

FISHERY ASSESSMENT REPORT

IFFO GLOBAL STANDARD FOR RESPONSIBLE SUPPLY OF FISHMEAL AND FISH OIL



FISHERY:	Peru Anchovy (<i>Engraulis ringens</i>)
LOCATION:	Northern Border Of The EEZ To 16^o South
DATE OF REPORT:	August 2015
ASSESSOR:	Sam Peacock

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1. APPLICATION DETAILS AND SUMMARY OF THE ASSESSMENT OUTCOME			
Name:			
Address:			
Country:		Zip:	
Tel. No.		Fax. No.	
Email address:		Applicant Code	
Key Contact:		Title:	
Certification Body Details			
Name of Certification Body:		Global Trust Certification Ltd.	
Assessor Name	Peer Reviewer	Assessment Days	Initial/Surveillance/ Re-certification
Sam Peacock	Deirdre Hoare	1	Surveillance
Assessment Period	August 2015		
Scope Details			
1. Scope of Assessment		IFFO Global Standard for Responsible Supply	
2. Fishery		Anchovy (<i>Engraulis ringens</i>)	
3. Fishery Location		North-central Peru and Southern Peru/Northern Chile	
4. Fishery Method		Pelagic trawl	
Outcome of Assessment			
5. Overall Fishery Compliance Rating		Medium/High	
6. Sub Components of Low Compliance		None	
7. Information deficiency		None	
8. Peer Review Evaluation		Approve	
9. Recommendation		Maintain approval subject to conditions	

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2. QUALITY OF INFORMATION			
Good; primarily government reports and websites			
3. COMPLIANCE LEVEL ACHIEVED			
Medium/High			
Recommendation			
Maintain fishery approval			
4. GUIDANCE FOR ONSITE ASSESSMENT			
<p>In accordance with the conditions under which the fishery was initially approved, on-site assessors should ensure the following:</p> <ul style="list-style-type: none"> • One member of each of the supplying vessel’s crew must receive training in sea mammal/sea turtle species identification. Evidence of training must be documented for future review. • Each supplying vessel must maintain a Log book record of sea mammal/sea turtle interactions and evidence of marine mammal interactions collated for scientific and evaluation purposes. • Where sea mammal/sea turtle encounters occur, there must be concerted attempts to allow release of the animal without damage through identified effective release measures. • The Client must support investigations/reviews into avoidance of sea mammals/sea turtles, including the use of fishing devices should be undertaken. 			
Based on HIGH compliance findings			
Based on MEDIUM compliance findings			
Based on LOW compliance findings			
5. ASSESSMENT DETERMINATION			
<p>In general, there have been no substantial changes to the management of the Peruvian north-central anchovy fishery since the time of the previous IFFO RS surveillance report. The fundamental management and research frameworks and systems remain in place and appear to be effective. There is new information on the reference points used by IMARPE to inform these recommendations, which has led to an upgrade of the compliance rating in section C1 from medium to high. Elsewhere the ratings remain identical to the previous surveillance report. The main issues with the fishery are a lack of transparency on the way in which surveys are used to produce biomass estimates (as full stock assessments are not made publically available), and also the lack of information on the potential impacts of the fishery on ETP species which led to the conditions listed above. However, based on the information in the IMARPE reports, the stock is in satisfactory condition and the scientific quota recommendations continue to be followed.</p>			
HIGH Compliance			
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A1, A2, A3, B1, B2, D2, E1, E2
MEDIUM Compliance
C1, D1, D3
LOW Compliance
NONE

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SUMMARY OF LEVEL OF COMPLIANCE					
	The Management Framework and Procedures	Stock assessment procedures and management advice	Precautionary approach	Management measures	Implementation
legal and administrative basis	A1				
Fisheries management should be concerned with the whole stock unit	A2				
Management actions should be scientifically based	A3				
Research in support of fisheries conservation and management should exist		B1			
Best scientific evidence available should be taken into account when designing conservation and management measures		B2			
The precautionary approach is applied in the formulation of management plans			C1		
The level of fishing permitted should be set according to management advice given by research organisations				D1	
Where excess fishing capacity exist, mechanisms should be in established to reduced capacity				D2	
Management measures should ensure that fishing gear and fishing practices do not have a significant impact on non-target species and the physical environment				D3	
A framework for sanctions of violation of laws and regulations should be efficiently exists					E1
A management system for fisheries control and enforcement should be established					E2

KEY: Low Compliance: Medium Compliance: High Compliance:

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6. RATIONALE OF THE ASSESSMENT OUTCOME

A. THE MANAGEMENT FRAMEWORK AND PROCEDURE

LEVEL OF COMPLIANCE

A1. The management of the fishery must include a legal and administrative basis for the implementation of measures and controls to support the conservation of the fishery.

