



MarinTrust Standard V2

Whole fish Fishery Assessment, WF20,
Pacific Thread Herring and Anchovetta
(*Cetengraulis mysticetus* and
Opisthonema spp.), FA077

MarinTrust Programme

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Table 1 Application details and summary of the assessment outcome

Application details and summary of the assessment outcome			
Name: Promarina SA, Procesadora Bayano SA			
Country: Panama			
Email Address: Panama		Applicant Code:	
Certification Body Details			
Name of Certification Body:		LRQA	
Assessor Name	CB Peer Reviewer	Assessment Days	Initial/Surveillance/ Re-approval
Jose Peiro Crespo	Sam Peacock	4.5	2 nd Surveillance
Assessment Period	December 2023 – January 2024		
Scope Details			
Management Authority (Country/State)		Panama, Aquatic Resources Authority of Panama (Autoridad de los Recursos Acuáticos de Panamá, ARAP)	
Main Species		<ol style="list-style-type: none"> 1. Pacific anchoveta (<i>Cetengraulis mysticetus</i>) 2. Pacific thread herring (<i>Opisthonema</i> spp.) (note: it is a complex of at least 3 different species) 	
Fishery Location		Area FAO 77, Eastern Central Pacific, Panama (Gulf of Panama)	
Gear Type(s)		Purse seine	
Outcome of Assessment			
Overall Outcome		Pass	
Clauses Failed		None	
CB Peer Review Evaluation		Pass	
Fishery Assessment Peer Review Group Evaluation		Pass	
Recommendation		Approved	

Table 2. Assessment Determination

Assessment Determination
<p>This report shows the results of the 2nd Surveillance assessment of the Pacific anchoveta (<i>Cetengraulis mysticetus</i>) and Pacific thread herrings (<i>Opisthonema spp.</i>) purse seine fishery which occurs in the Gulf of Panama (Area FAO 77, Eastern Central Pacific). The fishery was first assessed in January - February 2022. As this is an annual surveillance assessment, it mainly focuses on the changes that have occurred since the previous surveillance assessment in regard to status of the status of impacted stocks, environmental impact (new impacts on bycatch species, habitats and the ecosystem), changes in the management system and relevant regulations, etc. Therefore, this surveillance assessment does not constitute a full re-assessment of the fishery. Therefore, for additional information, please refer to the initial assessment (https://www.marin-trust.com/sites/marintrust/files/approved-raw-materials/FISH2%20-%20MarinTrust%20V2.0%20Wholefish%20fishery%20assessment_Pacific%20anchoveta_FINAL_0.pdf)</p> <p>Generally speaking, it can be confirmed that changes on stocks affected and their status, management system, etc have been very few since the previous year. The scope of this fishery (targets species, management entities, fishing area, fishing gear etc.) remains unchanged from the initial assessed.</p> <p>As indicated above, the fishery assessed is the purse seine fishery of small pelagic species in Panama. The fishery targets (Pacific anchoveta (<i>Cetengraulis mysticetus</i>) and Pacific thread herrings (<i>Opisthonema spp.</i>)¹ which represents more than 95% of the catch, with relatively low catches of other species, such as Pacific bumper (<i>Chloroscombrus orqueta</i>), Peruvian moonfish (<i>Selene peruviana</i>), Pacific harvestfish (<i>Prepilus medius</i>), Silver drum (<i>Larimus argenteus</i>), Brassy grunt (<i>Orthopristis chalceus</i>), Mexican barracuda (<i>Sphyraena ensis</i>), Pacific smalleye croaker (<i>Nebris occidentalis</i>) and Red sea catfish (<i>Bagre pinnimaculatus</i>), which in 2023 represented around 1.6% of the total catch.</p> <p>The small pelagic fishery in Panama is managed by the Aquatic Resources Authority of Panama (Autoridad de los Recursos Acuáticos de Panamá, ARAP). ARAP is also the body responsible for the data collection and analysis of fisheries resources in Panama. The stock is managed under the Small pelagic management plan (ARAP 2018). The ARAP's Directorate of Inspection, Surveillance and Control is responsible for monitoring compliance with fishery laws and regulations. Therefore, Clauses M (management) remain unchanged.</p> <p>Category A clauses (status of the target species) have been updated with the new data provided by the client. A full stock assessment was conducted for the target species in 2020 (Canales 2020) and reviewed in 2021 (Mintevra 2021). No new full assessments have been conducted for the target species after that one. However, before the annual fishing season, the authorities (ARAP) in collaboration with ALBOR tecnologico and CeDePesca conduct a hydroacoustic survey to assess the status of the stocks and based on that information a potential catch for the fishing season is estimated. Although it does not constitute a full stock assessment, catches in recent years of both target species have been well below the MSY estimated by Canales 2020 (MSY for both species was estimated at 137 mil tonnes). In the most recent evaluation, ARAP recommend conducting another evaluation in the middle of the fishing season in order to assess the spawning status of the species and the behaviour of the stocks during the fishing season. It is therefore understood that the fishery is managed in real time. Therefore, Clauses A are met. However, it is recommended to undertake a full stock assessment for the target species before the five-year period indicated in the standard is exhausted.</p> <p>As indicated above, Category D species (non-managed species representing <5% of the catch) include Pacific bumper, Peruvian moonfish, Pacific harvestfish, Silver drum, Brassy grunt, Mexican barracuda, Pacific smalleye croaker and Red sea catfish. It is interesting to highlight that only two of those species were reported in previous</p>

¹ Thread herring represents a complex of three species (*Opisthonema libertate*, *O. medirastre* and *O. bulleri*) that are target together in Panamanian waters and treated as a single unit by the authorities for assessment and management purposes.

years. Category D species are primarily assessed using a Productivity and Susceptibility Analysis (PSA) approach. During the previous surveillance audit, this category was updated based on the changes implemented by the MT in their PSA. To know more about that, please see https://www.marin-trust.com/sites/marintrust/files/approved-raw-materials/WF20_2023%20-%20Pacific%20anchoveta%20and%20thread%20herring%20Panama%20FAO%2077%20FINAL%20with%20peer%20review.pdf. No relevant changes have been identified this year and all the **category D species pass the PSA.**

New observer data was provided by CeDePesca for the 2023 fishing season. Section F (further impacts) has been updated with this new information both for bycatch species and habitat impact. **Clauses F are still met by the fishery.**

Fishery Assessment Peer Review Comments

This second surveillance assessment of the Panama small pelagic fishery constitutes a thorough review of the changes which have occurred since the previous MT assessment in 2023. In the majority of areas there have been no substantial changes, including in catch composition, management, Category D, and further impacts.

A key issue raised in the 2023 surveillance was the absence of any full stock assessment since 2020. This remains the case, potentially causing issues in Category A where a stock assessment must be completed at least every 3 years unless there is sufficient evidence to demonstrate that 5 years is sufficient to ensure the sustainable management of the stock. However, the assessor has identified an annual hydroacoustic survey which is used to estimate SSB for both Category A stocks, and also the appropriate level of fishery removals in the upcoming year. As this process is implemented annually and also meets the other Category A requirements, it is reasonable to consider it an appropriate stand-in for a full stock assessment.

