consequently, routine work includes observations devote a day haul exclusively for birds and one for mammals. The information collected in accordance with the format established by the working groups of the National University of Mar del Plata, is referred to these working groups.

It has proved useful in incorporating the Procedural Manual Board Observer from a specific chapter and a photo ID Guide Marine Mammal and features. Training of observers for this fishery includes specific embodiment 2 courses and some individual training, issued by the Working Group Nacional University of Mar del Plata.

Within the analysis of the first results, we have determined the cause of interaction and in turn, to approximate the magnitude of the impact of it on the most vulnerable species. It has been determined that most interactions occur during hauling of fishing gear. So, in 2012, 10 recorded interactions with fishing gear, 3 events were observed mortality (one sea lion and 3 dolphins). There were no interactions with cables, propeller or discard.

In interactions were recorded 2 species of fur seal (known as 1 and 2 hairs) and 2 species of dolphins (common known as dark).

Seabird interactions

Interactions are reported between seabirds and fishing vessels with technical assistance of the Vertebrate Group (IIMyC, CONICET and UNMDP) during the months of September and October 2012. There were two trips and 18 sets with information on interactions with seabirds (out of a total of 74 sets made). In five of the 18 sets analyzed showed discard, mainly Chub mackerel (*Scomber japonicus*) and Horse mackerel (*Trachurus lathami*).

No mitigation measures were implemented to mitigate seabird by-catch in any of the sets. These surveys were focused on estimating the abundance of species of seabirds associated with fishing operations and quantify interactions during maneuvers draft, drag and hauling. Where identified 18 species of birds, among which the most abundant and frequent were Black-browed albatross (*Thalassarche melanophrys*), Shearwaters (*Puffinus sp.*), Kelp gull (*Larus dominicanus*), White-chinned petrel (*Procellaria aequinoctialis*) and Southern giant petrel (*Macronectes giganteus*). To a lesser extent were recorded : Cape petrel (*Daption capense*), South american tern (*Sterna hirundinacea*), Atlantic yellow-nosed albatross (*Thalassarche chlororhynchos*), Olrog's gull (*Larus atlanticus*), Grey-headed albatross (*Thalassarche chrysostoma*), Magellanic penguin (*Spheniscus magellanicus*), Fairy prion (*Pachyptila turtur*), Skuas (*Stercorarius sp.*), Southern royal albatross (*Diomedea epomophora*), Sandwich tern (*Sterna sandvicensis*), Spectacled petrel (*Procellaria conspicillata*) and Wandering albatross (*Diomedea exulans*).

Interactions were observed in 14 of the 18 sets in which bird sampling was performed. Most interactions (87 %) consisted of contacts between birds and fishing net. In most cases these interactions were not apparent consequences. However, in five cases (22 % of hauls sampled) interactions killed birds : two individuals of *Thalassarche melanophrys* to be caught in the net , an individual of *Puffinus gravis* after colliding with the wire probe, a copy of *Spheniscus magellanicus* to be caught in the net , and an individual of *Larus dominicanus* seriously injured in a collision with the wire probe. Several of these species has a worrisome condition and interactions with fishing operations should be mitigated. These results are preliminary and exploratory, and prepared for a preliminary consultation on the second year of monitoring of the fishery. The sample sizes obtained during the harvest 2012 are much lower than planned which was due to a combination of reduced fishing effort apparently and logistical hurdles. While the information obtained to identify the existence of an interaction problem and incidental mortality, poor representativeness of samples in space and time restrict the characterization of the problem.

It will be essential for next season adjust the sampling plan to achieve the goal set in the certification process.

Interactions with Marine Mammals

Summary:

- The preparation of specific forms to record interactions with marine mammals was effective for evaluation, as information could be obtained reliable, repeatable and accurate as of the same.
- In 44 % of sets exclusively for Marine Mammal monitored were fishery interactions.
- All interactions were recorded during steering maneuvers.
- In the present tidal interactions were recorded with two species of seals (sea lions one and two hairs) and two species of dolphins (common dolphin and dusky dolphin)
- The interactions recorded (n = 11) were essentially five types:
 1. Catch feeding without entanglement (36.4 %)

2. Catch feeding with entanglement with the net (9.1%)
3. Entanglement with the net without feeding (18.2%)
4. Interactions with the net without entanglement (27.3 %)
5. Climb on board (9.2%)

- There were three entanglements: a seal of two hairs (released) and two dark dolphin entanglement in different sets, three of which were released and two died.
- In no case was registered discard food or interaction with cables or propellers.
- There were also sightings of sea lions in one and two hairs and common dolphins, all throughout the area of operation during the tides, and mainly in the draft and driving maneuvers.

c) Principle 3 - Management and regulation

During the second surveillance, the Assessment Team consulted with officials of the Under-Secretariat of Fisheries and Aquaculture (SSPyA) and INIDEP. In parallel, websites of the Ministry of Agriculture, Livestock and Fisheries (www.minagri.gob.ar); the Joint Technical Commission for the Maritime Front (www.ctmfm.org); Federal Fisheries Council (www.cfp.gob.ar) and INIDEP (www.inidep.edu.ar) were also consulted. Since previous surveillance, there have been no changes at the level of management system structures.

All administrative and supervisory structures remain the same missions, roles and responsibilities held at time of Fishery's certification.

It has NOT been detected that the fishery is in any controversy incurring any international treaty or systematic failures to current regulations. In consultations with stakeholders, none of them found any new information that might be changed in any aspect of the certification or the scoring assigned during the assessment process.

Legal frame and TAC

Since the certification of the fishery, there have not been any new regulations applying on anchovy fishery, with the only exception of the establishment of 2012 and 2013's TAC by the Federal Fisheries Council (FFC Resolution No. 17/2012 and 6/2013). The information has been confirmed in three different ways: a) review of the official websites (www.infoleg.gob.ar, www.cfp.gob.ar, www.minagri.gov.ar), b) consultation with stakeholders, and c) by telephone interview with the person in charge of the SSPyA National Directorate of Fisheries Planning, Lic. Gabriela Navarro.

While the Total Allowable Catch has been established for the 2012 and 2013 harvest, following the recommendations in the INIDEP Report No. 14/2012 and 15/2013, respectively. Maximum Allowable Catch for both years remains the same as in previous years, maintaining the precautionary criterion studied and described in the Public Certification Report.

