



# FISHERY ASSESSMENT REPORT

## IFFO GLOBAL STANDARD FOR RESPONSIBLE SUPPLY OF FISHMEAL AND FISH OIL



<b>FISHERY:</b>	<b>Anchovy (<i>Engraulis ringens</i>)</b>
<b>LOCATION:</b>	<b>Northern Border Of The EEZ To 16° South</b>
<b>DATE OF REPORT:</b>	<b>14/12/12</b>
<b>ASSESSOR:</b>	<b>Sam Peacock</b>

Global Trust Certification Ltd, Quayside Business Centre, Dundalk, Co. Louth, Ireland Tel: 042 932 0912 Fax 042 938 6864

Issue No; 2; Issue Date; Nov 09

Report Ref: PERU ANCHOVY 2012

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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	
Assessor Name:	Peer Reviewer:	Assessment Days:	Initial/Surveillance/Re-certification:
Sam Peacock	Mike Platt	10	Re-approval
Assessment Period	1 – 14 December 2012		
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		Agree to Re-approve Fishery	
9. Recommendation		Re-approve fishery	

2. Quality of Information
Good; primarily Ministerial websites, stock assessments and other publications. Additional information sourced from third party websites including FishSource, scientific publications, and news websites.

3. Compliance Level Achieved
High/medium
Recommendation
<b>Re-approve fishery against the IFFO RS standard</b>

4. Requirements for On-site Assessment
<b>Based on High Compliance Findings</b>
<ul style="list-style-type: none"> <li>• Re-Confirm that all landings are monitored by SGS, and that SGS maintain a 24-hour presence at landing locations.</li> <li>• Re- Confirm that only legally-entitled (i.e. licenced) vessels are permitted to land catch</li> <li>• Re- Confirm, where possible, adherence to other management requirements, including minimum landing size (12cm), minimum mesh size (13cm), maximum 5% by-catch, no fishing within 5 miles of shore.</li> <li>• Re- Confirm all vessels are equipped with active VMS systems.</li> <li>• <b>Each supplying vessel must maintain a Log book record of sea mammal/sea turtle interactions and evidence of marine mammal interactions collated during the on site assessment</b></li> <li>• <b>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 and reviewed during the on site assessment</b></li> </ul>
<b>Based on Medium Compliance Findings</b>
Key Stakeholders of the Fishery

<b>5. Assessment Determination</b>
<p>Management of the Peruvian north-central anchovy fishery has a solid legal, administrative, and scientific basis, and laws and management measures are generally effectively enforced by government and independent bodies. The robust, science-based approach has led to high compliance levels under most clauses in this assessment, as in previous assessments. However, there are a number of minor issues which continue to prevent the fishery from scoring very high compliance.</p> <p>Firstly, there is a lack of transparency in the methodology used to assess the stock and make quota recommendations. While some additional information can be obtained on these issues from third party organisations, there are still gaps in the information available. In particular, it was not possible for the assessment team to fully establish how strictly quota-setting and the development of other management measures follows the precautionary approach.</p> <p>Secondly, there remains a lack of information on the indirect impacts of the fishery on species for which anchovy is an important prey species, and the extent to which these impacts are factored into fishery management decisions. Recent data suggests there may also be an issue within the fishery with regards to discarding of juvenile anchovy, although the assessment team considers this to be less pressing as management authorities are taking steps to minimise the phenomenon, and additionally the reduced number of juvenile individuals led directly to an unusually small quota in the most recent fishing season.</p> <p>Finally, although it did not lead to reduced compliance scores, there have been some concerns over illegal landings and other attempts to contravene fishery legislation. The evidence available shows that managers are taking appropriate action to minimise and punish such activity, but future assessors should be aware of the issue and subject compliance to additional scrutiny.</p>
<b>HIGH COMPLIANCE</b>
A1, A2, A3, B1, B2, D2, E1, E2
<b>MEDIUM COMPLIANCE</b>
C1, D1, D3

## Background

The initial assessment of the Peruvian North-central anchovy fishery, conducted in September 2009, awarded high compliance under all sections except D3, under which the fishery was awarded medium compliance. The fishery was approved with conditions, and subsequently scored medium/high compliance in both surveillance assessments.