The estimated biomass for both stocks appears to be above the target reference point and catches are within the level recommended as a result of the hydroacoustic surveys.

As the fishery continues to meet the MT requirements, it should remain approved for use as a source of raw material at this time.

Notes for On-site Auditor

On-site auditor should confirm species not covered within the report are not destined for marine ingredient production, especially ETP species which may be retained in the hold such as Scalloped Hammerhead Shark as.

Table 3 General Results

General Clause	Outcome (Pass/Fail)
M1 - Management Framework	Pass
M2 - Surveillance, Control and Enforcement	Pass
F1 - Impacts on ETP Species	Pass
F2 - Impacts on Habitats	Pass
F3 - Ecosystem Impacts	Pass

Table 4 Species- Specific Results

List all Category A and B species. List approximate total percentage (%) of landings which are Category C and D species; these do not need to be individually named here

Category	Species	% landings	Outcome (Pass/Fail)	
Category A	Pacific anchoveta (<i>Cetengraulis mysticetus</i>)	79.34% (64.3%)*	A1	Pass
			A2	Pass
			A3	Pass
			A4	Pass
Category A	Pacific thread herrings (<i>Opisthonema spp.</i>)	20.63% (35.4%)*	A1	Pass
			A2	Pass
			A3	Pass
			A4	Pass
Category B	NA			
Category C	NA			
Category D**	Pacific bumper (<i>Chloroscombrus orqueta</i>)	0.4%	Pass	
Category D	Peruvian moonfish (<i>Selene peruviana</i>)	0.13%	Pass	
Category D	Pacific harvestfish (<i>Prepilus medius</i>)	0.12%	Pass	
Category D	Silver drum (<i>Larimus argenteus</i>)	0.09%	Pass	
Category D	Brassy grunt (<i>Orthopristis chalceus</i>)	0.05%	Pass	
Category D	Mexican barracuda (<i>Sphyræna ensis</i>)	0.05%	Pass	
Category D	Pacific smalleye croaker (<i>Nebris occidentalis</i>)	0.05%	Pass	
Category D	Red sea catfish (<i>Bagre pinnimaculatus</i>)	0.05%	Pass	

*The percentages show above refer to the most updated landing and observer data available (first number - landing data for 2022, second number - observer data for the 2023 fishing season) (in 2023, 16,892.8 tonnes and 3,409.5 tonnes of Pacific anchoveta and Pacific thread herring were landed respectively).

** For category D species, observer data for the 2023 fishing season is used. It is interesting to highlight the high variability of bycatch species caught in the fishery. Only two of the category D species (Pacific bumper and Peruvian moonfish) listed here appeared in previous assessments of the fishery.

Table 5 Species Categorisation Table

Common name	Latin name	Stock	IUCN Redlist Category ²	% of landings	Management	Category
Pacific anchoveta	<i>Cetengraulis mysticetus</i>	Gulf of Panama	Least concern	50-60%	Aquatic Resources Authority of Panama (ARAP)	A
Pacific thread herrings*	<i>Opisthonema spp.</i>	Gulf of Panama	Per species	20.63%	ARAP	A
	<i>O. libertate</i>		Least concern			
	<i>O. medirastre</i>		Least concern			
	<i>O. bulleri</i>		Least concern			
Pacific bumper	<i>Chloroscombrus orqueta</i>	Gulf of Panama	Least concern	<5%	ARAP	D
Peruvian moonfish	<i>Selene peruviana</i>	Gulf of Panama	Least concern	<5%		D
Pacific harvestfish	<i>Prepilus medius</i>	Gulf of Panama	Least concern not listed	<5%		D
Silver drum	<i>Larimus argenteus</i>	Gulf of Panama	Least concern	<5%		D
Brassy grunt	<i>Orthopristis chalceus</i>	Gulf of Panama	Least concern	<5%		D
Mexican barracuda	<i>Sphyraena ensis</i>	Gulf of Panama	Least concern	<5%		D
Pacific smalleye croaker	<i>Nebris occidentalis</i>	Gulf of Panama	Least concern	<5%		D
Red sea catfish	<i>Bagre innimaculatus</i>	Gulf of Panama	Least concern	<5%		D

Species categorisation rationale

New landing data was provided from the Private Onboard Observer Programme in 2023. The target species represented 98.33% of the total catch. Pacific bumper is also managed under the Small pelagic management plan (ARAP 2018) but no reference points have been established for the species.

*Refers to stock complexes containing multiple species.

References

Ceballes, A., Palacios, M. & Palacios, M. 2024. INFORME TÉCNICO PROGRAMA PRIVADO DE OBSERVADORES A BORDO. Pesquería de Pequeños Pelágicos de Panamá. Temporada 2023. CeDePesca. 50 pp.

² <https://www.iucnredlist.org/>

Links to the IUCN red list are provided in the table above.

MANAGEMENT

The two clauses in this section (M1, M2) relate to the general management regime applied to the fishery under assessment. The clauses should be completed by providing sufficient evidence to justify awarding each of the requirements a pass or fail rating. A fishery must meet all the minimum requirements in every clause before it can be recommended for approval.

M1	Management Framework – Minimum Requirements	
	M1.1 There is an organisation responsible for managing the fishery.	Yes
	M1.2 There is an organisation responsible for collecting data and assessing the fishery.	Yes
	M1.3 Fishery management organisations are publicly committed to sustainability.	Yes
	M1.4 Fishery management organisations are legally empowered to take management actions.	Yes
	M1.5 There is a consultation process through which fishery stakeholders are engaged in decision-making.	Yes
	M1.6 The decision-making process is transparent, with processes and results publicly available.	Yes
Clause outcome:		Pass
<p>M1.1 There is an organisation responsible for managing the fishery.</p> <p>No changes have occurred since the previous Surveillance audit. The organisation responsible for the management of fisheries resources in Panama is still the Aquatic Resources Authority of Panama (Autoridad de los Recursos Acuáticos de Panamá, ARAP), created by Law 44 of November 23th 2006 (https://arap.gob.pa/wp-content/uploads/2015/05/ARAP_legislacion_ley-2006-44.pdf).</p> <p>A new fisheries law was implemented in 2021, Law 204 of March 18th 2021 (https://arap.gob.pa/wp-content/uploads/2023/02/Borrador-de-Reglamentaci%C3%B3n-de-Ley-de-Pesca.pdf)</p> <p>According to the new law, the ARAP will be responsible for preparing, updating and executing the National Fisheries and Aquaculture Policy, in coordination with the National Responsible Fisheries Commission, the National Aquaculture Commission and all those entities linked to fishing, aquaculture and related activities.</p> <p>There is an organisation responsible for managing the fishery. Sub-clause M1.1 is met.</p> <p>M1.2 There is an organisation responsible for collecting data and assessing the fishery.</p> <p>ARAP is the body responsible for the data collection and analysis of fisheries resources in Panama with the support of Albor Tecnológico which was the company in charge of conducting hydroacoustic survey with the support of the fishing industry and CeDePesca (CeDePesca 2021).</p> <p>There are organizations responsible for collecting data and assessing the fishery. Sub-clause M1.2 is met.</p> <p>M1.3 Fishery management organisations are publicly committed to sustainability.</p> <p>As indicated above, a new fisheries law was approved in Panama in March 2021. Article 8 lists the main objectives of the law, including to implement a sustainable management of the fishery resources and the application of the precautionary approach to fisheries management in the country (https://cedepesca.net/wp-content/uploads/2021/08/Panama-Ley-de-Pesca-2021.pdf).</p> <p>ARAP’s mission is “to ensure the development of a productive and social culture of aquatic resources in a sustainable and sustainable way in harmony with the environment to improve the quality of life of the inhabitants of the Republic”.</p> <p>Fishery management organisations are publicly committed to sustainability. Sub-clause M1.3 is met.</p>		