3.2 Status of previously raised conditions

- Conditions 1 and 2:

| 1) PI. 1.2.1. Harvest strategy | | SCORE: 75 |
|---|--|--|
| There is a robust and precautionary harvest strategy in place. | | |
| SG 60 | SG 80 | SG 100 |
| <ul style="list-style-type: none"> ▪The harvest strategy is expected to achieve stock management objectives reflected in the target and limit | <ul style="list-style-type: none"> ▪The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving management | <ul style="list-style-type: none"> ▪The harvest strategy is responsive to the state of the stock and is designed to achieve stock management objectives reflected in the |

| | | |
|--|--|---|
| <p>reference points.</p> <ul style="list-style-type: none"> ▪ The harvest strategy is likely to work based on prior experience or plausible argument. ▪ Monitoring is in place that is expected to determine whether the harvest strategy is working. | <p>objectives reflected in the target and limit reference points.</p> <ul style="list-style-type: none"> ▪ The harvest strategy may not have been fully tested but monitoring is in place and evidence exists that it is achieving its objectives. | <p>target and limit reference points.</p> <ul style="list-style-type: none"> ▪ 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. ▪ The harvest strategy is periodically reviewed and improved as necessary. |
|--|--|---|

| 2) PI. 1.2.2. Harvest control rules and tools | | SCORE: 75 |
|---|--|--|
| There are well defined and effective harvest control rules in place. | | |
| SG 60 | SG 80 | SG 100 |
| <ul style="list-style-type: none"> ▪ Generally understood harvest control rules are in place that are consistent with the harvest strategy and which act to reduce the exploitation rate as limit reference points are approached. ▪ There is some evidence that tools used to implement harvest control rules are appropriate and effective in controlling exploitation. | <ul style="list-style-type: none"> ▪ Well defined harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached. ▪ The selection of the harvest control rules takes into account the main uncertainties. ▪ Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the harvest control rules. | <ul style="list-style-type: none"> ▪ The design of the harvest control rules take into account a wide range of uncertainties. ▪ Evidence clearly shows that the tools in use are effective in achieving the exploitation levels required under the harvest control rules. |

Conditions to 1.2.1 and 1.2.2 for second annual audit:

The client group must provide documented evidence that:

- Target reference points are agreed upon and explicit
- There are discussions of rules that will ensure that the exploitation rate is reduced as limit reference points are initiated.

| Action Plan | Timescales/Milestones |
|---|---|
| <p>By the second annual audit, provide documented evidence that:</p> <p>(1) Analyze and define target reference points, taking into account the low trophic level of the species.</p> <p>(2) Analyze and define a rule to ensure that the exploitation rate is reduced as limit reference points are approached.</p> <p>(3) Discuss and propose specific harvest controls rules for periods of low stock productivity.</p> | <p>YEAR 2: Provide evidences that:</p> <p>(1) Options for target reference points are presented and target reference point are agreed and explicitly.</p> <p>(2) Discussions about rules that will ensure that the exploitation rate is reduced as limit reference points are approached and performed.</p> <p>(3) There are discussions of potential harvest control rules towards precaution in years when productivity can be low.</p> |

Progress on conditions:

All milestones were complete for the second annual surveillance. The target reference points are presented in the technical report 15/2013 (Hansen et al., 2013). According to the analysis, the spawning stock biomass in October 2012 (1.09 million t) would be above the target level $BR_{66} = 499,550$ t. Therefore accept the proposed rule indicate $F_{obj} = F_{66} = 0.99$. This rate, according to projections incorporated uncertainty (on the current biomass, the future recruitment and seasonality of exploitation) that cause either over 10% of cases reproductive biomass in 2013 falls below BR_{40} limit level = 303,000 t. Predicted capture would be about 299,000 t for the year, having a risk associated approximately 9%.

The control rules are been proposed and discussed by the commission that has carried out the action plan (INIDEP and Client Group). The technical report has been submitted and approved by CFP.

Status on conditions:

By the second annual surveillance, PI. 1.2.1 and PI 1.2.2 are **“On target”**.

- Condition 3:

| 3) PI. 1.2.4. Assessment of stock status | | SCORE: 75 |
|---|---|---|
| There is an adequate assessment of the stock status. | | |
| SG 60 | SG 80 | SG 100 |
| <ul style="list-style-type: none"> The assessment estimates stock status relative to reference points. The assessment identifies major sources of uncertainty. | <ul style="list-style-type: none"> The assessment is appropriate for the stock and for the harvest control rule. The assessment takes uncertainty into account. The assessment of stock status is subject to peer review. | <ul style="list-style-type: none"> The assessment takes into account the major features relevant to the biology of the species and the nature of the fishery. The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a probabilistic way. The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored. The assessment has been internally and externally peer reviewed. |

Condition to 1.2.4 for second annual audit:

The client group must provide documented evidence that:

- Inclusion of egg survey estimates are used for tuning the cohort analysis.
- Target reference points are agreed upon and explicit.
- There are discussions of rules that will ensure that the exploitation rate is reduced as limit reference points are initiated.

| Action Plan | Timescales/Milestones |
|--|---|
| By the second annual audit, to provide documented evidence that: | YEAR 2: Provide documented evidences that (1) Options for target reference points are presented and target reference points are agreed |

| | |
|---|--|
| <p>(1) Analyze and define target reference points, taking into account the low trophic level of the species.</p> <p>(2) Produce a report of the annual assessment including basic data and details of the methodology, as well as trends in stock status in relation to target and limit reference points.</p> <p>(3) Commission a peer review of the stock assessment results.</p> <p>(4) Discuss the application of different models taking into account the ecological role of the stock as a low trophic level species.</p> | <p>and explicitly.</p> <p>(2) Produce a report about the Bonaerense anchovy stock including recruitment and stock assessment models, acoustic survey estimates, details of the methodology, early stages of development, spawning and nursery areas and environment.</p> <p>(3) Produce annual, submitted a peer review, report about the Bonaerense anchovy stock including recruitment and stock assessment models, acoustic survey estimates, details of the methodology, early stages of development, spawning and nursery areas and environment.</p> <p>(4) Propose alternative stock assessment models that explicit target reference points which take into account the recruitment-environment coupling and the ecological role of this low trophic level species.</p> |
|---|--|

Progress on conditions:

From 2008 to second annual surveillance on site visit (October 2013), it has not conducted a research fishing survey, so the Assessment team has not had an updated report about acoustic survey and the total biomass derived from the spawners' egg production method.