Anchovy is a small pelagic species which can reach up to 20cm in length. Anchovy is a fast-growing species, with younger fish recruiting to the fishery at around 5-6 months old (8-9cm). The north-central Peruvian anchovy fishery is prosecuted by industrial, mid-sized and artisanal vessels using pelagic trawl gear. The fishery is open for two seasons each year, in April – September and November – January, and is closed during the peak anchovy spawning periods. Minimum landing size is 12cm, which corresponds to the approximate length of females at sexual maturity.

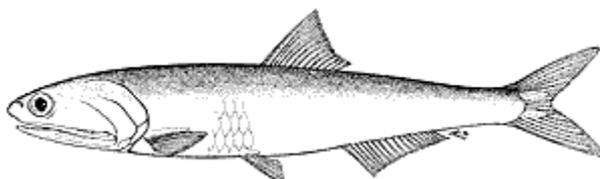


Fig. 1 – Anchovy (*Engraulis ringens*). From FishSource.

References: R1-3.

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	High Compliance	Low Compliance	Low Compliance	Low Compliance	Low Compliance
Fisheries management should be concerned with the whole stock unit	High Compliance	Low Compliance	Low Compliance	Low Compliance	Low Compliance
Management actions should be scientifically based	High Compliance	Low Compliance	Low Compliance	Low Compliance	Low Compliance
Research in support of fisheries conservation and management should exist	Low Compliance	High Compliance	Low Compliance	Low Compliance	Low Compliance
Best scientific evidence available should be taken into account when designing conservation and management measures	Low Compliance	High Compliance	Low Compliance	Low Compliance	Low Compliance
The precautionary approach is applied in the formulation of management plans	Low Compliance	Low Compliance	Medium Compliance	Low Compliance	Low Compliance
The level of fishing permitted should be set according to management advice given by research organisations	Low Compliance	Low Compliance	Low Compliance	Medium Compliance	Low Compliance
Where excess fishing capacity exist, mechanisms should be in established to reduced capacity	Low Compliance	Low Compliance	Low Compliance	High Compliance	Low Compliance
Management measures should ensure that fishing gear and fishing practices do not have a significant impact on non-target species and the physical environment	Low Compliance	Low Compliance	Low Compliance	Medium Compliance	Low Compliance
A management system for fisheries control and enforcement should be established	Low Compliance	Low Compliance	Low Compliance	Low Compliance	High Compliance
A framework for sanctions of violation of laws and regulations should be efficiently exists	Low Compliance	Low Compliance	Low Compliance	Low Compliance	High Compliance

**KEY:** Low Compliance [Red Box] Medium Compliance [Yellow Box] High Compliance: [Green Box]

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**6. Rationale of the Assessment Outcome**

**a. The Management Framework and Procedure**

LEVEL OF COMPLIANCE	a.i. 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.	References	Rating
LOW	<b><i>Determination: Peruvian fisheries management is based on robust legal and administrative foundations, which are applied effectively to the anchovy fishery.</i></b>	R4-7	HIGH
MEDIUM	The Ministry of Production (PRODUCE) was created by Law 27779 of July 10, 2002, and has responsibility for the fishing and industrial sectors. PRODUCE, through the vice-Ministry of Fisheries, develops, approves and monitors national fishing and industrial policies, dictates national standards and monitors compliance. The role of PRODUCE with regards to fisheries includes publishing Ministerial Resolutions dictating annual quotas and makes other on-going management decisions based on data and advice provided by the Marine Research Institute of Peru (IMARPE). The activities of PRODUCE include:		
HIGH	<ul style="list-style-type: none"> <li>• Formulate, approve, direct, coordinate, implement, monitor and evaluate policies and national development plans of the fishery subsectors;</li> <li>• Encourage and incorporate research, innovation and technology transfer;</li> <li>• Improve and strengthen the sectorial environmental management system;</li> <li>• Establish the policy framework for the development of fishery production and processing subsectors, and oversee and monitor compliance with this framework;</li> <li>• Identify opportunities, disseminate and promote the growth of investments in fishery subsectors;</li> <li>• Issue and administer regulations, technical documentation and management for the sector, and settle claims brought against them.</li> </ul> <p>IMARPE is a specialised technical agency which conducts research and provides advice on Peruvian fisheries.</p>		