LOW	An administrative framework that ensures an efficient management of the fishery for its conservation is not established.
MEDIUM	An administrative framework that ensures an efficient management of the fishery for its conservation is somehow established, but there is evidence of not being efficient to ensure the conservation of the stock.
HIGH	A legal and administrative framework that ensures an efficient management of the fishery for its conservation is established and works efficiently toward the conservation of the stock.

Determination: There have been no substantial changes to the robust legal and administrative framework identified in the initial and first surveillance assessments. H

The primary government agency responsible for fisheries management in Peru is the Ministry of Production (PRODUCE), under which the vice-Ministry of Fisheries develops, approves and monitors national fishing policies, dictates national standards and monitors compliance. PRODUCE is also responsible for encouraging and incorporating research, establishing and maintaining the policy framework, and promoting the growth of fishery subsectors.

Research in support of the activities of PRODUCE is conducted and collated by the specialised technical agency IMARPE, which implements an ecosystem-based approach to examining the relationships between fishery resources, the environment, and fisheries, including artisanal fisheries and aquaculture.

For more detail on the legal and administrative management framework in place for fisheries in Peru, please refer to the 2012 re-assessment (R1).

R1

LEVEL OF COMPLIANCE

A2. Fisheries management should be concerned with the whole stock unit over its entire area of distribution and take into account fishery removals and the biology of the species.

LOW	Fisheries management is not concerned with the whole stock unit over its entire area of distribution and do not take into account any of the matters listed in 'A1'.
MEDIUM	Fisheries management is concerned with matters listed in 'A1' but not entirely. Fisheries, in relation to 'A1' statement, should improve to ensure the long term conservation of the marine resource.
HIGH	Fisheries management should be concerned with the whole stock unit over its entire area of distribution and take into account: <ul style="list-style-type: none"> • All fishery removals • The biology of the species

Determination: There is no evidence of any substantial change in either the scientific understanding of the biological stock, or the stock management unit. H

Anchovy in the South-eastern Pacific is widely distributed, ranging the full length of the South American coastline. This assessment is concerned with the northernmost stock, the Peruvian North-central anchovy fishery which extends from the northern end of the Peruvian EEZ down to 16°S. That this represents a single biological stock is well documented in the scientific literature, and as at the time of the first surveillance assessment there is no evidence to suggest this has changed since the 2012 re-assessment. The status of north-central anchovy as a single biological stock is confirmed by Cahuin *et al* 2015 (R5)

The fishery is monitored and landings recorded by international surveillance company SGS, which is funded in Peru by the fishing industry itself. Fishery removals recorded by SGS include industrial and artisanal

landings, and bycatch of anchovy in other fisheries. Discards are not directly recorded, but rather incorporated into stock assessments indirectly via acoustic surveys and population length frequency data.

For more detail on the definition of the stock and the recording of fishery removals, please refer to the 2012 re-assessment report (R1).

R1

LEVEL OF COMPLIANCE	
<i>A3. Management actions should be based on long-term conservation objectives</i>	
LOW	Management actions are not based on long term management objectives.
MEDIUM	Management actions are based on long term management objectives. However the actions are not scientifically formulated.
HIGH	Management actions are based on long term management objectives, and actions are science based.

Determination: Since the previous assessment, some of the reference points used in the management of the fishery have been clarified. A high compliance rating remains appropriate.

The Peruvian North-central anchovy fishery is subject to both generic and stock-specific management objectives. The generic objectives include “ensure the sustainability of fisheries and of aquatic resources, by managing fisheries with an ecosystem approach, based on the best scientific evidence and including consideration of economic and social aspects”, and “maintain environmental quality by implementing the National Environmental Policy for ecosystem conservation”.