However, INIDEP scientists and client group have requested to fisheries management authorities, conducting the research fishing season. The same has been accepted and is being carried out to the present.

Status on conditions:

By the second annual surveillance, PI. 1.2.4 is **"Behind target"**.

- Conditions 4, 5, 6 and 7:

| 4) PI 2.2.3 By-catch species information / monitoring | | SCORE: 75 |
|---|---|--|
| Information on the nature and amount of by-catch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage by-catch. | | |
| SG 60 | SG 80 | SG 100 |
| <ul style="list-style-type: none"> ▪ Qualitative information is available on the amount of main by-catch species affected by the fishery. ▪ Information is adequate to broadly understand outcome status with respect to biologically based limits. ▪ Information is adequate to support measures to manage by-catch. | <ul style="list-style-type: none"> ▪ Qualitative information and some quantitative information are available on the amount of main by-catch species affected by the fishery. ▪ Information is sufficient to estimate outcome status with respect to biologically based limits. ▪ Information is adequate to support a partial strategy to manage main by-catch species. ▪ Sufficient data continue to be collected to detected any increase in risk to main by-catch species (e.g. due to changes in the outcome indicator scores or | <ul style="list-style-type: none"> ▪ Accurate and verifiable information is available on the amount of all by-catch and the consequences for the status of affected populations. ▪ Information is sufficient to quantitatively estimate outcome status with respect to biologically based limits with a high degree of certainty. ▪ Information is adequate to support strategy to manage by-catch, and evaluate with a high degree of certainty whether a strategy is achieving its objective. ▪ Monitoring of by-catch data is |

| | | |
|--|---|---|
| | the operation of the fishery or the effectiveness of the strategy). | conducted in sufficient detail to assess ongoing mortalities to all by-catch species. |
|--|---|---|

| 5) PI 2.3.1 ETP species outcome | | SCORE: 75 |
|--|---|--|
| The fishery meets national and international requirements for protection of ETP species The fishery does not pose a risk of serious or irreversible harm to ETP species and does not hinder recovery of ETP species. | | |
| SG 60 | SG 80 | SG 100 |
| <ul style="list-style-type: none"> Known effects of the fishery are likely to be within limits of national and international requirements for protection of ETP species. Known direct effects are unlikely to create unacceptable impacts to ETP species. | <ul style="list-style-type: none"> The effects of the fishery are known and are highly likely to be within limits of national and international requirements for protection of ETP species. Direct effects are highly unlikely to create unacceptable impacts to ETP species. Indirect effects have been considered and are thought to be unlikely to create unacceptable impacts. | <ul style="list-style-type: none"> There is a high degree of certainty that the effects of the fishery are within limits of national and international requirements for protection of ETP species. There is a high degree of confidence that there are no significant detrimental direct effects of the fishery on ETP species. There is a high degree of confidence that there are no significant detrimental indirect effects of the fishery on ETP species. |

| 6) PI 2.3.2 ETP species management strategy | | SCORE: 60 |
|--|--|--|
| The fishery has in place precautionary management strategies designed to: -meet national and international requirements; -ensure the fishery does not pose a risk of serious or irreversible harm to ETP species; -ensure the fishery does not hinder recovery of ETP species; and -minimize mortality of ETP species. | | |
| SG 60 | SG 80 | SG 100 |
| <ul style="list-style-type: none"> There are measures in place that minimize mortality, and are expected to be highly likely to achieve national and international requirements for the protection of ETP species. The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/species). | <ul style="list-style-type: none"> There is a strategy in place for managing the fishery's impact on ETP species, including measures to minimize mortality that is designed to be highly likely to achieve national and international requirements for the protection of ETP species. There is an objective basis for confidence that the strategy will work, based on information directly about the fishery and/or the species involved. There is evidence that the strategy is being implemented successfully. | <ul style="list-style-type: none"> There is a comprehensive strategy in place for managing the fishery's impact on ETP species, including measures to minimize mortality that is designed to achieve above national and international requirements for the protection of ETP species. The 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. There is clear evidence that the strategy is being implemented successfully. There is evidence that the |

| | | |
|--|--|--------------------------------------|
| | | strategy is achieving its objective. |
|--|--|--------------------------------------|

| 7) PI 2.3.3 ETP species information | | SCORE: 60 |
|--|--|---|
| Relevant information is collected to support the management of fishery impacts on ETP species, including: -information for the development of the management strategy; -information to assess the effectiveness of the management strategy; and -information to determine the outcome status of ETP species. | | |
| SG 60 | SG 80 | SG 100 |
| <ul style="list-style-type: none"> Information is sufficient to qualitatively estimate the fishery related mortality of ETP species. Information is adequate to broadly understand the impact of the fishery on ETP species. Information is adequate to support measures to manage the impacts on ETP species. | <ul style="list-style-type: none"> Sufficient information is available to allow fishery related mortality and the impact of fishing to be quantitatively estimated for ETP species. Information is sufficient to determine whether the fishery may be a threat to protection and recovery of the ETP species. Information is sufficient to measures trends and supports a full strategy to manage impacts on ETP species. | <ul style="list-style-type: none"> Information is sufficient to quantitatively estimate outcome status of ETP species with a high degree of certainty. Accurate and verifiable information is available on the magnitude of all impacts, mortalities and injuries and the consequences for the status of 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. |

Conditions to 2.2.3, 2.3.1, 2.3.2 and 2.3.3 for second annual audit:

The client group must provide documented evidence that:

PI 2.2.3. To provide documented evidence that data on main by-catch species impacted by fishing gears has been collected and has been adequate to estimate any change in risk to main by-catch species.

PI 2.3.1. The defined program on fishery interactions with ETP species has been implemented and data is being collected and analyzed.

PI 2.3.2. A strategy for managing the fishery's impact on ETP species has been defined, which includes measures to minimise mortality and is designed to be highly likely to achieve national and international requirements (including ACAP requirements established for *Procellaria aequinoctialis*) for the protection of ETP species.

