

FISHERY ASSESSMENT REPORT

IFFO GLOBAL STANDARD FOR RESPONSIBLE SUPPLY OF FISHMEAL AND FISH OIL



FISHERY:	Common Anchovy (<i>Engraulis ringens</i>)
LOCATION:	Chile – Small Pelagic Fishery Regions V-X
DATE OF REPORT:	September 2015
ASSESSOR:	Deirdre Hoare

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1. APPLICATION DETAILS AND SUMMARY OF THE ASSESSMENT OUTCOME			
Name:			
Address:			
Country: Chile		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
Deirdre Hoare	Sam Peacock	5	Re-certification
Assessment Period	2014		
Scope Details			
1. Scope of Assessment		IFFO Global Standard for Responsible Supply – Issue 1	
2. Fishery		Common Anchovy (<i>Engraulis ringens</i>)	
3. Fishery Location		Chile (Chilean management areas V-X)	
4. Fishery Method		Purse seine	
Outcome of Assessment			
5. Overall Fishery Compliance Rating		Medium	
6. Sub Components of Low Compliance		None	
7. Information deficiency		None	
8. Peer Review Evaluation			
9. Recommendation		Approve based on conditions	

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2. QUALITY OF INFORMATION
Good; primarily government publications.
3. COMPLIANCE LEVEL ACHIEVED
Medium
Recommendation
<ul style="list-style-type: none"> • Approve conditionally
4. GUIDANCE FOR ONSITE ASSESSMENT
Based on HIGH compliance findings
Based on MEDIUM compliance findings
Based on LOW compliance findings
5. ASSESSMENT DETERMINATION
<p>Chile has a robust legal and administrative framework for fisheries, where decisions are informed by annual surveys and fishery-dependent data. The available evidence continues to suggest that the fishery is well monitored and management actions are largely based on best available scientific advice. However, as at the time of the initial assessment, limited data are collected on levels of bycatch in the fishery, and there is a lack of transparency in the way that quota recommendations, both initial and mid-year, are calculated.</p> <p>The fishery is in a state of collapse; The Current biomass is 89.5049496 (000 t). The Bmsy (or equivalent) is 720.0 (000 t). The underlying SSB/B40 (or equivalent) for this index is 12.4%. The Current F is 2.028. The Target F is 0.39. The underlying F/Ftrp for this index is 520.0%. A specific recovery plan or management plan with explicit harvest control rules, has not been elaborated yet. The species is strongly dependent on environmental variables and biological characteristics.</p> <p>In 2011 to 2014 the artisanal share of the annual quota was exceeded, and in 2011 this led to the TAC being exceeded by a substantial margin. However, landings in 2013 were substantially below the TAC and the quota for 2014 has been reduced considerably. Despite this, the fishery retains a medium compliance rating under section D1 to reflect the lack of transparency in the quota-setting process. The only other significant change was the introduction of a new fisheries law in February 2013, which has not resulted in changes to any of the compliance ratings for the fishery.</p>
HIGH Compliance

A1, A2, E1
MEDIUM Compliance
A3, B1, B2, D2, D3, E2 – conditional compliance C1, D1
LOW Compliance

Conditions

C1

Determination: To date the management actions have not been sufficient to prevent excessive exploitation rates and the stock depletion. A management plan has been proposed for this fishery. The focus of the new plan is the precautionary approach. Based on this a medium compliance level has been awarded by the assessment team conditional on the proposed management plan being accepted and implemented by June 2016.

D1

Determination: In 2014 the level of fishing permitted was not set according to management advice given by research organisations. For 2015 and 2016 the total quota was reduced to 34,400t, based on the scientific advice. This was exceeded slightly in 2015 due to the mixed nature of the fishery. The assessment team has decided to grant medium compliance based on the reduction in quota and investigations taking place, this is conditional on the management plan being adopted by June 2016.

Client Action Plan

The onus is on the client to provide the assessment team with evidence of this plan being approved and provide us with the appropriate information to confirm that these conditions are met.

- 1. Evidence that the Proposed Management Plan is adopted by the Fisheries Management Committee by June 2016.*

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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 - condition		
The level of fishing permitted should be set according to management advice given by research organisations				D1 - condition	
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: The Chilean fisheries management framework is extensive and robust, and includes specific commitments to ensuring the sustainability of marine stocks. H

Primary institutional framework

The Chilean institutional structure governing the fisheries and aquaculture sector centers around three key organisations, with a number of other institutions providing additional research and enforcement support (such as the Navy). These three organizations have a degree of operational independence while performing a crucial and interlinked function within the broad institutional framework.