Stock-specific objectives determined during the re-assessment include:

- $B_{lim} = 4,000,000t$; $B_{pa} = 5,000,000t$
- Fishing mortality (F) should be lower than natural mortality (M), where M is estimated to be 0.8.
- The target exploitation rate is 0.35 – i.e. TAC should not exceed 35% of the estimated biomass.

However, these were largely determined from sources other than official stock assessments. IMARPE reports which include direct mention of biomass reference points have since been made available to the assessment team, and place B_{pa} at 6,000,000t while B_{lim} remains at 4,000,000t (R6).

For more detail on the management objectives applied to the fishery, please refer to the 2012 re-assessment (R1).

R1

B. STOCK ASSESSMENT PROCEDURES AND MANAGEMENT ADVICE	
LEVEL OF COMPLIANCE	
<i>B1. Research in support of fisheries conservation and management should exist.</i>	
LOW	Research to support the conservation and management of the stock, non-target species and physical environment does not exist
MEDIUM	Research to support the conservation and the management of the stock, non-target species and physical environment exists, however research programmes could be significantly improved to decrease scientific advice uncertainty.
HIGH	Research to support the conservation and the management of the stock, non-target species and physical environment exist, and existent research is considered most adequate for the long term conservation of the target, non-target and physical environment

Determination: The conservation and management of the North-central anchovy fishery is supported by the collection of fishery-dependent and fishery-independent data by IMARPE. This research has continued since the previous surveillance assessment.

IMARPE is responsible for the assessment of Peruvian anchovy populations based on direct and indirect methods and processes studies. Fishery-dependent data are collected when catch is landed and on board vessels at sea, and include effort data. Fishery-independent hydro-acoustic surveys are also carried out regularly. The stock is assessed at least twice per year by virtual population analysis (VPA) and using integrated population models. Spawning areas are identified and Spawning Stock Biomass (SSB) is estimated using the Egg-Production Method (EPM).

The most recently published IMARPE stock projections, published in 2015 (R3), concluded that the total SSB in April of that year was around 9.4 million tonnes (substantially higher than the B_{pa} of 6 million tonnes).

R1, R3

LEVEL OF COMPLIANCE	
<i>B2. Best scientific evidence available should be taken into account when designing conservation and management measures.</i>	
LOW	Scientific advice is not taken into account when designing conservation and management measures.
MEDIUM	Scientific advice is taken into account, when designing conservation and management measures. However some areas of discrepancy are identified that could have a significant impact in the long term conservation of the marine environment.
HIGH	Scientific advice is taken into account, when designing conservation and management measures, in a comprehensively manner.

Determination: *There continues to be no evidence that any significant aspects of the scientific recommendations are ignored.*

The north-central anchovy fishery is subject to a range of scientifically-advised technical measures, including fishing seasons designed to protect the stock during the main spawning periods (Jan-Mar and Jul-Oct); seasonal quotas (see D1); minimum mesh and landing sizes; and temporary regional closures applied in area with high juvenile landings. Specific examples of regional and temporal closures during 2012 were detailed in the re-assessment, demonstrating that scientific advice is followed even where that advice recommends cessation of fishing. Similar closures have continued to be implemented in the period since the re-assessment, including the cancellation of the second fishing period in 2014 in reflection of IMARPE advice resulting from low biomass estimates in the second half of that year.

For more details on the technical measures in place in the fishery, and examples of their implementation, please refer to the 2012 re-assessment (R1).