PI 2.3.3. The defined program on fishery interactions with ETP species has been implemented and data is being collected and analyzed.

| Action Plan | Timescales/Milestones |
|---|--|
| Improve a monitoring plan to cover the whole fishing season with observers on board to continue collecting sufficient data to detect any increase in risk to main by-catch and ETP species. | <p>A statistical method will be used to estimate the best number of observers to monitor the anchovy fleet during the fishing season.</p> <p>If the existence of a by-catch problem is identified during the first year, further monitoring should provide better observer coverage and the continuous recording of environmental and operational conditions during the fishing operation to allow a better understanding of variables</p> |

| | |
|--|--|
| | <p>affecting the occurrence of ETP and its by-catch.</p> <p>The results of such detailed monitoring should be expressed in an ERA (Ecological Risk Assessment).</p> <p>Additional laboratory analyses should be conducted in order to have a better understanding of the importance of target and by-catch fish species in the trophic spectrum of the ETP affected.</p> |
|--|--|

Progress on conditions:

All milestones for these conditions were complete for the second annual surveillance. It has provided a Technical Report 48/2013 which shows the interactions between fishing gear and the main by-catch and ETP species (marine mammals and seabirds) in the 2012 harvest.

While is identified the type of interactions, it is not possible to quantify the magnitude of them, particularly in seabirds. At the moment, no analysis has begun to approve a mitigation measure. Within the analysis, there is an identification of the most vulnerable seabird species.

While the research groups of marine mammals and chondrichthyans, are indicated that the impact on these species is not significant, missing improving data collection (p.eg. use of cameras, electronic ictiometers, etc.) to ease the sampling process and its analysis more efficient. It is essential to continue with the On board Observer's training that has already implemented.

Status on conditions:

By the second annual surveillance, PI. 2.2.3, PI. 2.3.1, PI. 2.3.2 and PI. 2.3.3 are **"On target"**.

3.3 Conclusions and recommendations

No non-conformities were found and no PI was re-scored during the Second Annual Surveillance. Following the MSC Certification Requirements and the MSC Fisheries Standard, the Assessment Team agrees that the fishery has complied with the specific milestones established for the second year, excepting for PI. 1.2.4 who status condition is actually "Behind target". It will required that the next surveillance audit to achieve to bring process back on track by the original deadline.

However, the Assessment Team recommends that the Argentine anchovy fishery maintains the certification. The Client Group must be continuing meeting the objectives proposed in the action plan for the next surveillance audit.

4. Catch data.

There have been no changes in the fish size structure of the stock since the assessment of the fishery last year (Garciaarena, Buratti, & Hansen, 2013). The following tables summarize Bonaerense anchovy catches from the different season 1992/2013.

Table 14. Total TAC established for the Bonaerense anchovy (*Engraulis anchoita*) fishery from 1992 to 2013.

| Year | Recommended INIDEP TAC and adopted | Resolution adoption TAC | Catch North 41 ^a |
|------|------------------------------------|-------------------------|-----------------------------|
| 1992 | 100,000 | SAGPyA 279/1992 | 18.800 |
| 1993 | 120,000 | SAGPyA 295/1993 | 13.176 |
| 1994 | 120,000 | SAGPyA 589/1994 | 18.294 |
| 1995 | 120,000 | SAGPyA 149/1995 | 19.113 |
| 1996 | 120,000 | SAGPyA 567/1996 | 18.379 |
| 1997 | 120,000 | SAGPyA 313/1997 | 22.100 |
| 1998 | 120,000 | RES CFP 3/1998 | 19.871 |
| 1999 | 120,000 | SAGPyA 341/1999 | 9.026 |
| 2000 | 120,000 | RES CFP 1/2000 | 12.860 |
| 2001 | 120,000 | RES CFP 9/2001 | 14.509 |
| 2002 | 120,000 | | 21.155 |
| 2003 | 120,000 | | 28.302 |
| 2004 | 120,000 | RES CFP 10/2004 | 40.330 |
| 2005 | 59,000 | | 38.999 |
| 2006 | 120,000 | | 47.111 |
| 2007 | 124,000 | RES CFP 7/2007 | 24.985 |
| 2008 | 82,000 | RES CFP 17/2008 | 21.309 |
| 2009 | 12,000 | RES CFP 9/2009 | 28.247 |
| 2010 | 120,000 | RES CFP 9/2010 | 22.711 |
| 2011 | 120,000 | RES CFP 3/2011 | 19.960 |
| 2012 | 120,000 | RES CFP 17/2012 | 14.763 |
| 2013 | 120,000 | RES CFP 6/2013 | |

Table 15. Biological Acceptable Catches determined by INIDEP for the Bonaerense anchovy (*Engraulis anchoita*) Fishery from 2003 to 2013.

| Year | Biological Acceptable Catch (t) | Source |
|------|---------------------------------|---------------------------------|
| 2003 | 94,000/233,000 | INIDEP Technical Report 63/2003 |
| 2004 | 115,000/130,000 | INIDEP Technical Report 15/2004 |
| 2005 | 59,000/122,000 | INIDEP Technical Report 36/2005 |
| 2006 | 120,000 | INIDEP Technical Report 66/2006 |
| 2007 | 282,000 | INIDEP Technical Report 53/2007 |
| 2008 | 82,000/165,000 | INIDEP Technical Report 16/2008 |
| 2009 | 145,000 | INIDEP Technical Report 12/2009 |
| 2010 | 145,000 | INIDEP Technical Report 05/2010 |
| 2011 | 208,000 | INIDEP Technical Report 12/2011 |
| 2012 | 171,000 | INIDEP Technical Report 14/2012 |
| 2013 | 299,000 | INIDEP Technical Report 15/2013 |