- The Subsecretariat de Pesca (Undersecretariat of Fisheries, SUBPESCA or SSP) is positioned within the Chilean Ministry of Economy, Development and Tourism and was created under Law No. 1.626 on the 21st of December 1976. It provides the policy settings and regulatory framework for the domestic management of the sector. It also manages policy direction and provides input into international fisheries issues. Law 20.657 created eight scientific-technical fisheries committees within SUBPESCA, to act as advisory bodies in the formulation of all reference points, quotas, and other technical measures. The law also rendered their technical recommendations mandatory – thus there is a legal requirement for scientific advice to be adopted.
- The Servicio Nacional de Pesca (National Fisheries Service, SERNAPESCA) is also based within the Ministry of Economy, Development and Tourism. It is responsible for executing national fisheries policy, for supervising its enforcement and for ensuring proper application of the legal rules and regulations on fishing. In practice, compliance is checked by Intertek Caleb Brett Chile SA, acting on behalf of SERNAPESCA.
- The Instituto de Fomento Pesquero (Fisheries Development Institute, IFOP) is the research arm of the institutional framework. A non-profit organisation created in 1964 under a joint agreement between the Chilean government, the FAO, and the UN Development Program, it is the primary source of scientific advice to the SSP on fisheries and aquaculture agreement issues. Its work includes stock assessment, advising on total allowable catch levels for the wild fisheries, and the environmental and health aspects of aquaculture production. It draws a proportion of its funding from SUBPESCA but also has to compete for funding from a range of public funding sources.

Fisheries councils

The National Fisheries Council was created by the Fisheries and aquaculture Law 18.892 for the purpose of managing the participation of all stakeholders in the fisheries and aquaculture sector. It is a ruling, advisory and consultative body for dealing with Fisheries and Aquaculture plans and Laws as well as for

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development proposals for small scale fishing. There are also five Zonal Fisheries Councils aimed at contributing to the decentralization of management measures to be taken by authorities, and to enhance regional participation of fisheries and aquaculture stakeholders. They communicate new and amended regulations through regional bulletins and acts published several times a year to fishery stakeholders. Finally, Regional Fisheries Councils are aimed at studying fisheries and aquaculture problems affecting their zones and to propose solutions and management measures to SUBPESCA. Until 2013 the Councils were responsible for approving the SUBPESCA-recommended TAC; however, the introduction of Law 20.657 (the General Law on Fisheries and Aquaculture, LGPA) in February 2013 adjusted this arrangement to render the Council as a purely consultative body for the purposes of TAC-setting.

Legal instruments

Since February 2013, the primary legal instrument for fisheries management in Chile has been Law 20.657 (LGPA). The LGPA is a modification of the previous fisheries legislation, and includes:

- A commitment to the sustainable use and conservation of marine resources.
- A commitment to make key decisions on conservation measures on the basis of scientific information above all other considerations. To this end, the recommendations of SUBPESCA’s scientific-technical committees have been made mandatory.
- A commitment to develop management plans for any fishery with restricted access, and the review and updating of these plans every five years.

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: The small pelagic fisheries management in Chile is concerned with the whole stock unit over its entire area of distribution and takes into account; all fishery removals and the biology of the species.

Anchoveta has a wide geographical distribution in the South Eastern Pacific Ocean, from Zorritos (4°30’ S) in Northern Peru to Chiloé (42°30’ S) in Southern Chile (Serra *et al.*, 1979). There are three different anchoveta (*Engraulis ringens*) stocks (Cahuin *et al.*, 2015):

1. the Northern-Central Peruvian stock, managed by Peru;
2. the Southern Peru/ Northern Chile stock, managed by both Peru and Chile, and,
3. the “Central-Southern Chile stock”, managed by Chile.

There is some evidence based on reproductive population parameters that two independent populations may exist in Central-Southern Chile (Canales and Leal, 2009), however it is more likely based on genetic and other studies that there is only one stock (Ferrada *et al.*, 2002; Cahuinet *et al.*, 2015).

Chilean anchovy fisheries are divided into three management units;

- Regions XV- II

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- Regions III and IV
- Regions V – X

This report refers to the Anchoveta Regions V- X

An on-board observer program was created in 2014 to study discards in the artisanal anchoveta fishery in the V-X Chilean regions, which accounts for 76% of total allowable catch (MEFT, 2014b)

There is a no discard policy in place for Chilean fisheries, meaning all by-catch is landed, but only target species appear to be sampled by SERNAPESCA.