	<p>IMARPE implements an ecosystem-based approach to examine the relationships between fishery resources, the environment, and fisheries, including artisanal fisheries and aquaculture. The stated mission of IMARPE is (paraphrased):</p> <p>“Conducting timely and high-quality scientific and technological research, contributing to greater knowledge of fishery resources and their environment, to promote the conservation of aquatic ecosystems, biodiversity, and sustainable use.</p> <p>Advising the Ministry of Production under an ecosystem approach for decision-making, related to the management and regulation of fisheries, aquaculture and conservation of the environment, in accordance with the guidelines of the Fisheries and natural conditions of aquatic ecosystems.”</p>		
	a.ii. 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	References	Rating
LOW	<p><b><i>Determination: The stock unit is defined according to the best available science, including the long-established understanding of the four main anchovy stocks in the Southeastern Pacific. Fishery managers take all fishery removals into account, with both targeted and by-catch landings of anchovy recorded and used in stock assessments. Although discards do not appear to be monitored in this fishery, the assessment team considers a rating of high compliance to be appropriate.</i></b></p> <p>Anchovy has a wide geographical distribution in the Southeastern Pacific, from Punta Aguja (6°00’ S) in Northern Peru to Southern Chile. There are four different anchovy (<i>Engraulis ringens</i>) stocks off the South Eastern Pacific margin as follows:</p> <ul style="list-style-type: none"> <li>• Northern-Central Peruvian stock, managed by Peru;</li> <li>• Southern Peru/Chilean Regions XV-I-II stock, managed by both Peru and Chile,</li> <li>• Chilean fishery units III-IV stock, managed by Chile,</li> <li>• Chilean fishery units V-X stock, also managed by Chile.</li> </ul> <p>This assessment is concerned only with the first of these stocks, the Peruvian North-central anchovy fishery.</p>	R8-10	HIGH
MEDIUM			
HIGH			

	<p>The geographical range of the stock unit extends from the northern end of the Peruvian exclusive economic zone (EEZ) down to 16°S, approximately level with San Juan de Marcona (Fig. 2). The geographical range of the biological anchovy stocks off the west coast of South America is well documented in the scientific literature, and so the north-central Peruvian management unit reflects best available scientific understanding of the stock.</p> <p>The international surveillance company SGS is appointed and financed by the fishing industry to monitor and record all fishing landings on the coast of Peru for management purposes, including artisanal landings which are included within seasonal quotas. Targeted anchovy landings are referenced in the bi-annual stock assessments and are certainly factored into the quota recommendation process. By-catch of anchovy in other fisheries is permitted up to 5% of total targeted catch, and so anchovy landed as by-catch is monitored and included in the total landings. The extent to which anchovy is discarded is not clear, but some sources (including the most recent stock assessment) suggest it could be a significant source of fishery removals. Discards do not appear to be quantified for inclusion in stock assessments; however, the acoustic surveys and population length data used in the assessments can detect high levels of discarding, as evidenced in the most recent assessment, and so discards are factored into fishery management in an indirect, post-hoc manner.</p> <p>It is clear from management and stock assessment documentation that consideration of environmental influences on the stock, in particular El Niño events, forms a core component of the management approach.</p>		
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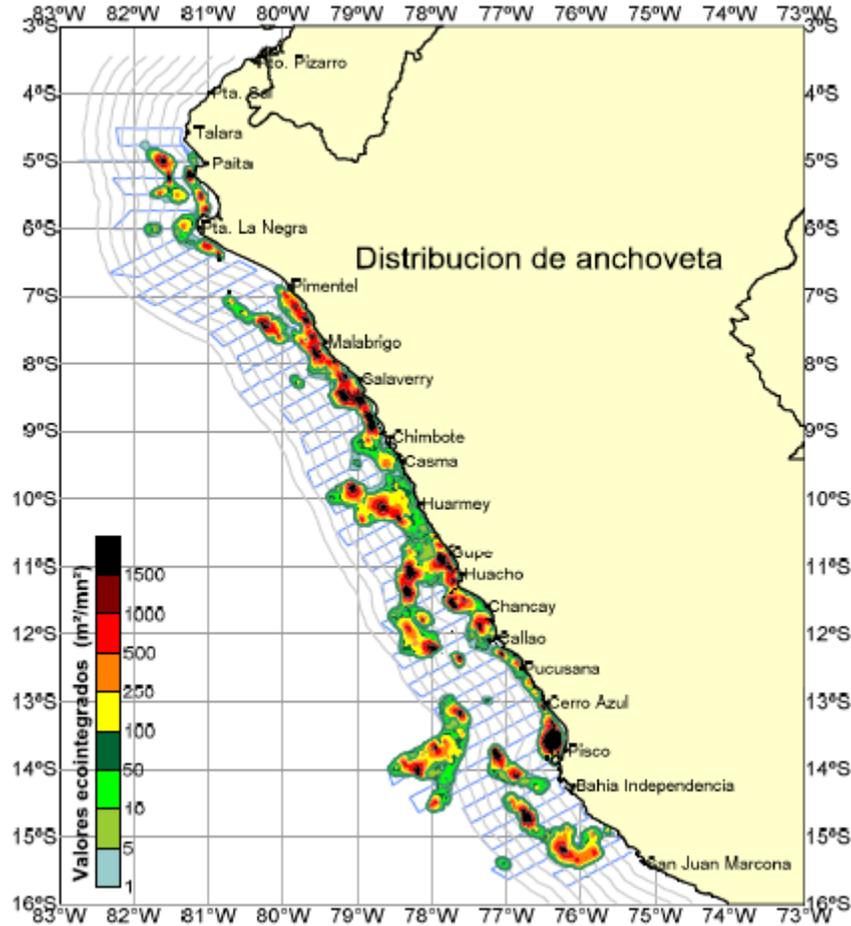
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**Fig. 2 – Distribucion de anchoveta (North-central region anchovy distribution). From the Nov 12 – Jan 13 anchovy projections, distribution data based on hydroacoustic survey. IMARPE (R8).**