M1.4 Fishery management organisations are legally empowered to take management actions.

Article 4 numeral 2 of Law 44 of November 23, 2006, establishes that the ARAP has the power to apply the technical measures and processes for the rational, sustainable, and responsible use of aquatic resources, in order to protect the national aquatic heritage and contribute to the protection of the environment.

Law 204/2021, legally empowered ARAP to take management actions related to: Fishing Licenses, Management Plan of the Fishing Resources, applying Sanctions, etc.

Fishery management organisations are legally empowered to take management actions. **Sub-clause M1.4 is met.**

M1.5 There is a consultation process through which fishery stakeholders are engaged in decision-making.

Article 8 of the law 204/2021 lists the main objectives, among which is to promote stakeholder participation in fisheries management in the country (<https://cedepesca.net/wp-content/uploads/2021/08/Panama-Ley-de-Pesca-2021.pdf>).

Fishery stakeholders (which include the reduction industry (Promarina and Probasa), NGOs (CeDePesca) and management authorities (ARAP)) were engaged in the development of the research and management of the fishery via the FIP which has been in place since 2011.

In 2021, a management committee was created for this fishery. It includes representatives from the government-ARAP (1), from the fishmeal industry (1), from the pelagic industrial fishery (1), from the pelagic artisanal fishery (1) and a representative from a relevant NGO. The role of this committee is to monitor the execution and/or modification of the small pelagic fishery management plan (<https://cedepesca.net/wp-content/uploads/2021/08/Anexo-VII.-Agenda-comite-Pequeños-Pelagicos-Marzo-2021-y-borrador-reglamento.pdf>). Recently the ARAP conducted a number of meetings with artisanal and industrial fishermen to discuss the specific legislation for the different fisheries covered by the law, including the pelagic fishery (<https://www.panamaamerica.com.pa/economia/arap-y-sector-pesquero-revisan-regulacion-de-ley-de-pesca-1227480>)

There is a consultation process through which fishery stakeholders are engaged in decision-making. The consultation process is continuous in time. **Sub-clause M1.5 is met.**

M1.6 The decision-making process is transparent, with processes and results publicly available.

A management plan was approved for the small pelagic fishery (including pacific anchoveta (*Cetengraulis mysticetus*), pacific herring (*Opisthonema sp.*) and pacific bumper (*Chloroscombrus orqueta*) in Panama in 2018 (Resolution ADM/ARAP 027 of August 28, 2018).

Management measures related to the fishery are regularly published in the official gazette. Examples include:

- Closure of the anchoveta fishery in 2022 (Resolution DGOMI 152-2022): https://www.gacetaoficial.gob.pa/pdfTemp/29588/GacetaNo_29588_20220728.pdf
- Closure of the Pacific thread herrings fishery in 2022 (Resolution 271/2022): <https://www.gacetaoficial.gob.pa/pdfTemp/29684/95490.pdf>

Landing data is also publicly available at: <https://www.datosabiertos.gob.pa/dataset/?tags=Pesca>

The decision-making process is transparent, with processes publicly available. **Sub-clause M1.6 is met.**

References

Direct links to the legislation used have been included in the text (*references in Spanish*)

ARAP 2018. Plan de manejo de la pesquería de pequeños pelágicos anchoveta, arenque y orqueta en el Pacífico de Panamá. 31pp.	
CeDePesca 2021. Programa Privado de Observadores a Bordo. Pesquería de Pequeños Pelágicos de Panamá. Informe Preliminar #1/2021. 3 pp	
Links	
MARINTRUST Standard clause	1.3.1.1, 1.3.1.2
FAO CCRF	7.2, 7.3.1, 7.4.4, 12.3
GSSI	D.1.01, D.4.01, D2.01, D1.07, D1.04,

M2 Surveillance, Control and Enforcement - Minimum Requirements		
M2.1	There is an organisation responsible for monitoring compliance with fishery laws and regulations.	Yes
M2.2	There is a framework of sanctions which are applied when laws and regulations are discovered to have been broken.	Yes
M2.3	There is no substantial evidence of widespread non-compliance in the fishery, and no substantial evidence of IUU fishing.	Yes
M2.4	Compliance with laws and regulations is actively monitored, through a regime which may include at-sea and portside inspections, observer programmes, and VMS.	Yes
Clause outcome:		Pass

M2.1 There is an organisation responsible for monitoring compliance with fishery laws and regulations.
<p>No changes since the last Surveillance audit. The ARAP's Directorate of Inspection, Surveillance and Control (DISC) (https://arap.gob.pa/direccion-de-inspeccion-vigilancia-y-control-2/) is responsible for monitoring compliance with fishery laws and regulations (Article 38 of Panama Law no. 44, 2006). The objective of the DISC is to "Promote, organize, monitor, coordinate and execute the general policy, strategy, plans and programs regarding inspection, surveillance, control and control of aquatic resources". DISC tasks include conducting inspections, establishing base parameters to be followed in terms of technical standards for fishing and aquaculture activities, issuing of certificates of inspections, investigating complaints, ensuring vessels adhere to safety legislation, and imposing sanctions for violations of legal and regulatory norms regulations (https://arap.gob.pa/wp-content/uploads/2015/05/ARAP_legislacion_ley-2006-44.pdf).</p> <p>There is an organisation responsible for monitoring compliance with fishery laws and regulations. Therefore, sub-clause M 2.1 is met.</p>
M2.2 There is a framework of sanctions which are applied when laws and regulations are discovered to have been broken.
<p>Title VIII of the La 204/2021 the type of infractions and sanctions to be implemented are found from article 195 to 201. Minor infractions are fined with fines between \$5 (per meter of the vessel sanctioned) and \$45,000 (international fisheries), and serious infractions with fines between \$20 (per meter) and \$50,000. Fishing permits, licenses or authorisations may be also revoked by the authorities.</p> <p>There is a framework of sanctions which are applied when laws and regulations are broken. Sub-clause M2.2 is met.</p>
M2.3 There is no substantial evidence of widespread non-compliance in the fishery, and no substantial evidence of IUU fishing.
<p>A number of measures have been implemented in the fishery which make difficult for fishers to be non-compliant with the regulations in the small pelagic fishery, such as: the implementation of a catch database, the introduction of an on-board</p>