There are limits on the percentages of bycatch allowed http://www.subpesca.cl/normativa/605/articles-86767_documento.pdf . Information on the species composition and volume of by-catch is now available for management and research organisations, allowing the ecosystem-wide impacts of fisheries from being factored into management regimes.

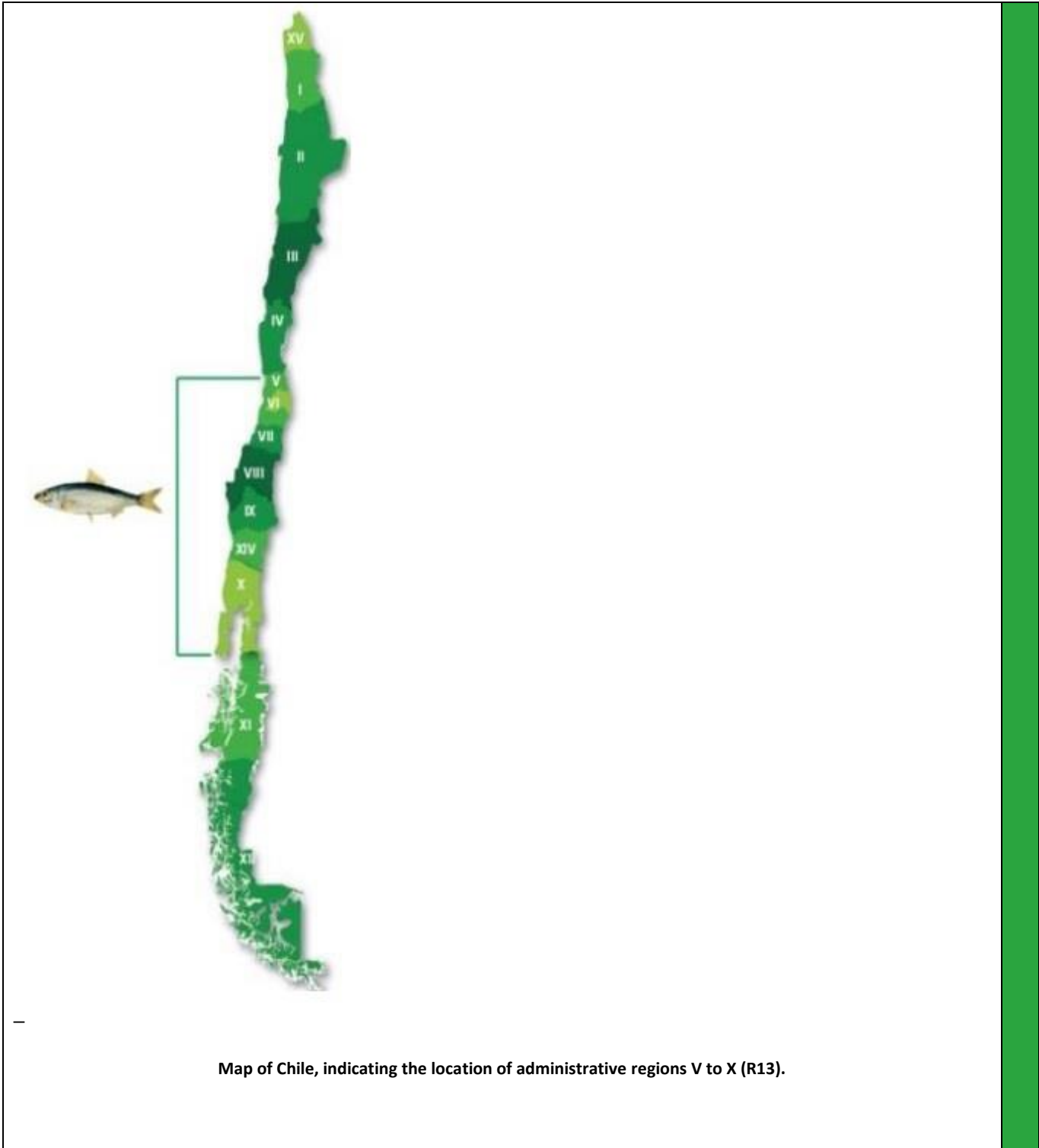
Anchovy stock assessment is conducted separately for each fishery unit, taking into account the self-sustained population units found in Chile: XV-II Region fishery unit, III-IV Region fishery unit and V-X Region fishery unit. Quotas are then issued at the Regional level.