Table 16. Factor $\gamma(M)$, defined by Mertz and Myers (1996) and Reproductive Biomass (RB) for the Bonaerense anchovy (*Engraulis anchoita*) Fishery from 2002 to 2012

| Year | Parameter $\gamma(M)$ define by Mertz and Myers (1996) | RB by Model | Source |
|------|--|-----------------|---------------------------------|
| 2002 | 0,835 | 670,000/950,000 | INIDEP Technical Report 63/2003 |
| 2003 | 0,735 | 750,000/800,000 | INIDEP Technical Report 15/2004 |
| 2004 | 0,777 | 950,000 | INIDEP Technical Report 36/2005 |
| 2005 | 0,786 | 870,491 | INIDEP Technical Report 66/2006 |
| 2006 | 0,777 | 875,000 | INIDEP Technical Report 53/2007 |
| 2007 | 0,8 | 875,000 | INIDEP Technical Report 16/2008 |
| 2008 | 0,754 | 903,000 | INIDEP Technical Report 12/2009 |
| 2009 | 0,826 | 942,000 | INIDEP Technical Report 05/2010 |
| 2010 | 0,794 | 842,000 | INIDEP Technical Report 12/2011 |
| 2011 | 0,802 | 693,800 | INIDEP Technical Report 14/2012 |
| 2012 | 0,799 | 917,000 | INIDEP Technical Report 15/2013 |

Table 17. Monthly anchovy catch (tons) per the various fleets in 2012. (Source: Garcarena D. 2012, INIDEP Technical Report 05/2013)

| Mes | Efectivo Norte | | | Total |
|--------------|----------------|----------------|-------------|-----------------|
| | Altura | Costero | Rada | |
| Julio | | 79,4 | | 79,4 |
| Agosto | 523,0 | 2.189,1 | | 2.719,1 |
| Setiembre | 1.922,1 | 3.008,8 | 0,5 | 4.931,4 |
| Octubre | 3.554,3 | 2.836,0 | 19,4 | 6.409,7 |
| Noviembre | 438,2 | 184,8 | | 623,0 |
| Total | 6.444,6 | 8.298,1 | 19,9 | 14.762,6 |

Table 18. Monthly number of vessels, per type of fleet, landing anchovy during 2012. (Source: Garcarena D. 2013, INIDEP Technical Report 05/2013).

| Mes | Efectivo Norte | | | Total |
|--------------|----------------|-----------|-----------|-----------|
| | Altura | Costero | Rada | |
| 7 | | 2 | | 2 |
| 8 | 2 | 9 | | 11 |
| 9 | 8 | 11 | 1 | 20 |
| 10 | 12 | 13 | 15 | 40 |
| 11 | 6 | 5 | | 11 |
| Total | 13 | 15 | 16 | 44 |

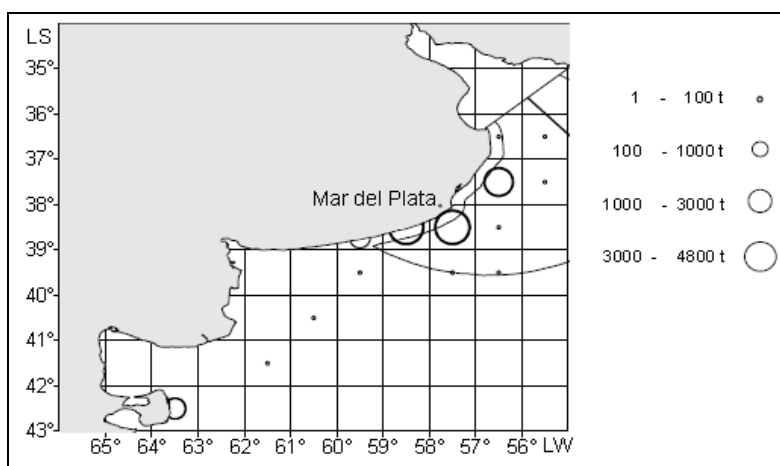


Fig. 6. Distribution of fishing hauls during the research surveys from where anchovy samples were taken during 2012. Source: Garciarena D. 2013, INIDEP Technical Report 05/2013

Table 19. Catch on the Bonaerense anchovy stock and percentage of share by the certified companies' vessels (Client Group)

| Fleet | Vessel | 2012 | | | 2013* | | |
|--------------------|--------------------|-----------------------|------------------|-------------|-----------------------|-------------------|-------------|
| | | Catch of Anchovy (Kg) | Total Catch (Kg) | % | Catch of Anchovy (Kg) | Total Catch (Kg) | % |
| ALTURA, FRESQUERO | ARAUCANIA | 723,206 | 872,942 | 82.8 | 742,809 | 897,196 | 82.8 |
| | ATREVIDO | 1,117,000 | 1,876,676 | 59.6 | 892,841 | 1,176,285 | 75.9 |
| | BELVEDERE | 0 | 0 | 0 | 533,554 | 573,451 | 93 |
| | CIUDAD FELIZ | 0 | 0 | 0 | 308,321 | 386,616 | 79.7 |
| | DON NICOLA | 0 | 0 | 0 | 53,748 | 102,995 | 52.2 |
| | DON RAIMUNDO | 280,543 | 451,393 | 62.2 | 282,505 | 335,205 | 84.3 |
| | DON SANTIAGO | 165,934 | 306,036 | 54.2 | 1,227,599 | 1,302,414 | 94.3 |
| | EL SANTO | 0 | 0 | 0 | 1,261,816 | 1,461,992 | 86.3 |
| | EURO II | 0 | 0 | 0 | 112,935 | 142,407 | 79.3 |
| | FLORIDABLANCA | 108,964 | 189,352 | 57.5 | 213,356 | 341,283 | 62.5 |
| | FRANCA | 605,472 | 682,294 | 88.7 | 0 | 0 | 0 |
| | GURISES | 187,915 | 234,255 | 80.2 | 0 | 0 | 0 |
| | JUPITER II | 102,544 | 102,544 | 100 | 358,416 | 462,286 | 77.5 |
| | MADRE MARGARITA | 0 | 0 | 0 | 393,813 | 461,331 | 85.4 |
| | MARBELLA | 0 | 0 | 0 | 103,470 | 198,423 | 52.1 |
| | MESSINA I | 0 | 0 | 0 | 139,518 | 208,650 | 66.9 |
| | RAFFAELA | 1,186,914 | 1,723,207 | 68.9 | 688,366 | 950,119 | 72.5 |
| | ROCIO DEL MAR | 341,254 | 341,254 | 100 | 172,957 | 249,481 | 69.3 |
| | SAN ANTONIO | 0 | 0 | 0 | 40,104 | 40,104 | 100 |
| | SAN GENARO | 1,057,010 | 1,162,634 | 90.9 | 462,112 | 531,412 | 87 |
| | SFIDA | 412,947 | 478,760 | 86.3 | 730,761 | 783,465 | 93.3 |
| | TOMAS I | 0 | 0 | 0 | 136 | 510 | 26.7 |
| | TOZUDO | 154,919 | 206,906 | 74.9 | 0 | 0 | 0 |
| | TOTAL | 6,444,622 | 8,624,253 | 74.7 | 8,719,137 | 10,756,199 | 81.1 |
| COSTERO, FRESQUERO | CALLEJA | 328,845 | 381,069 | 86.3 | 616,881 | 625,461 | 98.6 |
| | CANAL DE BEAGLE | 1,081,457 | 1,125,809 | 96.1 | 723,692 | 723,692 | 100 |
| | CONSTANCIA | 246,610 | 274,354 | 89.9 | 322,959 | 323,443 | 99.9 |
| | DON SALVADOR | 0 | 0 | 0 | 300 | 5,700 | 5.3 |
| | DON VICENTE VUOSO | 332,094 | 400,071 | 83 | 930,207 | 930,277 | 100 |
| | ESTEFANY | 133,395 | 211,189 | 63.2 | 424,034 | 425,750 | 99.6 |
| | FIESTA | 0 | 0 | 0 | 343,149 | 343,149 | 100 |
| | MADONNINA DEL MARE | 150,474 | 150,474 | 100 | 620,668 | 620,668 | 100 |
| | MARIA GRACIA | 749,744 | 797,314 | 94 | 444,324 | 444,324 | 100 |
| | NONO PASCUAL | 394,275 | 517,305 | 69 | 135,912 | 135,912 | 100 |
| | NUEVO VIENTO | 0 | 0 | 0 | 165,685 | 283,573 | 58.4 |