	a.iii .Management actions should be based on long-term conservation objectives	References	Rating
LOW	<p><b>Determination:</b> <i>The North-central anchovy fishery is subject to general and stock-specific management objectives. There is no clear, publically available management plan for the stock, but several sources provide evidence that managers are working against internally-recognised objectives. Although the management process could be improved by increased transparency, the assessment team consider the current approach sufficient to award a score of high compliance under this section.</i></p> <p><b>General management objectives</b></p> <p>PRODUCE has defined 6 strategic objectives for the fishery vice-Ministry. Strategic Objective 3 is to 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. Objective 5 is to maintain environmental quality by implementing the National Environmental Policy for ecosystem conservation.</p> <p>Peru has been a member of the Asia-Pacific Economic Cooperation (APEC) since 1998. The purpose of APEC is to support sustainable economic growth and prosperity in the Asia-Pacific region; one aspect of this is the management of fisheries and aquaculture. In the early 1990’s, APEC established the Marine Resource Conservation Working Group (MRCWG) and the Fisheries Working Group (FWG). In 2011 these groups were merged to form the Ocean and Fisheries Working Group (OFWG), which held its first meeting in May 2012. The objectives of the MRCWG and FWG, which will be transferred into the long-term plans of the new OFWG, included commitments to sustainable development, preservation of marine environmental quality, biodiversity, and marine ecosystems, and to implement the “Action Plan for Sustainability of the Marine Environment”, as agreed by the APEC member states.</p> <p><b>Stock-specific management objectives</b></p> <p>Although not clearly stated in the PRODUCE or IMARPE documentation seen by the assessment team, external references (R10) have noted that both limit and precautionary biomass reference points have been defined for</p>	R10-14	HIGH
MEDIUM			
HIGH			

	<p>the stock and are referred to by managers in presentations. They also appear to be referenced in some stock assessment diagrams, although not explicitly discussed (R13). Based on this evidence, the reference points used by fishery managers to determine quotas are as follows:</p> <p><math>B_{lim} = 4,000,000t</math>; <math>B_{pa} = 5,000,000t</math>.</p> <p>Additional management objectives, which have not been observed as part of an official management plan but rather have been mentioned in other documents, include:</p> <ul style="list-style-type: none"> <li>Fishing mortality (F) should be lower than natural mortality (M), where M is estimated to be 0.8.</li> <li>The target exploitation rate is 0.35 – i.e. TAC should not exceed 35% of the estimated biomass.</li> </ul>	
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**b. Stock Assessment Procedures and Management Advice**