IFOP is the main organization that provides the necessary scientific support for the sector. Universities and technological institutions such as the School of Oceanographic and Natural Sciences at Universidad of Concepcion are also engaged independently or participate in public bidding to undertake research work ordered by the State on a case by case basis only. IFOP has a regionalized structure with research stations situated the length of Chile. IFOP also owns and operates an oceanic research vessel (the Abate Molina), and rents others as necessary to carry out basic work on population dynamics, population surveys, etc. Artisanal vessels are utilized in shallower waters closer to coast.

The management of the Regions V-X fishery as a separate population assumes minimal interaction between this and the other anchovy populations. If evidence of significant interactions or interdependence were to arise, it may become unreasonable to consider the management regimes separately.

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Map of Chile, indicating the location of administrative regions V to X (R13).

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.
<i>Determination: The over-arching fisheries Law make long-term sustainability a clear, stated objective. However these objectives have clearly failed with the collapse of the stock, and the lack of a recovery</i>	
M	

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plan.

Management actions generally aim at keeping spawning biomass at 60% of unfished levels to sustain the reproductive viability of the stock, according to SUBPESCA technical reports. Under the Chilean General Law for Fisheries and Aquaculture, “the provisions of the Act shall subject the preservation of aquatic resources, and all extractive fishing, aquaculture, research and sport activities, which takes place in inland waters, internal waters, territorial sea or exclusive economic zone of Chile in accordance to Chilean laws and its signed international treaties”. The Fisheries Research Fund under the Ministry of Economy is to finance research projects in aquaculture and fisheries, providing for the adoption of management measures of fisheries and aquaculture activities, which aim at the conservation of aquatic resources, considering both the biological and socio-economic aspects of fisheries.

The updated fisheries Law 20.657 states that the purpose of the Act “is to foster the conservation and sustainable use of aquatic resources through the application of a precautionary approach, an ecosystem approach to fisheries regulation and the protection of marine ecosystems in the world those resources”. It also states that MSY is the objective to be taken into account when quotas are established.

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: Research and stock assessment activities are carried out in support of the management of the stock; however the full stock assessments were not made available to the assessment team. The FIP identifies a number of potential data improvements.

Fisheries research is largely funded by the Fishery Research Fund (FIP), although money is also available from other non-specific Government funds. Research results from the FIP form the basis of regulations developed by the administration. Also involved in the process are the National Fisheries Council, the National Oceanographic Council, experts in the fishing field (including 2 from the university sector), and representatives of producers' associations. Each year, the Zonal and Regional Fisheries Councils give their suggestions for the annual programme of fishery and aquaculture research, including their priorities. With this information SUBPESCA proposes the annual programme of Fishery Research to the National Fisheries Council which gives the final approval. Research is sometimes constrained by funding. Importance is given to economic utility when competing research proposals are evaluated. It is not considered desirable for the State to maintain large and expensive research infrastructure, so joint public-private co-operation in research is very important.

Indirect stock assessments are carried out with Statistical Catch at Age Models, which allow the incorporation of such supplementary information as spawning stock biomass (SSB) and recruitment indices from cruises', fishing mortality (F) and Catch per Unit Effort (CPUE) indices. Uncertainties are related to

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annual variability of survey results and recruitment estimates.

Current research needs to improve the quality of the stock assessment include: i) population structure and migration patterns; ii) spawning and nursery grounds; iii) growth and age parameters; iv) discards and under-reported catches; v) fishing effort and CPUE; vi) environmental influence on the stock dynamics (Ramírez et al, 2012; IFOP, 2013b).