C. THE PRECAUTIONARY APPROACH

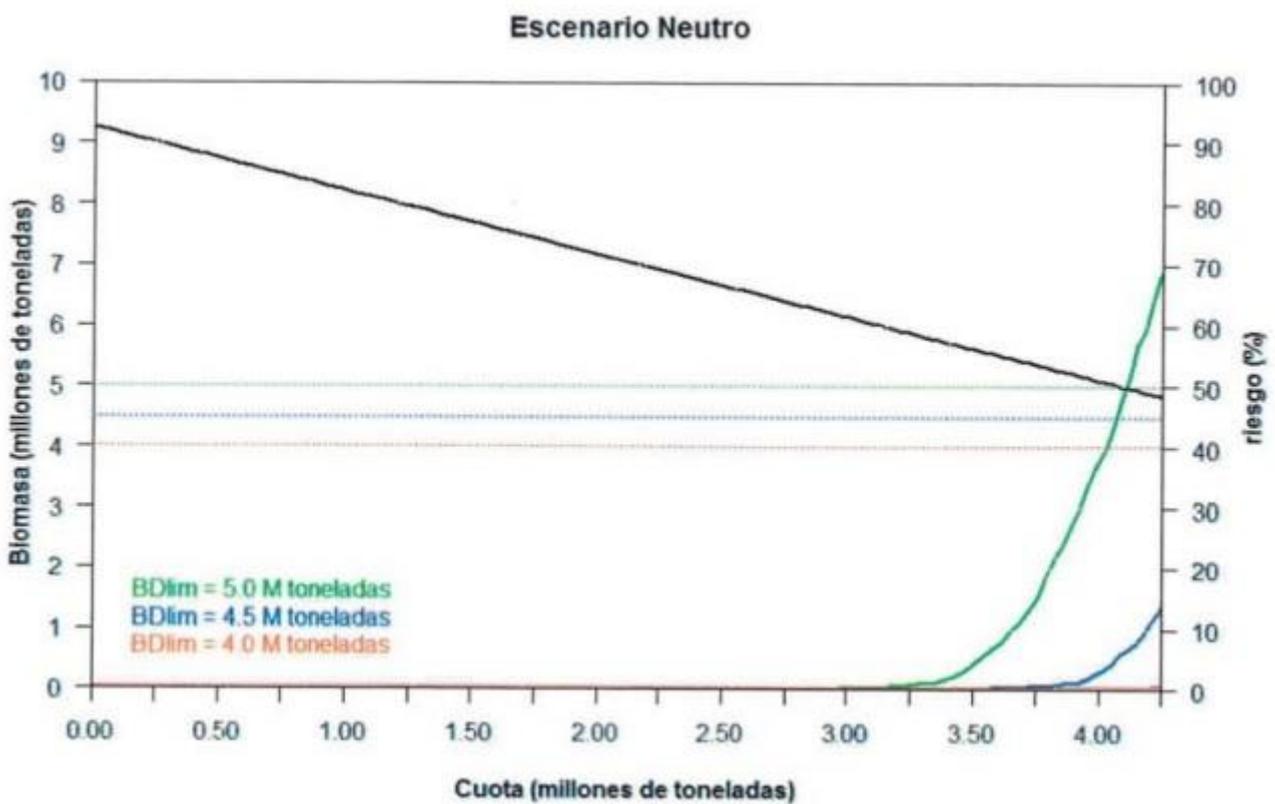
LEVEL OF COMPLIANCE	
<i>C1. The precautionary approach is applied in the formulation of management plans.</i>	
LOW	The precautionary approach is not applied in the formulation of management plans.
MEDIUM	The precautionary approach is applied, however not all uncertainties are taken into account.
HIGH	The precautionary approach is applied, taking into account uncertainties relating to the dynamic of fish population (recruitment, mortality, growth and fecundity), and the impact of the fishing activities, such as discards and by-catch of non-target species as well as on the physical environment (Habitats).

Determination: *The process by which quotas and other management measures are determined continues to appear precautionary and conservative. Previous assessments have awarded a medium compliance under this section due to a lack of clarity on reference points; the increased detail available to the assessment team explaining the reference points and their use in quota recommendations means a high compliance rating is now appropriate.*

The 2012 re-assessment reported some uncertainty as to which reference points were used to calculate

quota recommendations, with figures between 4,000,000t and 6,000,000t seemingly used at different stages in the stock assessment process. The most recent evidence (R6) uses 4,000,000t as a limit reference point, 6,000,000t as a target reference point, and 0.25 as a target exploitation rate. These values are somewhat more conservative than those derived from other documentation during the 2012 re-assessment, which were 4,000,000t, 5,000,000t, and 0.35 respectively (See section A3).

The stock projection includes the graph below, which indicates the anticipated biomass in August 2015 under various quota regimes, along with the estimated probability that B_{lim} will be exceeded. The final IMARPE TAC recommendation was 2.52-2.73 million tonnes, which according to the graph represents a very low probability of B_{lim} being exceeded (and appears to be in line with achieving B_{pa} (6 million tonnes). The TAC was subsequently set at 2.58 million tonnes, in line with the advice.