LEVEL OF COMPLIANCE	bi. Research in support of fisheries conservation and management should exist.	References	Rating
LOW	<p><b><i>Determination: The management of the north-central anchovy fishery is supported by fishery-dependent data collection and bi-annual hydroacoustic surveys and stock assessments. Although the details of stock assessments and the process used to generate quota recommendations are not made public, the evidence available suggests that on-going research is sufficient to provide a solid scientific basis for the management of the stock.</i></b></p> <p>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. The stock is assessed at least twice per year by hydro-acoustic survey, by virtual population analysis (VPA) and using integrated population models. Spawning areas are identified and</p>	R8, R10, R15	HIGH
MEDIUM			
HIGH			

	<p>Spawning Stock Biomass (SSB) is estimated using the Egg-Production Method (EPM).</p> <p>Although the published stock assessments do not contain all the details of the methodology and modeling processes used to arrive at quota recommendations, they do provide many environmental and biological data including surface and sub-surface temperature and salinity, oxygen concentrations, geographical and vertical distribution of the anchovy population, size frequency diagrams and biomass projections for a range of quota options.</p> <p>The summer 2012 research cruise (discussed in detail in the previous stock projection, for the April – September 2012 season, R15) resulted in a quota recommendation of 2.7 million tons, and projected a remaining biomass after these removals of 6.2 million tons. However, the most recently published IMARPE stock projections (which made recommendations for the November 2012 – January 2013 season) estimated stock biomass as being only 4.2 million tons. This resulted in a quota recommendation for the November-January season of only 810,000t, which was subsequently adopted as the final quota and represented a 68% reduction on the previous year, and the lowest quota in 25 years. The stock assessment hypothesises that the difference between observed and expected biomass was caused by a combination of environmental anomalies and potentially high levels of juvenile discarding.</p>		
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	<p>Fig. 8. Estructura por talla de anchoveta</p>		
	<p><b>Fig. 3 – Length frequency distribution of the North-central anchovy stock, by number (Numero, blue) and weight (Peso, red). From the Nov 12 – Jan 13 stock projection (R8).</b></p>		
LEVEL OF COMPLIANCE	b.ii Best scientific evidence available should be taken into account when designing conservation and management measures	References	Rating
LOW	<p><b><i>Determination: The anchovy fishery is subject to both temporary and permanent management measures which are primarily concerned with the conservation of the stock and have been recommended by IMARPE. There is recent evidence that in-season scientific recommendations are also implemented, up to and including localised fishery closures.</i></b></p> <p>The north-central anchovy fishery is subject to a range of technical measures, based on best available scientific understanding of the stock via advice provided by IMARPE. The dates of fishing seasons are specified to protect the anchovy during the main spawning periods in January – March and July – October. Additional management</p>	R8, R10, R16	HIGH
MEDIUM			
HIGH			

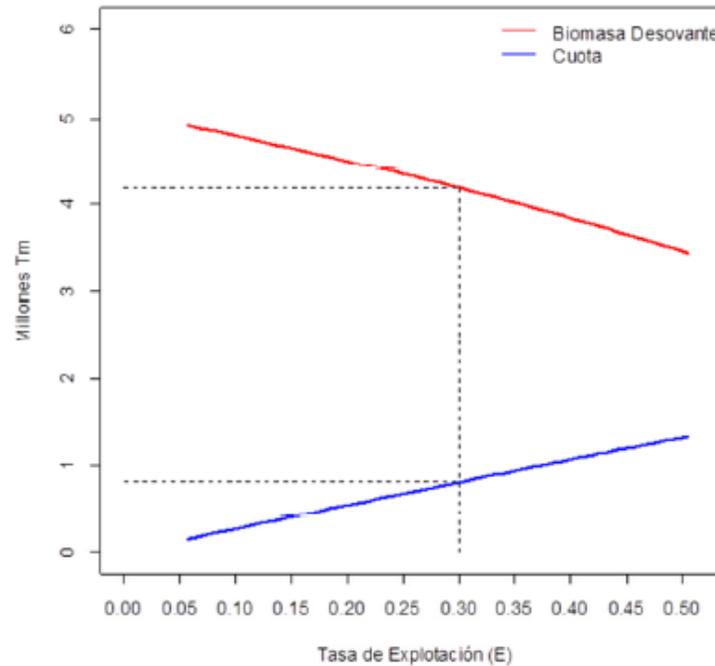
	<p>measures in place include:</p> <ul style="list-style-type: none"> <li>• Seasonal quotas, with closure of the fishery occurring if the quota is reached (see section D1).</li> <li>• All vessels must have a valid fishing permit</li> <li>• Minimum mesh size is 13 mm</li> <li>• Minimum landing size of 12cm, although up to 10% of individuals may be smaller</li> <li>• If the presence of juveniles exceeds 10% in the daily landings at a port, fishing will be prohibited from this port for a minimum of three days</li> <li>• No fishing within 5 miles of the coast</li> <li>• All vessels must have an operating satellite positioning system on board</li> <li>• Daily lists published on the PRODUCE website of permitted and prohibited fishing vessels</li> </ul> <p>In November 2012, IMARPE recommended localised fishery closures due to the high incidences of juvenile anchovy in the catch. These closures affected holders of all types of licence, including artisanal, small-scale and industrial. An additional measure implemented in the same legislation restricted all vessels to one fishing trip per day throughout the north-central region. There were similar localised fishery closures during the April – September season, also due to the high incidence of juveniles in the catch. These instances provide strong evidence that in-season advice from scientists is followed closely by fishery managers, even where that advice recommends closure.</p>		
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**c. The Precautionary Approach**