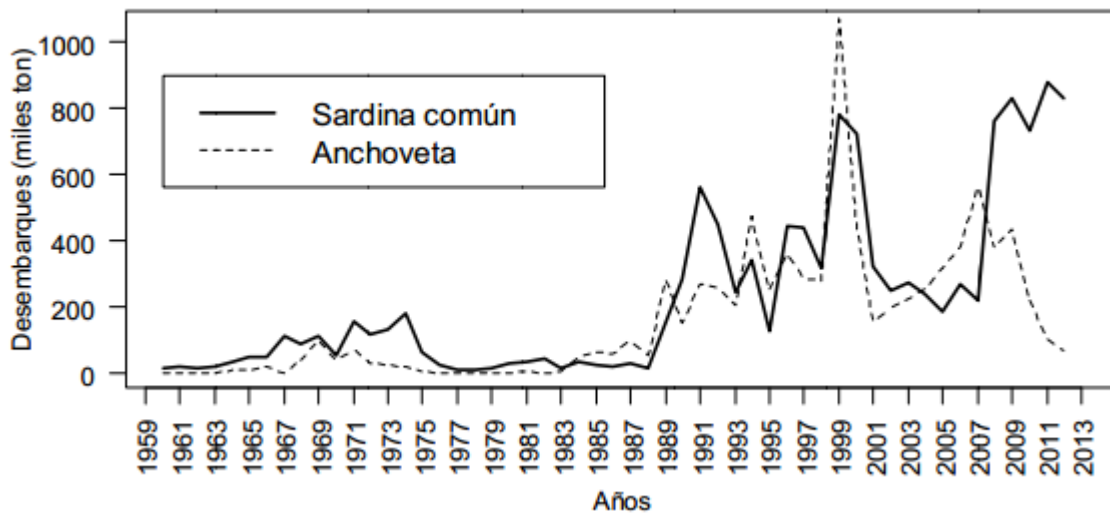
Fishery-dependent data

Fishery-independent data collected from the small pelagic fishery includes total landings and age and size estimates from sampling. Information collected at landing sites and directly from fishing vessels includes location and time of catch, length, weight, sex, and age data, and size frequency distribution data.

Fishery-independent data

Several fishery-independent surveys have been, and are still, carried out. The second 2013 stock assessment included new data: data series commercial fishing landings (until June 2013), spawning biomass surveys (MPDH 2002-2010), Summer (Reclas 2000-2013) and Autumn (Pelaces (2003-2013) acoustic surveys, and annual age and size composition estimates (from commercial fishing and scientific surveys) (IFOP, 2013b).

Additional research which would improve the reliability of the stock assessment includes an improved understanding of population structure and migration patterns, location of spawning and nursery grounds, growth and age parameters, discards and under-reported catches, fishing effort/CPUE, and environmental influence on stock parameters.



Landings of common sardine (sardine común) and anchovy (anchoveta) in the Chilean south-central fishery. From the 2013 stock assessment report.

Table 1. Results of the summer acoustic (RECLASS) survey, 2013 and 2014 (R12)

CRUCERO RECLAS 2014		Fecha: 05 Enero – 01 Febrero 2014 32°40,9'S – 41°40,6'S 78 lances de pesca		
Sardina común				
	RECLAS 2014	RECLAS 2013	Diferencia 2014–2013	
Biomasa (ton)	3.079.434	1.133.477	1.945.957	
Abundancia (millones de peces)	768.494	87.069	681.425	
Abundancia reclutas (%)	96,4%	42%	54,4%	
Anchoveta				
	RECLAS 2014	RECLAS 2013	Diferencia 2014–2013	
Biomasa (ton)	116.472	71.376	45.096	
Abundancia (millones de peces)	9.512	5.303	4.209	
Abundancia reclutas (%)	65,6%	50%	15,6%	

LEVEL OF COMPLIANCE

B2. Best scientific evidence available should be taken into account when designing conservation and management measures.

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: Since 2013, there has been a legal requirement for SUBPESCA’s technical recommendations (including TAC) to be adopted. However, as the original IFOP advice is not available to the assessment team, it is not possible to determine how fully these recommendations reflect the original scientific advice.

The main scientific advice for the fishery is the recommendation for the annual TAC, which is given in three stages each year. A pre-season recommendation is followed by an initial in-season recommendation, which makes use of landings data and a January survey. A third, final recommendation is made after a second survey is conducted in June; the results of the two surveys are also used to produce the pre-season TAC estimate for the following year. These three TAC recommendations are made by IFOP to SUBPESCA, and do not appear to be made publically available. SUBPESCA then passes on its own recommendations, which are publically available, to the CNP and SERNAPESCA.

Prior to the update of the fishery management legislation in 2013, quota recommendations made by IFOP and SUBPESCA had to be approved by a majority vote in the appropriate fishery council. The update to the LGPA made it mandatory for the management recommendations of SUBPESCA’s scientific/technical

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advisory boards to be adopted by fishery managers, including with regards to the setting of quotas. However, examples of the recommendations of the scientific/technical boards were not available to the assessment team and it is not clear whether this component of the law has yet been applied in practice. Although final TACs do reflect the SUBPESCA recommendations, it is not clear the extent to which they reflect the original IFOP advice.