observer programme with the objective of covering at least 20% of the trips (Executive decree no 107 2016 (<http://www.viceipup.up.ac.pa/cidim/files/ARAP-Decreto-Ejecutivo-107-de-2016.pdf>), VMS for all industrial vessels, etc. Since 2022, the country has a control and monitoring center for local and international vessels to prevent illegal fishing. Progress on fighting the IUU fishing has been praised by the EU. (<https://www.laestrella.com.pa/vida-y-cultura/planeta/panama-aumenta-vigilancia-pesca-ilegal-DELE490993>).

Information about the current level of enforcement in the fishery (number of inspections, infractions, etc) is scarce, but the number of vessels in the fishery seems to be relatively low and compliance with the management measures considered adequate.

There is no substantial evidence of widespread non-compliance in the fishery, and no substantial evidence of IUU fishing. **Sub-clause M2.3 is met.**

M2.4 Compliance with laws and regulations is actively monitored, through a regime which may include at-sea and portside inspections, observer programmes, and VMS.

As above, and as the time of the initial assessment, there are numerous measures to actively monitor compliance in the fishery including a logbooks (bitacora de pesca), onboard observers (covering 20% of the trips), Vessel Monitoring Systems (VMS) (compulsory for all medium scale and industrial vessels) and landing declarations (Law 204/2021) (<https://arap.gob.pa/wp-content/uploads/2023/02/Borrador-de-Reglamentaci%C3%B3n-de-Ley-de-Pesca.pdf>).

Compliance with laws and regulations is actively monitored, through a regime which include at-sea and portside inspections, observer programmes, and VMS. **Sub-clause M2.4 is met.**

References

Direct links to the legislation used have been included in the text (*references in Spanish*)

CeDePesca 2021. PROYECTO DE MEJORAS DE LA PESQUERÍA. I Campaña 2021 - Evaluación Hidroacústica de Recursos Pelágicos. INFORME EJECUTIVO- PANAMÁ. Del 21 al 27 de febrero 2021.

Links	
MARINTRUST Standard clause	1.3.1.3
FAO CCRF	7.7.2
GSSI	D1.09

CATEGORY A SPECIES – Pacific anchoveta (*Cetengraulis mysticetus*)

The four clauses in this section apply to Category A species. Clauses A1 - A4 should be completed for **each** Category A species. If there are no Category A species in the fishery under assessment, this section can be deleted. A Category A species must meet the minimum requirements of all four clauses before it can be recommended for approval. The clauses should be completed by providing sufficient evidence to justify awarding each of the requirements a pass or fail rating. The species must achieve a pass rating against all requirements to be awarded a pass overall. **If the species fails any of these clauses it should be re-assessed as a Category B species.**

Species Name		Pacific anchoveta (<i>Cetengraulis mysticetus</i>)	
A1	Data Collection - Minimum Requirements		
	A1.1	Landing data are collected such that the fishery-wide removals of this species are known.	Yes
	A1.2	Sufficient additional information is collected to enable an indication of stock status to be estimated.	Yes
Clause outcome:			PASS

A1.1 Landing data are collected such that the fishery-wide removals of this species are known.

According to the management plan, landing and effort data is available for this fishery for the period between 1995 and 2017. Catches of Pacific anchoveta and Pacific thread herring in the last 10 years have been around 50,000 mt and 33,000 mt respectively. Although important changes in landings have occurred for the first species (ARAP 2018). Catch data per trip between 1995 and 2019 was used to assess the status of the stock in 2020 (Canales 2020).

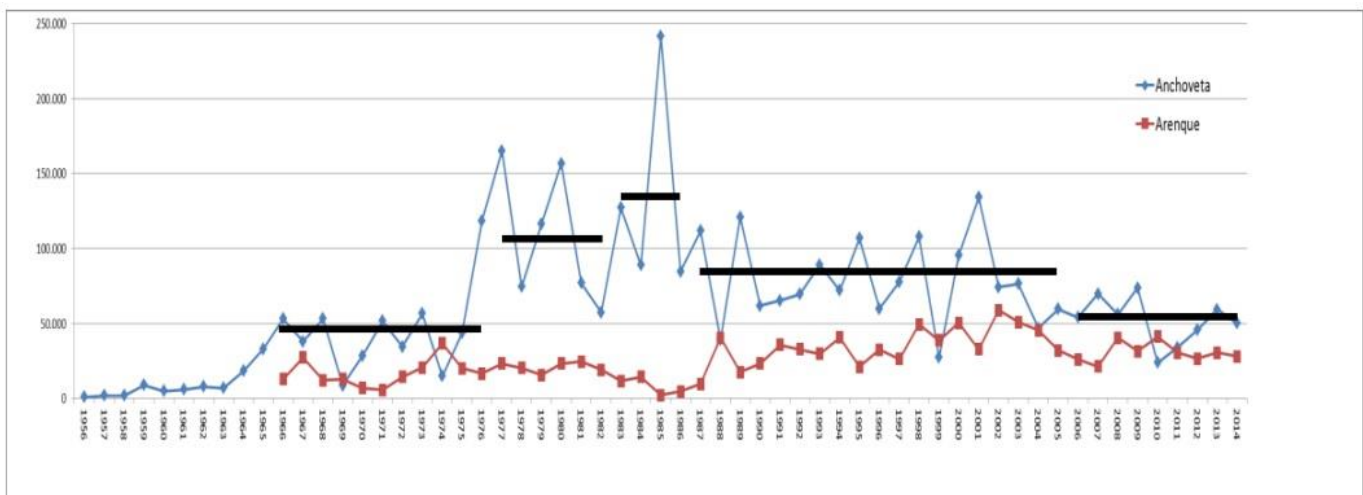


FIGURE 1 HISTORIC EVOLUTION IN SMALL PELAGIC FISHERY 1956-2014 (SOURCE: CEDEPESCA 2015 FROM FISTAT AND PROMARINA DATA)

During the 2023 fishing season, 16,892 and 3,409 tonnes of Pacific anchoveta and Pacific thread herring were landed respectively (see figure and table below).