LEVEL OF COMPLIANCE	c.i The precautionary approach is applied in the formulation of management plans.	References	Rating
LOW	<p><b><i>Determination: The precautionary approach appears to be implemented in the development and application of management measures in this fishery. However, the full details of the quota-recommendation process are not publically available, and the assessment team requires more detail, particularly on the application of precautionary reference points, before a score of high compliance can be awarded.</i></b></p> <p>A precautionary biomass reference point of <math>B_{pa} = 5,000,000t</math> has been set for the stock; this figure has not been explicitly stated in the stock assessment documentation but is referred to in several diagrams. However, the most recent stock assessment documentation (R8) also states that according to information on the relationship between SSB and recruitment, the optimum spawning biomass (i.e. the target reference point) is 6,000,000t. The assessment then appears to use 4,000,000t (<math>B_{lim}</math>) (in addition to an exploitation rate of 0.3) as a basis for setting the quota recommendation. As stated elsewhere in this assessment, the full details of the process used to reach quota recommendations is not made public; however, from the information available the process is as follows:</p> <ul style="list-style-type: none"> <li>• The results of the hydroacoustic survey produce an estimated anchovy SSB at the start of the Nov 12 – Jan 13 season of 5,350,000t, which is significantly lower than the average over the past 12 years.</li> <li>• The quota for the April – September 2012 season was set at a level which was estimated to produce an SSB in Feb 2013 of 6,200,000t if the 2012/13 exploitation rate was set at 0.3.</li> <li>• For a number of hypothesised reasons (see B1), the Feb 2013 SSB is now projected to be 4,200,000t if the 2012/12 exploitation rate is set at 0.3.</li> <li>• An exploitation rate of 0.3 would imply a quota of 910,000t. The final recommendation for the</li> </ul>	R8, R10	MEDIUM
MEDIUM			
HIGH			

2012/12 season was 810,000t. There are no details provided on why the recommendation was reduced by this quantity, although it is clear that it was for precautionary reasons.

- Additional precautionary measures recommended by IMARP in the most recent stock projections include “strengthen monitoring and surveillance systems on landings, discard and removal of juveniles. Implement an on-board observer program to obtain more reliable information on exploitation activities. Consider an additional stock survey.”



**Fig 4 – Projected spawning biomass (Biomasa Desovante, red) at the end of the summer (Nov-Jan) 2012/13 season for varying quotas (Cuota, blue). “Millones Tm” = Millions of tons. “Tasa de Explotacion” = Exploitation rate. From the 2012/13 stock projection (R8).**