The LGPA also states that quotas should be established using MSY as the primary technical parameter.

C. THE PRECAUTIONARY APPROACH

LEVEL OF COMPLIANCE

C1. The precautionary approach is applied in the formulation of management plans.

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: To date the management actions have not been sufficient to prevent excessive exploitation rates and the stock depletion. A management plan has been proposed for this fishery. The focus of the new plan is the precautionary approach. Based on this a medium compliance level has been awarded by the assessment team conditional on the proposed management plan being accepted and implemented by June 2016.

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According to Article 1 B of the General Law on Fisheries and Aquaculture (LPGA) which states that "The objective of this law is the conservation and sustainable use of aquatic resources by applying the precautionary approach and ecosystem approach in fisheries regulation and safeguarding the marine ecosystems in which those resources exist. "

Similarly, in Article 1 ° C, letter b) states that when adopting conservation and management measures as the precautionary principle must be used, defined as: "i) There should be more caution in the management and conservation of resources when scientific information is uncertain, unreliable or incomplete, and ii) the absence of adequate scientific information, unreliable or incomplete, must not be used as a reason for postponing or failing to take conservation and management measures."

Biological reference points (PBR) are established by the Scientific and Technical Committee on Small Pelagic Fisheries and are based on the best available stock assessment. Similarly measures and / or management actions contained in the management plan are binding with the mechanisms and procedures established by the LPGA, ie its provisions are mandatory.

The specific objective in relation to anchovy is to maintain a spawning biomass equal to 60% of the level if the stock was unexploited, with a risk of failing this to be not more than 10%. However the current biomass is 89.5049496 (000 t) whereas the Bmsy (or equivalent) is 720.0 (000 t). The current F is 2.028, the target F is 0.39. The underlying F/Ftrp for this index is 520.0%.

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.

Determination: In 2014 the level of fishing permitted was not set according to management advice given by research organisations. For 2015 and 2016 the total quota was reduced to 34,400t, based on the scientific advice. This was exceeded in 2015 due to the mixed nature of the fishery. The assessment team has decided to grant medium compliance based on the reduction in quota and investigations taking place, this is conditional on the management plan being adopted by June 2016.

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Once SUBPESCA receives IFOP’s scientific reports, it writes its own technical report, summarizing the status of the fishery and issuing its own TAC recommendation to the National Fisheries Council, along with a recommendation for the distribution of the quota. SUBPESCA’s reports, along with economic and social considerations, are discussed by the National Fisheries Council, where a final decision is made regarding the quota level and its distribution. Finally, the Minister of Economy, Development and Reconstruction proceeds to sign the TACs for each fishery unit and its distribution, in accordance with the Fisheries and Aquaculture Law. The initial IFOP reports are not made available to the public or assessors, although the remainder of the quota-setting process is fully reported upon.

In 2013, catches were significantly lower than set TAC of 120,000t, although higher than the precautionary recommended catch. Final landings were 43,866t. Although 2014 catches are still preliminary, the official catches as of November 2014 (55,996 t) (SUBPESCA, 2014b) were 32% above the set TAC (42.2 thousand tonnes). For 2015 the total quota was 34,400t (Table 2.)

Table 2. Total quota for Anchovy 2015.

CUOTA GLOBAL TOTAL	34.400
Reserva de Investigación	167
Cuota de Imprevistos	344
Cuota de consumo humano	344
Cuota Remanente	33.545
FRACCIÓN INDUSTRIAL	7.380

Table 3. Shows the TAC and offloadings of both Anchovy and Common Sardine for the V to X regions, and includes the artisanal and industrial operations (over 80% is caught by artisanal/coastal fishermen). Sardine is included due to the fact that the authority ran an anchovy research program with volunteer artisanal vessels that allowed them to add up their sardine and anchovy quotas to have a better knowledge of the behaviour of this mixed fisheries. The fishermen were required to keep a detailed logbook, set by set, which later was delivered to the authority. This program will be for two seasons, and reports have not been released so far. The sum of both offloadings can't exceed the sum of the quotas of sardine and anchovy V to X regions, no matter what.