Biomass estimates and catches of the target species during the period 2017-2023

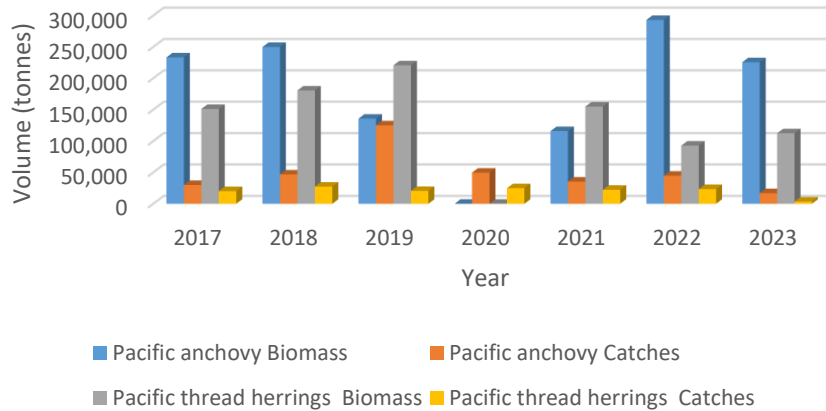


FIGURE 2 BIOMASS ESTIMATES AND CATCHES FOR THE MOST RECENT FISHING SEASONS (SOURCE: PREPARED WITH THE DATA PROVIDED BY ARAP 2023)

TABLE 6 LANDING DATA PROVIDED BY THE CLIENT FOR THE MOST RECENT FISHING SEASON (SOURCE: CATCH DATA PROVIDED BY THE CLIENT)



DESCARGA DE MATERIA PRIMA 2023

MES	NOMBRE COMUN	ESPECIE	TONELAJE	NOMBRE COMUN	ESPECIE	TONELAJE	TOTAL
Abril	Sardina	Cetengraulis Mysticetus	3,605.35	Arenque	Opistonema spp	0.00	3,605.35
Mayo	Sardina	Cetengraulis Mysticetus	5,204.28	Arenque	Opistonema spp	0.00	5,204.28
Junio	Sardina	Cetengraulis Mysticetus	4,902.84	Arenque	Opistonema spp	0.00	4,902.84
Julio	Sardina	Cetengraulis Mysticetus	2,191.93	Arenque	Opistonema spp	221.83	2,413.77
Agosto	Sardina	Cetengraulis Mysticetus	988.36	Arenque	Opistonema spp	962.66	1,951.02
Septiembre	Sardina	Cetengraulis Mysticetus	0.00	Arenque	Opistonema spp	1,394.49	1,394.49
Octubre	Sardina	Cetengraulis Mysticetus	0.00	Arenque	Opistonema spp	830.50	830.50
TOTAL DESCARGADO			16,892.77			3,409.48	20,302.24

Landing data is collected and used for assessing the stock, **sub-clause A1.1 is met.**

A1.2 Sufficient additional information is collected to enable an indication of stock status to be estimated.

Apart from landing data, CPUEs, size classes from landing data and biomass estimates from hydroacoustic surveys are available. During the fishing season, data on CPUEs, size and weight and maturity is also collected by the onboard observers for the main target species (see figure below).

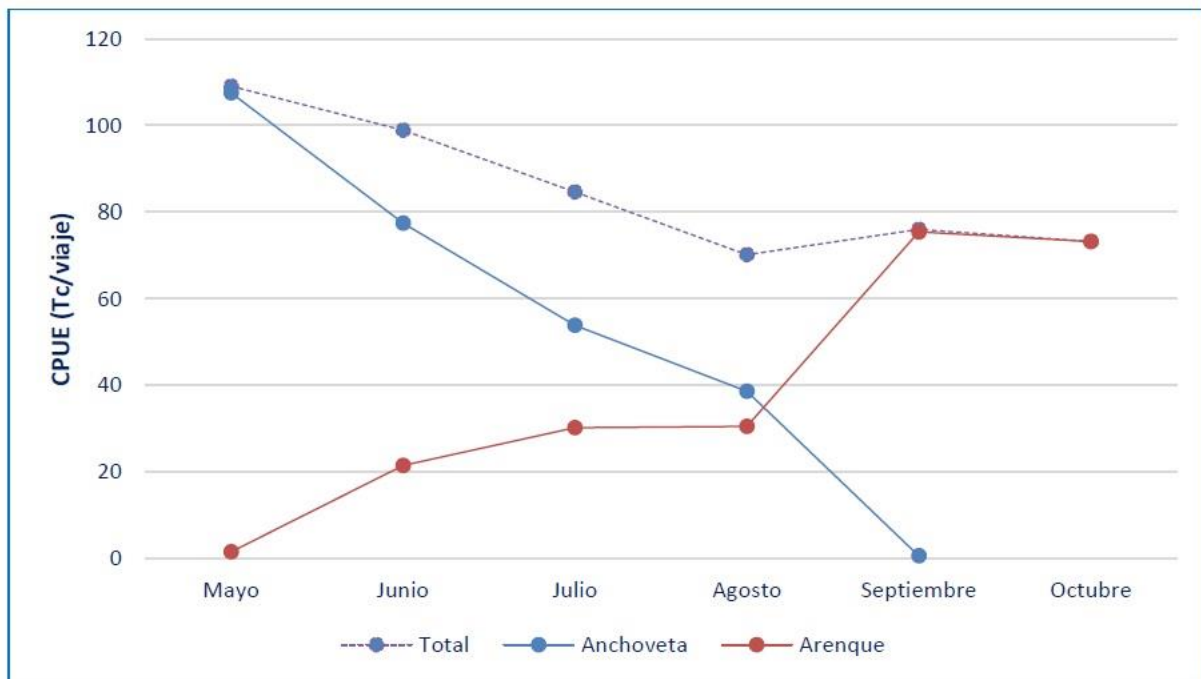


FIGURE 3 CPUEs DATA COLLECTED BY THE ONBOARD OBSERVER PROGRAM FOR THE TWO TARGET SPECIES (CEBALLES ET AL., 2024)

Those different sources of data were also used for assessing the stock in 2020. The general direction of research and development collects that information and it feeds directly on the advice to the authorities and subsequent regulations (see for example the text of the closure of the anchoveta fishery which makes specific reference to CPUEs per week and size classes in the catch) (<https://www.gacetaoficial.gob.pa/pdfTemp/29684/95490.pdf>). Therefore, it is understood that information is being regularly collected.

Sufficient additional information is collected to enable an indication of stock status to be estimated. **Sub-clause A1.2 is met.**

References

ARAP 2023. Informe técnico de la captura máxima admisible 2023. 5 pp.

CeDePesca 2015.

Canales 2020. Evaluación de los stocks de anchoveta (*Cetengraulis mysticetus*) y arenque (*Opisthonema sp.*) en el Golfo de Panamá. CeDePesca. 48 pp.

Ceballes, A., Palacios, M. & Palacios, M. 2024. INFORME TÉCNICO PROGRAMA PRIVADO DE OBSERVADORES A BORDO. Pesquería de Pequeños Pelágicos de Panamá. Temporada 2023. CeDePesca. 50 pp.