| | | | | | | | |
|----------------------------------|-----------------------|-------------------|-------------------|-------------|-------------------|-------------------|-------------|
| | OMEGA 3 | 0 | 0 | 0 | 123,914 | 127,624 | 97.1 |
| | ORION I | 955,902 | 1,105,626 | 86.5 | 953,582 | 1,003,592 | 95 |
| | PADRE PIO | 1,068,135 | 1,189,347 | 89.8 | 32,640 | 55,575 | 58.7 |
| | POPA | 915,724 | 915,724 | 100 | 710,401 | 790,714 | 89.8 |
| | PUCARA | 130,615 | 336,259 | 38.8 | 0 | 0 | 0 |
| | SALVADOR R | 0 | 0 | 0 | 54,156 | 54,156 | 100 |
| | SAN JORGE I | 0 | 0 | 0 | 306 | 87,312 | 0.4 |
| | SAN PEDRO APOSTOL | 1,599,032 | 1,718,335 | 93.1 | 1,241,621 | 1,337,332 | 92.8 |
| | SAN SALVADOR II | 59,403 | 336,188 | 17.7 | 267,516 | 267,516 | 100 |
| | TEMERARIO I | 0 | 0 | 0 | 324,304 | 324,304 | 100 |
| | VAMOS A PROBAR I | 152,367 | 152,367 | 100 | 110,262 | 110,262 | 100 |
| | TOTAL | 8,298,072 | 9,665,431 | 85.9 | 8,546,513 | 9,020,336 | 94.7 |
| RADA O RIA, FRESQUERO | ALBA II | 500 | 500 | 100 | | | |
| | ANGELO PADRE | 0 | 0 | 0 | 540 | 6,590 | 8.2 |
| | ANTARTIDA | 490 | 490 | 100 | 0 | 0 | 0 |
| | DON NINO | 1,300 | 1,300 | 100 | 0 | 0 | 0 |
| | DON PABLO PENNISI | 200 | 500 | 40 | 0 | 0 | 0 |
| | DUE FRATELLI | 1,200 | 1,200 | 100 | 0 | 0 | 0 |
| | EL PRINCIPE AZUL | 500 | 500 | 100 | 0 | 0 | 0 |
| | LA PASCUALA | 1,160 | 1,160 | 100 | 0 | 0 | 0 |
| | MI LUCHA | 380 | 620 | 61.3 | 0 | 0 | 0 |
| | NUEVA ANGELA MADRE | 1,500 | 1,500 | 100 | 0 | 0 | 0 |
| | NUEVA AUGUSTA | 200 | 500 | 40 | 0 | 0 | 0 |
| | NUEVA NUNCIA CONTI | 1,000 | 1,000 | 100 | 0 | 0 | 0 |
| | QUE DIOS SE LO PAGUE | 4,000 | 4,000 | 100 | 0 | 0 | 0 |
| | SAN CARLOS | 1,500 | 1,500 | 100 | 0 | 0 | 0 |
| | SIEMPRE LIBERTAD | 1,000 | 1,000 | 100 | 700 | 700 | 100 |
| | SIEMPRE SARA MADRE | 2,500 | 2,500 | 100 | 0 | 0 | 0 |
| | TENIENTE CORONEL ROME | 2,500 | 2,500 | 100 | 0 | 0 | 0 |
| | VIEJO AMABILE | 0 | 0 | 0 | 2,300 | 5,800 | 39.7 |
| | TOTAL | 19,930 | 20,770 | 96 | 3,540 | 13,090 | 27 |
| TOTAL CATCH PER YEAR | | 14,762,624 | 18,310,454 | 80.6 | 17,269,190 | 19,789,625 | 87.3 |
| *Preliminar catch | | | | | | | |

Table 20. Client Group's catch during 2012-2013.

| Vessel | Company | 2012 | | 2013* | |
|--------------------|--------------------|--------------------|--------------|--------------------|--------------|
| | | Catch anchovy (kg) | % | Catch anchovy (kg) | % |
| ALDEBARAN | ALLELOCCIC S.A. | 0 | 0 | 0 | 0 |
| ATREVIDO | CENTAURO S.A. | 1,117,000 | 7.57 | 892,841 | 5.17 |
| CALLEJA | OTESA S.A. | 328,845 | 2.23 | 616,881 | 3.57 |
| NUEVO VIENTO | NUEVO VIENTO S.R.L | 0 | 0 | 165,685 | 0.96 |
| RAFFAELA | DELICIAS S.A. | 1,186,914 | 8.04 | 688,366 | 3.99 |
| TOTAL CATCH | | 14,762,624 | 17.84 | 17,269,190 | 13.69 |
| *Preliminar catch | | | | | |

5. Appendix.

5.1. Opening surveillance meeting with Client Group

Participants

- Mr. Martín Di Scala (President, Delicias S.A.)
- Méd. Vet. Laura Martínez Souto (Quality manager, Centauro S.A.)
- Eng. Rocío González (Quality manager, Delicias S.A.)
- Mrs. Marisol Di Scala (Department director, Delicias S.A.)
- Mrs. Alicia Abren (Technical manager, Nuevo Viento S.R.L. /Alleloccic S.A.)