**d. Management Measures**

LEVEL OF COMPLIANCE	d.i The level of fishing permitted should be set according to management advice given by research organisations.	References	Rating
LOW	<p><i>Determination: For the two most recent fishing seasons, quotas have been set in line with or below scientific advice. The fishery has scored high compliance under this section in all 3 previous assessments, demonstrating a consistently science-based approach to quota-setting. However, as the details of the process used to generate quota recommendations are not made publicly available, the assessment team have downgraded the score in this section to medium compliance to better reflect the lack of transparency.</i></p> <p>IMARPE fishery projections are routinely used as the basis for setting seasonal quotas in the north-central anchovy fishery. The recommended quota for the April – September 2012 season was 2,900,000t, the actual quota was set at 2,700,000t, and the total landings for the season were 2,563,000t. The recommended quota for the Nov 2012 – Jan 2013 season was 810,000t, and the actual quota was set at this level. 810,000t represents a 68% reduction on the summer season quota of the previous year, and is the lowest quota in 25 years. This illustrates the willingness of fishery managers to restrict fishing effort when recommended by scientific advice. Both surveillance assessments and the initial assessment of the fishery reported that managers complied with scientific quota advice.</p> <p>Complete stock assessments are not made public, and those stock assessment methodologies which have been observed and reported by the assessment team have been from third party sources. However, stock assessment methodologies are reported by third party sources as being regularly reviewed by an international panel of experts, and those observed by the assessment team appear appropriate and reliable.</p>	R8, R10, R13, R15, R17	MEDIUM
MEDIUM			
HIGH			

LEVEL OF COMPLIANCE		d.ii Where excess fishing capacity exist, mechanisms should be in established to reduced capacity to allow for the recovery of the stock to sustainable levels.	References	Rating
LOW		<p><b>Determination: Excess fishing capacity is not currently an issue in this fishery, and fishing effort is managed by issuing strictly enforced quotas. The fishery is closed to new entrants.</b></p> <p>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. Additionally, the management measures described in B1, B2 and D1 highlight the extent to which fishery managers further reduce fishing effort, or close fisheries entirely, in the light of scientific recommendations.</p>	R8, R10, R13	HIGH
MEDIUM				
HIGH				
LEVEL OF COMPLIANCE		d.iii Management measures should ensure that fishing gear and fishing practices do not have a significant impact on non-target species and the physical environment.	References	Rating
LOW		<p><b>Determination: In general, fishery manager take appropriate action to identify and minimise the impacts of the fishery on non-target species and the physical environment. However, the assessment team considers a score of medium compliance to be appropriate due to high levels of discarding, possible direct impacts on PET species, and a poor understanding of the indirect ecosystem impacts of the removals of this important prey species.</b></p> <p><b>Non-target species</b></p> <p>By-catch is permitted up to 5% of the target catch. The stock projection for April – September 2011 included figures on the proportions of non-target species in research catches as follows: 9.77% carrot lobster (<i>Pleuroncodes monodon</i>); 1.19% horse mackerel (<i>Trachurus murphyi</i>); 1.1% catfish (<i>Galeichthys peruvianus</i>); 1.12% squid (<i>Dosidicus gigas</i>). 5% of the catch was categorised as ‘other species’, including lumptail searobin (<i>Prionotus stephanophrys</i>), twospine driftfish (<i>Psenes sio</i>), Pacific thread herring</p>	R8, R10, R13, R15	MEDIUM
MEDIUM				
HIGH				

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	<p>(<i>Opisthonema libértate</i>), Mexican lookdown (<i>Selene Brevoorti</i>), Pacific sierra (<i>Scomberomorus sierra</i>), Paloma pompano (<i>Trachinotus paitensis</i>) and others.</p> <p>By-catch, including by-catch of juvenile anchovy, is an issue for this fishery. Efforts have been made by managers to minimise by-catch and discards of target and non-target species, including area closures, a by-catch landing limit of 5%, and the associated monitoring and enforcement regimes required to make such actions meaningful. However, in 2012 bays and coves in the north-central region were sampled for incidence of discards, and of 173 sampled 13% were found to have some discards present. IMARPE stock assessments report that juvenile discarding, in particular, may be a significant issue in the fishery, and includes such activity as a possible explanation for the unexpectedly low SSB projected by the most recent hydroacoustic survey.</p> <p><b>PET species</b></p> <p>PET species known to be related to the Peruvian anchovy fishery are Humboldt penguin (<i>Spheniscus humboldti</i>, classified as Endangered by IUCN) and Peruvian diving-petrel (<i>Pelecanoides garnotii</i>, classified as Vulnerable), both of which are protected by Peruvian law. Other important predators of anchovy include Guanay cormorants (<i>Phalacrocorax bougainvillii</i>, Near threatened), Fur seals (<i>Arctocephalus australis</i>, Least Concern) and Sea lions (<i>Otaria byronia</i>, Least Concern). Direct impacts of the fishery on all these species are considered minimal, and the main concern is the indirect effect of the removal of anchovy. There are historical reports of the incidental capture of Humboldt penguins in the 1960's, but the issue does not appear to have been addressed in recent years. There are two marine reserves in Peru, created partially to protect PET species and the broader marine ecosystem.</p> <p><b>Ecosystems effects</b></p> <p>Although some sources report that fishery managers intend a transition towards an ecosystem-based management system for this fishery, the assessment team is not aware of any specific time frame or development plan for this approach. Fisheries managers are aware of the role of anchovy in the ecosystem, and its importance as a prey species for many other organisms. The extent to which this</p>	
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		<p>awareness is translated into management actions is not clear, although there is some evidence that it has played a role in the establishment of marine reserves, and may also be part of the reason for efforts to protect juvenile anchovy.</p> <p><b>Habitat &amp; the physical environment</b></p> <p>Pelagic trawling is widely acknowledged to have minimal impact on the physical environment. Fishing is banned in the shallow waters within 5 miles of the coast, further limiting the potential for nets to make contact with the seabed.</p>		
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**e. Implementation**