Table 3. TAC and offloadings of both Anchovy and Common Sardine for the V to X regions

Total 2015	TAC	Offloading	Remaining
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Anchovy V-X	34'400	48'508	(14'108)
Sardine V-X	478'000	393'098	84'902
	512'400	441'606	70'794

Misreporting of catches may be considerable in the artisanal sector, but no estimates are still available. One of the action points in the new management plan is to update the Fishing Register for the Industrial and Artesanal fleet (RPI y RPA), this will be the responsibility of Sernapesca/SSPA-DZPA/Directemar.

LEVEL OF COMPLIANCE

D2. Where excess fishing capacity exist, mechanisms should be in established to reduce capacity to allow for the recovery of the stock to sustainable levels.

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: Mechanisms such as scientifically based quotas and limiting of the fleet thorough licensing and restricited access are used to manage fishing capacity. However as the stock is in a state of collapse there is no evidence of the efficiency of the methods used. M

In theory there is a requirement for artisanal fishers to be registered on the National Registry for Artisanal Fishermen (NRAF) which is used to control their number per regional area. However, although there is no evidence available to determine the extent to which, or even whether, such restriction occurs, it is clearly not effective at restricting the artisanal fleet’s effort to TAC-defined levels. There is an implementation error between the assigned quotas and the actual landings. A number of options have been identified to avoid this in the future such as limiting effort and alternative distribution methods for quota. However it is not clear which methods are going to be used and when this will happen.

Industrial vessels require a licence to fish and, based on the repeated inability of the industrial fleet to fill its share of the quota, there does not appear to be an excess of capacity in this component of the fishery.

LEVEL OF COMPLIANCE

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.

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: Some management measures are in place to minimise the impacts of the fishery on non-target species, but on the whole there is limited available evidence to determine the extent of these impacts. In particular, there is a lack of data on bycatch, including bycatch of PET species. M

Non-target species

An on-board observer program was created in 2014 to study discards in the artisanal anchoveta fishery in the V-X Chilean regions, which accounts for 76% of total allowable catch (MEFT, 2014b). No recent data on other non-targeted species for this fishery could be found – bycatch information is not systematically collected. Species and maximum limits of bycatch species (by proportion) are defined per target species and gear type for artisanal fleets operating in the different regions (MEFT, 2015b).

The most recent landings composition data are for 2006, in which the main bycatch species was found to be jack mackerel. Historically, sardine was considered bycatch of the anchovy fishery, but the relative stock status in recent years has reversed this to a large extent. In 2014, the anchovy TAC in regions V-X was set considerably higher than the most conservative scientific advice in an effort to ensure that the sardine fishery would not be limited by anchovy bycatch. Additionally, even when the TAC of one species has been filled but quota for the other remains, 20% bycatch of the species with no remaining quota is permitted per trip. This makes it likely that the fishery has an impact on anchovy, and possibly other bycatch species.

Ecosystems

The availability of sardine and anchoveta as a prey is considered to be one of the major threats to Humboldt Penguin. Chile has implemented five marine reserves, with the objective of conserving natural banks of scallop, oyster and mussel, but also dolphins and penguins. Additionally, the introduction of the five-mile artisanal-exclusive zone near the shoreline has provided significant protection to spawners and other shallow-water organisms from industrial fishing activities.

ETP species

The incidence of dolphins in catches is considered to be minimal, with the majority of marine mammal interactions involving sea lions (which are not categorised as at risk by the IUCN). Seabirds also interact with the fishery, including the kelp gull, Peruvian pelican and Franklin’s gull (all either Least Concern or Near Threatened). Overall there is limited evidence available on the extent to which these species, and other ETP species, are impacted by the fishery.

Physical environment

The impact of purse seine nets on the physical and biological environment of the sea floor is considered minimal, as nets are generally used at depths considerably greater than their size.

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: There is a framework allowing for the application of sanctions ranging from monetary fines to revocation of licence.