Organización Internacional Agropecuaria
— Certificamos confianza y calidad

ENTREVISTAS INDIVIDUALIZADAS

2^{da} Auditoría de Supervisión
Certificación de Pesca Sustentable Pesquería de Anchoita

Martes 1 de Octubre de 2013
Mar del Plata, Argentina

| NOMBRE | INSTITUCIÓN | FIRMA |
|-------------------------|-----------------------------|--|
| Di Scala Martín | Delicias S.A. |  |
| Laura Martínez Souto | Pesca Veraz - Centauro S.A. |  |
| González, Rocío | Delicias S.A. |  |
| Di Scala Marisol | Delicias S.A. |  |
| Abren Alicia | Nuevo Viento S.R.L. |  |
| Briotti Rodolfo | OIA |  |
| Carisani Roxana Anke | OIA |  |
| Carolina Medina Fouchet | OIA |  |
| Leszek Beuno Preisky | OIA |  |
| Observaciones: | | |

Summary

During the 2012 harvest, catch volume was the lowest in the last 10 years, due to the short fishing season (August and September), climatic issues that declined fishing days and port strike which meant that the fleet was directed to other resources (need to complete hake's quota). There, the total catch not achieved the 20,000 t.

The late start of the current harvest and low production due to poor environmental conditions, except for the first 10 days on which presented a high performance, has generated economic losses in the sector, coupled with a size of small fish whose value is unprofitable and the economic crisis most important market, Spain.

However, it has improved the maintenance of the catch on board through technology transfer, which has resulted in the availability of ice in each box.

According to the development of the action plan established for the fishery, the client group meets every three months with scientists and observers INIDEP to plan tasks, generating good communication and transparency to the process. Among the results obtained has been identified interaction and fishing mortality of seabirds and marine mammals. Also developed onboard training prior to each harvest for the crew awareness as to the identification of species and subsequent enabling mitigation measure to reduce the impact.

Moreover, the client group said two notes were sent to the managing authorities for the creation of a joint technical committee to monitor and apply a research survey to identify the resource status and abundance indices to support future decisions regarding fishing.

5.2. Groupal meeting with scientists

Participants

- Lic. Jorge Colonello (Researcher, INIDEP)
- Lic. Natalia Hozbor (Researcher, INIDEP)
- Dr. Marcelo Pájaro (Chief of Pelagic Fishery Program, INIDEP)
- Lic. José Luis Flaminio (Observer, INIDEP)
- Lic. Gabriel Blanco (Head of on Board Observer Program and Commercial Vessel, INIDEP)

Summary

From the Observers on board Program in 2012, The data reported by the two observers was it conducted in 74 fishing operations, of which 14 were aimed at Mackerel in the statistical 40°60.1 and 40°60.3 quadrants.

During 2012, biological samples analyzed were obtained between August and November, to 8 of landing of long range ice chilled fleet, nine coastal and one harbor boat harbor. The same accounted for 13.3% of the catches of Bonaerence anchovy made during 2012.

In 2013, the shipment in the commercial fleet began with the beginning of the harvest 2013. At the time of the annual monitoring have only been observers on board two ships in the group (Raffaela and Atrevido). It is hoped to extend the observation to other boats certificates.

Among the activities on board, the observer should record the spatial distribution of the fishing area, sampling weight/height record by-catch and discard of Surel (*Trachurus lathami*), which in some cases is negligible or capture is limited in the area of El Rincón.

On the other hand, it is working together with clients to support the creation of an anchovy fishery tracking commission, which has not yet been approved by the managing authorities.

For 2013, it is planned to cover with observers on 20% of the catch, which involves the shipment of personnel for about 80 days of fishing. This has been calculated using the OPTIMOX 2010's program. At the time of the meeting have been completed two fishing trips and other two are in progress.

A methodology has been implemented that observers take a sample of the final set of fishing and bring to INIDEP for analysis.

Regarding the research campaign, it began in mid- October and is expected to collect oceanographic data and environmental information that adapt the acoustic evaluation model and method of reproduction by eggs. After 7 years without prospecting, conducting the campaign has been addressed by MSC certification requirements for this fishery.

The anchovy work group reports that it has begun work on trophic interactions between this species and other fisheries. In principle, there is carried out joint with researchers in charge of studying the nutritional aspects of the species hake (*Merluccius hubbsi*).

The mechanical work of the observers has been adapted to the needs of the research groups of Birds and Marine Mammals of Universidad Nacional de Mar del Plata, who have trained themselves to observe the interaction of the fishery with these species. As a result, routine work includes observations devote a day haul exclusively for birds and other mammals. The information collected in accordance with the format established by the working groups of Universidad Nacional de Mar del Plata, is sent to them.

Finally, observations have been made on chondrichthyan 9 trips and major species are evidenced Dogfish (*Galeorhinus galeus*) Angelfish (*Squatina guggenheim*) and Patagonian smooth-hound (*Mustelus schmitti*). They indicate that catch volumes are low, which vary according to the area of capture and information provided by the observer, so the importance of providing tools to facilitate identification of the specimen is very urgent.