LEVEL OF COMPLIANCE	e.i There should be a framework for sanctions of violation of Laws and regulations.	References	Rating
LOW	<p><b><i>Determination: The legal basis for sanctions is firmly established and there is clear evidence that such sanctions are both applied and effective.</i></b></p> <p>PRODUCE publishes lists of sanctions invoked and the relevant laws, fines, and fishing suspensions on the ministerial website (R18), as required by Regulations of the Organization and Functions of the Ministry of Production. Other regulations relevant to fisheries sanctions include:</p> <ul style="list-style-type: none"> <li>• Ley 25977 Ley General de Pesca (Artículos del 76° al 83°)</li> <li>• Decreto Supremo 012-2001-PE Reglamento de la Ley General de Pesca (Artículos del 126° al 150°)</li> <li>• Decreto Supremo 016-2007-PRODUCE Reglamento de Inspecciones y Sanciones Pesqueras Acuícolas</li> </ul>	R18, R19	HIGH
MEDIUM			
HIGH			
LEVEL OF COMPLIANCE	e.ii A management system for fisheries control and enforcement should be established.	References	Rating
LOW	<p><b><i>Determination: The fishery is subject to a well-established system for control and enforcement, which recognises and attempts to minimise the historical issues the fishery has faced with regards to illegal landings. Although the assessment team has observed some reports of illegal activity, it considers the actions taken by management authorities to be appropriate and sufficient, and as a result the fishery scores highly in this category.</i></b></p> <p>Enforcement of fisheries legislation and technical measures is the responsibility of PRODUCE, and to a lesser extent the surveillance company SGS which monitors landings. All licenced vessels carry a mandatory VMS monitoring device (Regulation of Satellite Tracking System approved by Supreme Decree).</p>	R19-21	HIGH
MEDIUM			
HIGH			

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	<p>The Directorate General of Monitoring and Control of the Ministry of Production publish the list of boats which are prohibited from sailing on any given day.</p> <p>There are several examples of the effectiveness of fisheries enforcement, including the recent seizure of more than 1,000kg of illegally landed fish in Piura (R21).</p> <p>Around 70% of the fishing industry is a member of the Sociedad Nacional de Pesquerías (National Fisheries Society, SNP). The SNP has developed an Ethical Code of Conduct with responsible fishing as a central theme, including strict compliance with regulations. A Fishing Behaviour Code has been established which covers the owners of plants and vessels, technicians of plants, skippers and crew-members.</p> <p>Historically there have been concerns over illegal landings, particularly in periods such as the current season where quotas are significantly lower than the fleet is capable of catching. However, the assessment team considers that the management authorities have taken all reasonable efforts to minimise the incidence of illegal landings, including mandatory vessel monitoring, 24-hour third-party monitoring of landing locations, and restriction of unlicensed vessels. The examples described above illustrate that these mechanisms are at least partially effective. Additionally, PRODUCE recently announced the recruitment of 200 extra fishing vessel inspectors to improve coverage and enforcement. All fishing license holders, from artisanal to industrial, are required to host inspectors on-board as and when demanded, often for the entire duration of fishing trips.</p>	
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R4 – Ministry of Production, 'About': <http://www.produce.gob.pe/index.php/ministerio/acerca-del-ministerio>

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