Black line - projected spawning biomass (y-axis) in August 2015 at various potential quota settings (x-axis). Dotted coloured lines represent options for the biomass limit reference point. Solid coloured lines represent the probability the limit reference point will be exceeded (y-axis) at various potential quota settings (x-axis). From the 2015 IMARPE recommendations, R3.

R1, R3

D. MANAGEMENT MEASURES

LEVEL OF COMPLIANCE

D1. The level of fishing permitted should be set according to management advice given by research organisations.

LOW	The level of fishing permitted is not set according to management advice given by research organisations.
MEDIUM	The level of fishing permitted is higher than management advice given by research organisations. However, the difference is not considered to have a significant impact of the sustainability of the stock
HIGH	The level of fishing permitted is set according to management advice given by research organisations.

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Determination: Quotas continue to be set in line with or below scientific advice. However, full details of the stock assessment process remain unavailable to the assessment team, and it is this continuing lack of clarity in the precise origins of biomass estimates and therefore stock status which means a medium compliance rating remains appropriate.

Since the previous surveillance assessment, TACs have continued to reflect the scientific advice. For the first fishing season of 2014, the TAC was set at 2,530,000t, which was in line with the IMARPE advice. As a result of the in-year surveys, IMARPE recommended the fishery not re-open for the second season, advice which was also followed by managers. Finally, as noted in section C1 above, the IMARPE TAC advice for the first 2015 fishing season was 2,520,000t – 2,730,000t, with the TAC finally set at 2,580,000t.

As at the time of the 2012 re-assessment, complete stock assessment are not made public. However, stock assessment methodologies are reported by third party sources as being regularly reviewed by an international panel of experts. Despite this, the full stock assessment methodology remains unclear, and there is no evidence available to demonstrate the scientific basis for biomass estimates.

R1, R3, R6

M

LEVEL OF COMPLIANCE	
<i>D2. Where excess fishing capacity exist, mechanisms should be in established to reduced capacity to allow for the recovery of the stock to sustainable levels.</i>	
LOW	Mechanisms to allow for recovery of the stock to sustainable levels are not established.
MEDIUM	Mechanisms to allow for recovery of the stock to sustainable levels are somehow established. However there is no evidence of the efficiency of the methods used.
HIGH	Mechanisms are established to reduce capacity to allow for the recovery of the stock to sustainable levels and there are evidences of recovery.

Determination: Fishing effort continues to be primarily limited by strict quotas and licencing, and the fishery remains closed to new entrants.

Seasonal quotas and vessel licensing are the primary management mechanism used to restrict excess fishing capacity. The fishery is closed to new vessels, and there is 24-hour monitoring of all 130 landing locations to ensure that only those vessels with a permit are allowed to land catch. There is substantial evidence that these mechanisms have been successful in the limiting of fishing effort, the most important of which is that seasonal landings have not exceeded quotas.

For more information on the avoidance and management of excess fishery capacity, please refer to the 2012 re-assessment (R1).

R1

H

LEVEL OF COMPLIANCE	
<i>D3. Management measures should ensure that fishing gear and fishing practices do not have a significant impact on non-target species and the physical environment.</i>	
LOW	There are no management measures to prevent the impact of the fishing methods and fishing practices on non-target species and the physical environment.
MEDIUM	There are management measures to prevent the impact of the fishing methods and fishing practices on non-target species and the physical environment. However it is not science based.
HIGH	There are management measures to prevent the impact of the fishing methods and fishing practices on non-target species and the physical environment. Measures are based on scientific information.

Determination: There is no new evidence in relation to the impacts of the fishery on non-target species and the physical environment available to the assessment team. Due to the continuing high levels of discarding and potential direct impacts on PET species, a medium compliance rating remains appropriate.

M

Bycatch of up to 5% of the target catch is permitted, with a wide range of non-target species reported in the anchovy fishery. Efforts have been made to minimise bycatch and discarding, but recent sampling efforts and IMARPE reports have found considerable discarding still occurs. PET species are also known to be impacted by the fishery, although such impacts are considered minimal and two marine reserves have been implemented partially in an effort to reduce any such impacts.