Organización Internacional Agropecuaria
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ENTREVISTAS INDIVIDUALIZADAS

2^{da} Auditoría de Supervisión
Certificación de Pesca Sustentable Pesquería de Anchoita

Miércoles 2 de Octubre de 2013
Mar del Plata, Argentina


| NOMBRE | INSTITUCIÓN | FIRMA |
|-------------------------|-------------|---|
| SOLBE COLONELLO | INIDEP |  |
| Natalia Hozbor | INIDEP |  |
| Bridi Rad Jorge | OIA |  |
| MARCELO PASARO | INIDEP |  |
| Jorge Luis Flaminio | Imidep |  |
| Germán Borrolo | INIDEP |  |
| Leszek Bruno Proski | OIA |  |
| Carolina Medina Foucher | OIA |  |
| Carissimi Roussio Andea | OIA |  |
| Observaciones: | | |

5.3. Individual meetings

i) Meeting with Marine Mammals Researchers

Participants

- Dr. Diego Rodríguez (Member of Coastal Ecology and Biodeterioration Group, UNMdP)
- Lic. Agustina Mandiola (Scholarship Holder of Coastal Ecology and Biodeterioration Group, UNMdP)

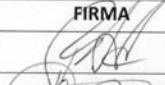
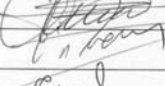
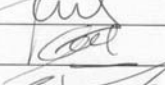

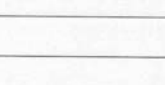
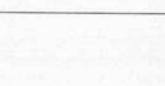


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ENTREVISTAS INDIVIDUALIZADAS

2^{da} Auditoría de Supervisión
Certificación de Pesca Sustentable Pesquería de Anchoita

Martes 1 de Octubre de 2013
Mar del Plata, Argentina

| NOMBRE | INSTITUCIÓN | FIRMA |
|------------------------|-------------|--|
| AGUSTINA MANDIOLA | UNMdP |  |
| Leszek Brzozowski | OIA |  |
| Diego Rodríguez | UNMdP |  |
| Carolina Medina Fouche | OIA |  |
| Carolina Riosio Andea | OIA |  |
| Bridi, Rafael Jorge | OIA |  |
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| Observaciones: | | |

Summary

The research team regarding marine mammals in 2012 met with the group of observers on board to train prior to the harvest, continuing the workshop initiated in 2012. From the fishery certification, modifications were made to the protocol of observers, which included sampling forms exclusive to mammals and found that within each tide was chosen at least one set per day to sample the interactions between these animals and the activity fishing. In 2013 this was improved.

Within the analysis of the first results, we have determined the cause of interaction and in turn, to approximate the magnitude of the impact of it on the most vulnerable species. It has been determined that most interactions occur during hauling of fishing gear. So, in 2012, 10 recorded

interactions with fishing gear, 3 events were observed mortality (one sea lion and 3 dolphins). There were no interactions with cables, propeller or discard.


In interactions were recorded 2 species of fur seal (known as 1 and 2 hairs) and 2 species of dolphins (common known as dark).

Also have suggested some improvements to the system, as the photographic record of the animals or situations, for identification or laboratory discussion.

ii) Meeting with Marine Birds Researchers

Participants

- Dr. Juan Pablo Seco Pon (Scholarship Holder of Vertebrate Group, UNMDP)
- Dra. Rocío Mariano y Jelichich (Scholarship Holder of Vertebrate Group, UNMDP)


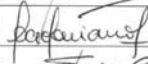

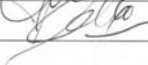
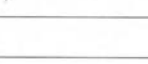


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ENTREVISTAS INDIVIDUALIZADAS

2^{da} Auditoría de Supervisión
Certificación de Pesca Sustentable Pesquería de Anchoita

Miércoles 16 de Octubre de 2013
Mar del Plata, Argentina

| NOMBRE | INSTITUCIÓN | FIRMA |
|---------------------------|-----------------------|--|
| Carolina Medina Fouchie | OIA |  |
| Rocio Mariano y Jelichich | IIMyC (CONICET-UNMDP) |  |
| Juan Pablo Seco Pon | IIMyC (CONICET-UNMDP) |  |
| Leszek Bruno Sierski | OIA |  |
| Constanza Rovasio Anden | OIA |  |
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Observaciones:

Summary

The research team regarding seabirds determined to be a problem related the interactions with the fishery and seabird bycatch. In 2012 of the 68 hauls were allocated to 18 seabirds of which 14 were observed in interactions. But very few evaluated tides therefore very little information and it can not

predict the magnitude. It is necessary therefore to train more observers, do at least a day haul destined to seabirds, and improve logistics / organization to be more representative samples.

iii) Meeting with Fundación Vida Silvestre Argentina

Participants

- Lic. Guillermo Cañete (Responsible of Marine Program)
- Lic. Verónica García (Fisheries Advisory)

Summary

During the past year, there have been several training onboard observers concerning the identification of various groups of animals (Chondrichthyes, marine mammals and birds) and the use of new more specialized forms to analyze the type of interaction that have these species fisheries.

In line with the 2012 workshop regarding mitigation measures for seabirds in the hoki fishery, Fundación Vida Silvestre Argentina is supporting in its development and seeks to implement the same measures to reduce mortality in case its magnitude, yet undetermined, affecting the most vulnerable species.



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Miércoles 2 de Octubre de 2013
Mar del Plata, Argentina

| NOMBRE | INSTITUCIÓN | FIRMA |
|-------------------------|-------------|--|
| Leszek Devero Preuski | OIA |  |
| Verónica García | FUSA |  |
| Guillermo Cañete | FUSA |  |
| Carolina Medina Fouchee | OIA |  |
| Gentian Dovesio Andean | OIA |  |
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| Observaciones: | | |
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iv) Meeting with CEDEPESCA

Participants

- Mrs. Alejandra Cornejo (Member)

Summary

Cedepesca indicates that communication between the team of certified companies and INIDEP technical group have maintained an open dialogue to achieve the objectives of the Action Plan.

Lack continues gathering information on by-catch species and ETP, which allows qualitative and quantify the magnitude and type of interaction of fishing maneuvers. However, it is important to emphasize the commitment of the observers about the data collection.



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ENTREVISTAS INDIVIDUALIZADAS

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Miércoles 2 de Octubre de 2013
Mar del Plata, Argentina

| NOMBRE | INSTITUCIÓN | FIRMA |
|--------------------------|-------------|--|
| Alejandra CORNEJO | CEDEPESCA. |  |
| Bridi Agory | OIA |  |
| Carolina Medina Fouchier | OIA |  |
| Carla Sani Rovasio Andre | OIA |  |
| Losado Bruno Preschi | OIA |  |
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| Observaciones: | | |
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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