H

The LGPA defines a range of sanctions for offences including fishing with an unlicensed vessel, discarding, incorrect logbook use, failure to report landings, fishing in a region or fishery other than the one for which the vessel is licenced, and for industrial vessels which land more fish than they have quota for. Depending

	<p>on the offence, sanctions can include one or a combination of monetary penalties dependant on tonnage; suspension of fishing licence; and revocation of licence entirely. Punitive proceedings are the responsibility of the regional SERNAPESCA director. In 2005, a national action plan was approved with the aim of preventing, deterring and eliminating IUU fishing. There is no evidence available to determine the level of success this plan enjoyed.</p>	
LEVEL OF COMPLIANCE		
<i>E2. A management system for fisheries control and enforcement should be established.</i>		
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.	
	<p><i>Determination: There is evidence of a fisheries control and enforcement regime in place in Chile, but limited information to determine how effective this regime is.</i></p> <p>The guiding instrument of fisheries management in Chile is the General Law on Fisheries and Aquaculture (LPGA). No. 18.892 of 1989 Act, as amended (Decree 430) plus other intermediate laws, regulated the activities of fisheries and aquaculture until February 9, 2013 when the new Law on Fisheries and Aquaculture No. 20,657, was published in the Official Journal amending the previous one in the field of sustainability of aquatic resources, access to industrial, craft and regulations for research and monitoring fishing activity.</p> <p>Enforcement of fisheries legislation is the responsibility of SERNAPESCA. Industrial vessels operate under mandatory VMS monitoring.</p> <p>Sernapesca;</p> <ul style="list-style-type: none"> • Carry out audits of capture fisheries and implement the surveillance and control of compliance with legal provisions relating to the fisheries. • Health and environmental monitoring of aquaculture, surveillance. Developing strategies and procedures for prevention, surveillance and control of high-risk diseases. • Information and sectoral statistics.Managing fisheries and aquaculture records. <p>Within the Exclusive Economic Zone the Chilean Navy also monitors an area covering approximately 4,542,990. Km2 ensuring the prevention of depredation of natural resources in an effort to protect the ecosystem from unauthorized activities.</p> <p>http://www.armada.cl/armada/site/edic/base/port/nuestra_armada.html</p>	M

7. KEY STAKEHOLDERS

8. REFERENCES

Global Trust Certification Ltd, 3 rd Floor, Block 3, Quayside Business Park, Mill Street, Dundalk, Co. Louth, Ireland Tel: 042 932 0912 Fax 042 938 6864			
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R1 – SUBPESCA home: <http://www.subpesca.cl/>

R2 – SERNAPECA home: <http://www.sernapesca.cl/>

R3 – IFOP home: <http://www.ifop.cl/>

R4 - Cuenta Pública Subsecretaría de Pesca y Acuicultura March – December 2014

http://www.subpesca.cl/publicaciones/606/articles-87256_recurso_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 - MEFT, 2014b. Ministerio de Economía, Fomento y Turismo - Subsecretaria de Pesca y Acuicultura. Resolución Exenta N° 946. Establece programa de investigación del descarte para pesquerías de anchoveta, sardina común y su fauna acompañante. Valparaíso, 3 Abril 2014. http://www.subpesca.cl/normativa/605/articles-82860_documento.pdf

R6 – Fisheries Law 20.657: http://www.subpesca.cl/normativa/605/articles-764_documento.pdf

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R7 – Fisheries Law 20.657, “History of the Law”:

<http://www.leychile.cl/Navegar/scripts/obtienearchivo?id=recursoslegales/10221.3/43656/3/HL20657.pdf>

R8 – Szary, AL, 1997, *Regiones ganadoras y regiones perdedoras en el retorno de la democracia en Chile: poderes locales y desequilibrios territoriales*, EURE (Santiago) v.23 n.70 Santiago dic:

http://www.scielo.cl/scielo.php?pid=S0250-71611997007000004&script=sci_arttext

R9 - Fraccionamiento y distribución de la cuota global anual de captura anchoveta y sardina común, regiones V a X, año 2014: http://www.subpesca.cl/publicaciones/606/articles-82271_documento.pdf

R10 – Landings year to date (south-central small pelagic fishery), October 2014: <http://www.ifop.cl/wp-content/uploads/2%C2%BA-QUINCENA-OCTUBRE-2014-N%C2%B020.pdf>

R11 – CeDePesca FIP information, Chilean Anchovy and Sardine, V-X: <http://cedepesca.net/promes/small-pelagics/chilean-anchovy-and-sardine/>

R12 – Fishsource fishery information, Chilean Anchoveta and Sardine, Regions V-X:

<http://www.fishsource.com/fishery/summary?fishery=Anchoveta+-+Chilean+regions+V-X+%5BFIP%3A+Chilean+Anchovy+and+Sardine%2C+CeDePesca%5D>

R13 – “Estado de Situacion de las Principales Pesquerias Chilenas, 2014” (The situation in leading Chilean fisheries, 2014): http://www.subpesca.cl/prensa/601/articles-87256_recurso_1.pdf

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