Links

MARINTRUST Standard clause	1.3.2.1.1, 1.3.2.1.2, 1.3.2.1.4, 1.3.1.2
FAO CCRF	7.3.1, 12.3
GSSI	D.4.01, D.5.01, D.6.02, D.3.14

Stock Assessment - Minimum Requirements

A2	A2.1	A stock assessment is conducted at least once every 3 years (or every 5 years if there is substantial supporting information that this is sufficient for the long-term sustainable management of the stock), and considers all fishery removals and the biological characteristics of the species.	Yes
	A2.2	The assessment provides an estimate of the status of the biological stock relative to a reference point or proxy.	Yes
	A2.3	The assessment provides an indication of the volume of fishery removals which is appropriate for the current stock status.	Yes
	A2.4	The assessment is subject to internal or external peer review.	Yes
	A2.5	The assessment is made publicly available.	Yes

Clause outcome: PASS

A2.1 A stock assessment is conducted at least once every 3 years (or every 5 years if there is substantial supporting information that this is sufficient for the long-term sustainable management of the stock) and considers all fishery removals and the biological characteristics of the species.

Stock assessments for Pacific anchoveta and Pacific thread herring were conducted in 2015, 2016 and more recently in 2020 under the umbrella of the Fisheries Improvement Project (Canales 2020). In the last assessment landing data (for the period 1956-2019), CPUEs, size classes from landing data (available since 2014) and biomass estimates from hydroacoustic surveys conducted in 2017, 2018 and 2019 were used in order to assess the stock status of the species.

No new full assessments have been conducted since Canales 2020. However, before the annual fishing season, the authorities (ARAP) in collaboration with ALBOR tecnologico and CeDePesca conduct a hidroacoustic survey to assess the status of the stocks and based on that information a potential catch for the fishing season is estimated.

AÑO	BIOMASA ESTIMADA (t)			CAPTURAS (t)		
	Anchoveta	Arenque	Total	Anchoveta	Arenque	Total
2017	233,138	151,042	384,180	29,858	20,156	50,014
2018	249,851	180,493	430,344	46,657	27,334	73,991
2019	135,596	220,587	356,183	124,888	20,417	145,305
2020	NO HUBO PROSPECCIÓN			49,516	24,785	74,301
2021	115,775	154,844	270,619	35,250	22,259	57,509
2022	292,864	92,650	385,514	44,661	23,356	68,017
2023	225,523	112,316	337,839	EN TEMPORADA		

FIGURE 4 BIOMASS AND CATCHES OF THE TARGET SPECIES DURING THE PERIOD 2017 – 2023 (ARAP 2023)

Although it does not constitute a full stock assessment, catches in recent years of both target species have been well below the MSY estimated by Canales 2020 (MSY for both species was estimated at 137 mil tonnes). In the most recent evaluation, ARAP recommend conducting another evaluation in the middle of the fishing season in order to assess the spawning status of the species and the behaviour of the stocks during the fishing season. It is therefore understood that the fishery is managed in real time and **Sub-clause A2.1 is met. However, it is recommended to undertake a full stock assessment for the target species before the five-year period indicated in the standard is exhausted.**

A2.2 The assessment provides an estimate of the status of the biological stock relative to a reference point or proxy.

No changes have occurred since the first assessment of the fishery. A management objective was established for these stocks to ensure that at least 60% of the virgin biomass (Target reference point) is kept for both stocks. A Blimit of 20% of the virgin biomass was also established by Canales 2020, although the review conducted by Minte-Vera 2021 indicated that this last value was not conservative enough for key stocks. Hydroacoustic surveys are carried out before the fishing season to provide an estimation of the biomass and inform the maximum allowable catch (CMA) for the season. The last hydroacoustic survey conducted in 2023 estimated a total biomass of 337,839 mt in waters of Panama, which corresponded to 225,523 mt of anchoveta and 112,316 mt of Pacific thread herring (ARAP 2023), a 10% below the average total biomass of the last 6 years.

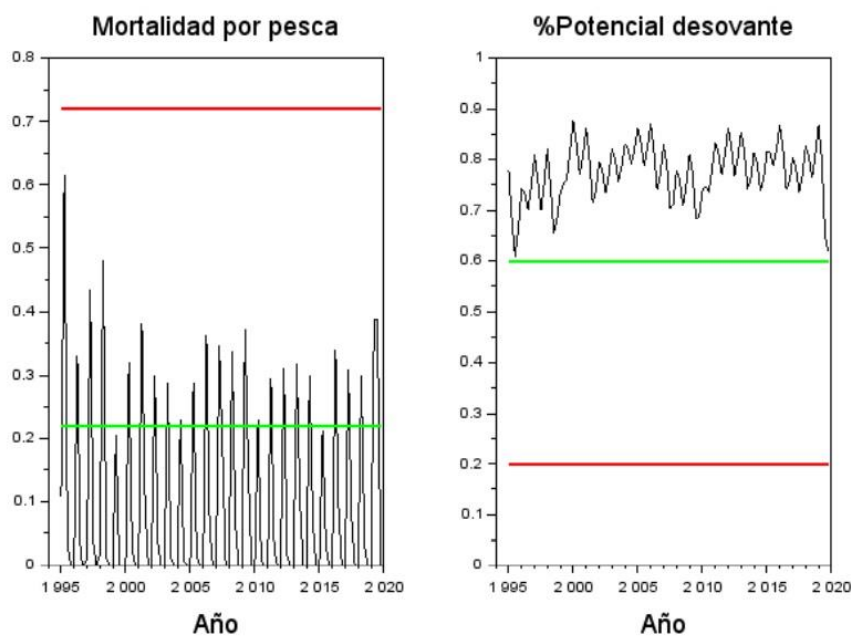


FIGURE 5 FISHING MORTALITY AND SSB FOR PACIFIC ANCHOVETA IN REFERENCE TO THE TARGET (GREEN LINE) AND THE LIMIT REFERENCE POINTS (RED LINE) (CANALES 2020).

The most recent assessment of the status of the target stocks was conducted before the 2023 fishing season and it was estimated that the biomass of the Pacific anchoveta was 225,523 tonnes (ARAP 2023).

The stock assessment provides an estimate of the status of the biological stock relative to a reference point or proxy. **Clause A2.2 is met.**

A2.3 The assessment provides an indication of the volume of fishery removals which is appropriate for the current stock status.

During the assessment of the status of Pacific anchoveta a $F_{msy}=F_{60\%}$ was calculated by Canales 2020. It would correspond to a value of 0.21. Canales 2020 considers that although there have been moments in the past in which $F > F_{msy}$, these were not long enough to create a situation of overexploitation in the stock. The harvest strategy has been effective in maintaining the stock above B_{msy} (see also Fishing mortality target and limit reference points in the figure above).