The 2012 re-assessment reported that there was an intention to transition towards an ecosystem-based management approach in the anchovy fishery, and this was followed up by the first surveillance report, which noted the existence of a full and detailed report into the ecosystem aspects of the anchovy stock and fishery. Pelagic trawling continues to be widely acknowledged to have minimal impact on the physical environment; additionally, fishing in the anchovy fishery is prohibited within 5 miles of the coast.

For more details on the technical measures in place to minimise the impacts of the fishery on non-target species and the physical environment, please refer to the 2012 re-assessment (R1).

R1

E. IMPLEMENTATION

LEVEL OF COMPLIANCE

E1. There should be a framework for sanctions of violation of Laws and regulations.

LOW	A framework for sanctions of violation of Laws and regulations do not efficiently exist.
MEDIUM	A framework for sanctions of violation of Laws and regulations do exist but do not work efficiently.
HIGH	A framework for sanctions of violation of Laws and regulations exists and is proven to be efficient.

Determination: The framework for the application of effective sanctions wherever laws and regulations are violated which was identified in previous assessments remains in place.

PRODUCE publishes lists of sanctions invoked and the relevant laws, fines, and fishing suspensions on the ministerial website, as required by Regulations of the Organization and Functions of the Ministry of Production. Other regulations relevant to fisheries sanctions include:

- Ley 25977 Ley General de Pesca (Artículos del 76° al 83°)
- Decreto Supremo 012-2001-PE Reglamento de la Ley General de Pesca (Artículos del 126° al 150°)
- Decreto Supremo 016-2007-PRODUCE Reglamento de Inspecciones y Sanciones Pesqueras Acuícolas

LEVEL OF COMPLIANCE

E2. A management system for fisheries control and enforcement should be established.

LOW	A management system for fisheries control and enforcement is not established.
MEDIUM	A management system for fisheries control and enforcement is established but do not work efficiently.
HIGH	A management system for fisheries control and enforcement is established and work efficiently.

Determination: The fishery continues to be subject to a well-established system for control and enforcement, with appropriate and sufficient actions taken by authorities to identify and tackle illegal activity.

The enforcement of fisheries legislation and technical measures in Peruvian fisheries is primarily the responsibility of PRODUCE, and to a lesser extent the surveillance company SGS which monitors landings. VMS is mandatory, and around 70% of the fishing industry is a member of the Sociedad Nacional de Pesquerías (National Fisheries Society, SNP), which has developed an Ethical Code of Conduct with responsible fishing as a central theme, including strict compliance with regulations.

The 2012 re-assessment identified historical issues with illegal landings; however, it was concluded that

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managers have taken every reasonable measure to minimise incidences of illegal fishing, including 24-hour third-party monitoring of landing locations. The assessment also provided examples of the effectiveness of these measures. There have been no substantial changes since the time of that report.

For more details on fisheries control and enforcement in Peru, please refer to the 2012 re-assessment (R1).

7. KEY STAKEHOLDERS

8. REFERENCES

R1 – IFFO RS Peruvian north-central anchovy re-assessment, 2012: <http://www.iffonet.net/files/iffoweb/approved-raw-materials/whole-fish/peruvian-anchovy-re-approval-2013.pdf>

R2 – IFFO RS Peruvian north-central anchovy surveillance, 2014: <http://www.iffonet.net/files/iffoweb/approved-raw-materials/whole-fish/peru-anchovy-surveillance-april-2014.pdf>

R3 – Evaluation of the north-central Peruvian anchovy stock: current status and recommendations for the first fishing season 2015: http://www.imarpe.pe/imarpe/archivos/informes/imarpe_public_evalanch_temp1_2015.pdf

R4 –Population analysis of the anchovy fishery in the Peruvian marine ecosystem, IMARPE/PRODUCE: http://www.imarpe.pe/imarpe/archivos/informes/info_anal_pob_anchov_1.pdf

R5 – Cahuin, S.M.; Cubillos, L. A.; Escribano, R. 2015. Synchronous patterns of fluctuations in two stocks of anchovy *Engraulis ringens* Jenyns, 1842 in the Humboldt Current System. *J. Appl. Ichthyol.* 31, 45–50, ISSN 0175–8659. <http://onlinelibrary.wiley.com/doi/10.1111/jai.12646/pdf>

R6 – Population analysis of the anchovy fishery in the Peruvian marine ecosystem: http://www.imarpe.pe/imarpe/archivos/informes/info_anal_pob_anchov_1.pdf