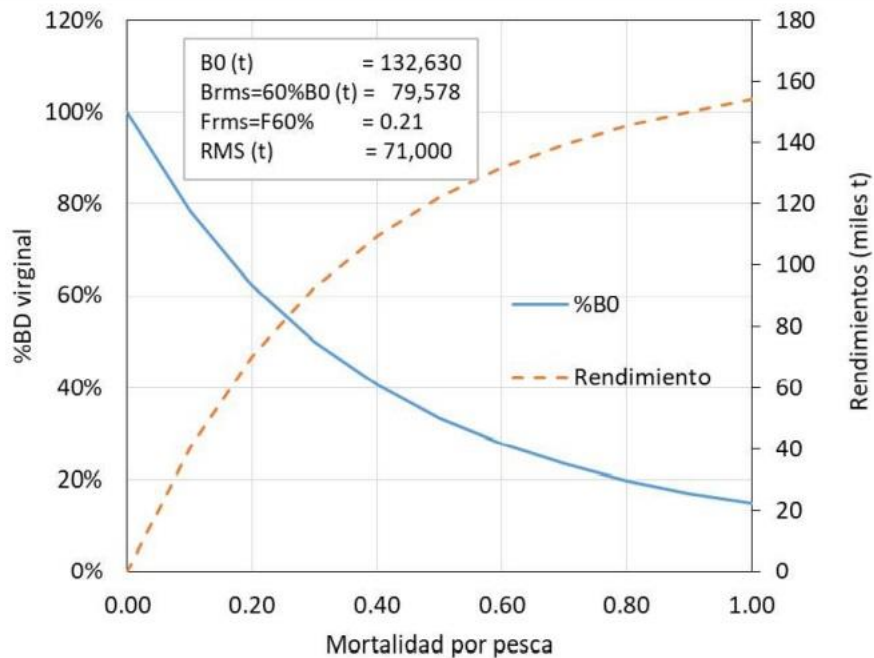


FIGURE 6 RELATIONSHIP BETWEEN FISHING MORTALITY SSB0 AND YIELD FOR ANCHOVETA (CANALES 2020)

In the most recent assessment conducted by ARAR 2023 a catch of 68,000 mt of anchoveta was calculated, which would represent a 30% of the estimated biomass. The real catch of the species until October was well below this value, at 17,000 mt.

The assessment provides an indication of the volume of fishery removals which is appropriate for the current stock status. **Sub-clause A2.3 is met.**

A2.4 The assessment is subject to internal or external peer review.

As indicated previously, the assessment of the pelagic fishery conducted by Canales in 2020 was reviewed in 2021 by Mintevera. A number of short- and medium-term recommendations were given to improve the assessment of the stocks. No new assessments have been conducted after Canales 2020.

The assessment is subject to internal and external review. **Sub-clause A2.4 is met.**

A2.5 The assessment is made publicly available.

Stock assessment can be accessed from the Marin Trust (<https://www.marin-trust.com/panama-small-pelagics-fip>) and CeDePesca (dedicated websites).

The assessment is made publicly available. **Sub-clause A2.5 is met.**

References

Canales 2020. Evaluación de los stocks de anchoveta (*Cetengraulis mysticetus*) y arenque (*Opisthonema sp.*) en el Golfo de Panama. CeDePesca. 48 pp.

CeDePesca 2015. Small Pelagic Fishery in Panama, Stock Assessment and Recommendations for a Management Plant. 24 pp.

CeDePesca 2021. PROYECTO DE MEJORAS DE LA PESQUERÍA. I Campaña 2021 - Evaluación Hidroacústica de Recursos Pelágicos. INFORME EJECUTIVO- PANAMÁ. Del 21 al 27 de febrero 2021.	
Minte-Vera, C.V. 2021. Revisión por pares de la evaluación de los stocks de anchoveta (<i>Cetengraulis mysticetus</i>) y arenques de hebra (<i>Opisthonema spp.</i>) en el Golfo de Panamá 2021 (informe no-publicado. 35 pgs).	
Links	
MARINTRUST Standard clause	1.3.2.1.2, 1.3.2.1.4, 1.3.1.2
FAO CCRF	12.3
GSSI	D.5.01, D.6.02, D.3.14

A3	Harvest Strategy - Minimum Requirements		
	A3.1	There is a mechanism in place by which total fishing mortality of this species is restricted.	Yes
	A3.2	Total fishery removals of this species do not regularly exceed the level indicated or stated in the stock assessment. Where a specific quantity of removals is recommended, the actual removals may exceed this by up to 10% ONLY if the stock status is above the limit reference point or proxy.	Yes
	A3.3	Commercial fishery removals are prohibited when the stock has been estimated to be below the limit reference point or proxy (small quotas for research or non-target catch of the species in other fisheries are permissible).	Yes
Clause outcome:			Pass

A3.1 There is a mechanism in place by which total fishing mortality of this species is restricted.

The fishing season starts when the average size of the specimens of Pacific anchoveta and Pacific thread herring in each fishing ground is greater than sizes that have been historically considered as acceptable and which coincide with average size at first maturity in the literature (12.5 cm for Pacific anchoveta and 17 cm for Pacific thread herring). Pacific anchoveta is the first target species of the fishery until July, when spawning is about to reach its peak. From July onwards, Pacific thread herring becomes the target species until October, when weekly yields start to decrease and the fishery is closed through an ARAP administrative resolution. The fishery is closed by ARAP's resolution, according to the scientific reports based on the monitoring and research on the fishery during the season, as defined by Article 16 of Executive Decree No. 107 of March 2016. For example in 2022, the anchoveta fishery was closed when CPUEs per week were a 15% below the maximum of the fishing season (https://www.gacetaoficial.gob.pa/pdfTemp/29588/GacetaNo_29588_20220728.pdf)

Therefore, it is understood that a management mechanism is in place to restrict fishing mortality. **Sub-clause A3.1 is met.**

A3.2 Total fishery removals of this species do not regularly exceed the level indicated or stated in the stock assessment. Where a specific quantity of removals is recommended, the actual removals may exceed this by up to 10% ONLY if the stock status is above the limit reference point or proxy.

As indicated previously, catches of Pacific anchoveta and Pacific thread herring in the last 10 years have been at around 50,000 mt and 33,000 mt respectively. During the 2023 fishing season, 16,892 and 3,409 tonnes of Pacific anchoveta and Pacific thread herring were landed respectively (see figure in section A1.1).

Canales 2020 indicated sustainable catch values of 71,000 mt and 66,000 mt as sustainable for the anchoveta and herring stocks respectively. Therefore, catches have been below sustainable levels in recent years. Hydroacoustic surveys are carried out before the fishing season to provide an estimation of the biomass and inform the maximum allowable catch (CMA) for the fishing season. The last hydroacoustic survey conducted in 2023 estimated a total biomass of 337,839 mt in waters of Panama, which corresponded to 225,523 mt of anchoveta and 112,316 mt of anchoveta (ARAP 2023), a 10% below the average total biomass of the last 6 years (ARAP 2023). Based on those biomass estimates, a catch of 68,000 mt of anchoveta was calculated,

which would represent a 30% of the estimated biomass. However, the real catch of the species until October was well below this value, at 17,000 mt.

Total fishery removals of this species do not regularly exceed the level indicated or stated in the stock assessment. **Sub-clause A3.2 is met.**

A3.3 Commercial fishery removals are prohibited when the stock has been estimated to be below the limit reference point or proxy (small quotas for research or non-target catch of the species in other fisheries are permissible).

Limit reference points have been established for these stocks at 0.2SSB0. They are currently well above the Bmsy, but it is considered that the fishery would stop if the annual hydroacoustic surveys indicate that the stocks has been reduced to low levels below Blim. In the most recent evaluation, ARAP recommend conducting another evaluation in the middle of the fishing season in order to assess the spawning status of the species and the behaviour of the stocks during the fishing season.

Commercial fishery removals are prohibited when the stock has been estimated to be below the limit reference point. **Sub-clause A3.3 is met.**

References

Canales 2020. Evaluación de los stocks de anchoveta (*Cetengraulis mysticetus*) y arenque (*Opisthonema sp.*) en el Golfo de Panama. CeDePesca. 48 pp.

Minte-Vera, C.V. 2021. Revisión por pares de la evaluación de los stocks de anchoveta (*Cetengraulis mysticetus*) y arenques de hebra (*Opisthonema spp.*) en el Golfo de Panamá 2021 (informe no-publicado. 35 pgs).

Standard clause 1.3.2.1.3

Links	
MARINTRUST Standard clause	1.3.2.1.3, 1.3.2.1.4
FAO CCRF	7.2.1, 7.22 (e), 7.5.3
GSSI	D3.04, D6.01

A4 Stock Status - Minimum Requirements		
A4.1	The stock is at or above the target reference point, OR IF NOT:	Yes
	The stock is above the limit reference point or proxy and there is evidence that a fall below the limit reference point would result in fishery closure OR IF NOT:	
	The stock is estimated to be below the limit reference point or proxy, but fishery removals are prohibited.	
Clause outcome:		Pass
<p>A4.1 The stock is at or above the target reference point, OR IF NOT:</p> <p>The stock is above the limit reference point or proxy and there is evidence that a fall below the limit reference point would result in fishery closure OR IF NOT:</p> <p>The stock is estimated to be below the limit reference point or proxy, but fishery removals are prohibited.</p>		

The stock of Pacific anchovy was assessed by Canales 2020. A target and limit reference point of 60% and 20% of the virgin biomass were selected respectively. The spawning biomass for the species in 2023 was estimated to be 225,235 mt (at 40% of the virgin biomass estimated by Canales 2020). Catches of the species in 2023 have been low, 17,000 mt until October 2023.

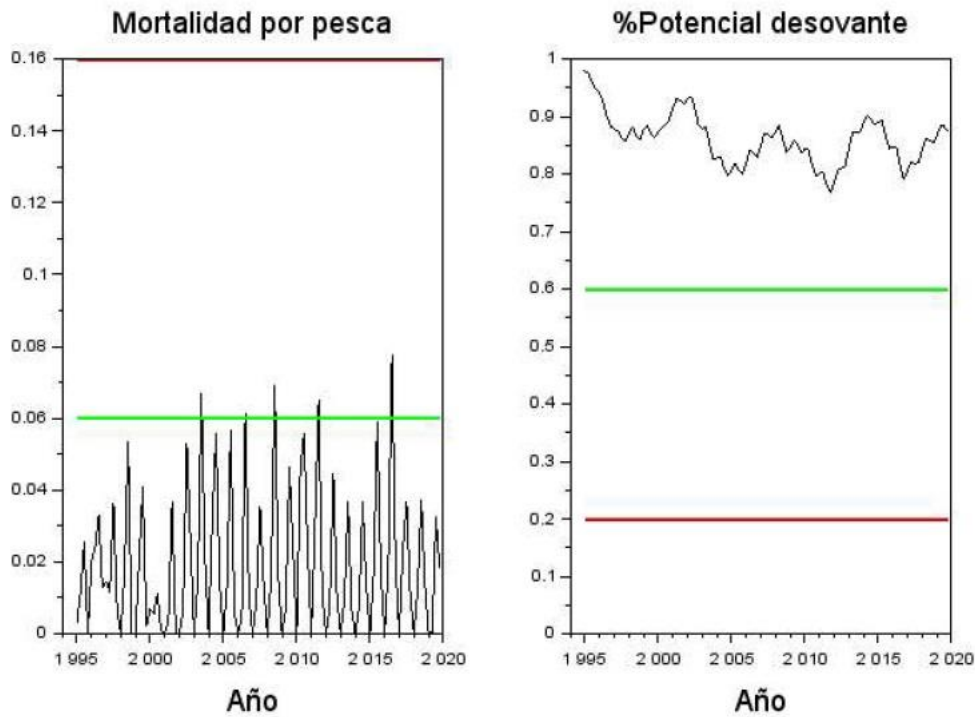


FIGURE 7 STATUS (F AND SSB) OF PACIFIC ANCHOVY IN REFERENCE TO TARGET AND LIMIT REFERENCE POINTS (CANALES 2020)

The stock is above the limit reference point. **Sub-clause A4.1 is met.**

References

ARAP 2023. Informe técnico de la captura máxima admisible 2023. 5 pp.

Canales 2020. Evaluación de los stocks de anchoveta (*Cetengraulis mysticetus*) y arenque (*Opisthonema sp.*) en el Golfo de Panama. CeDePesca. 48 pp.

Links

MARINTRUST Standard clause	1.3.2.1.4
FAO CCRF	7.2.1, 7.2.2 (e)
GSSI	D6 01

CATEGORY A SPECIES – Pacific thread herrings (*Opisthonema spp.*)

The four clauses in this section apply to Category A species. Clauses A1 - A4 should be completed for **each** Category A species. If there are no Category A species in the fishery under assessment, this section can be deleted. A Category A species must meet the minimum requirements of all four clauses before it can be recommended for approval. The clauses should be completed by providing sufficient evidence to justify awarding each of the requirements a pass or fail rating. The species must achieve a pass rating against all requirements to be awarded a pass overall. **If the species fails any of these clauses it should be re-assessed as a Category B species.**

Species Name		Pacific thread herrings (<i>Opisthonema spp.</i>)	
A1	Data Collection - Minimum Requirements		
	A1.1	Landing data are collected such that the fishery-wide removals of this species are known.	Yes
	A1.2	Sufficient additional information is collected to enable an indication of stock status to be estimated.	Yes
Clause outcome:			Pass

A1.1 Landing data are collected such that the fishery-wide removals of this species are known.

According to the management plan, landing and effort data is available for this fishery for the period between 1995 and 2017. Catches of Pacific anchoveta and Pacific thread herring in the last 10 years have been around 50,000 mt and 33,000 mt respectively. Catch data per trip between 1995 and 2019 was used to assess the status of the stock in 2020 (Canales 2020).

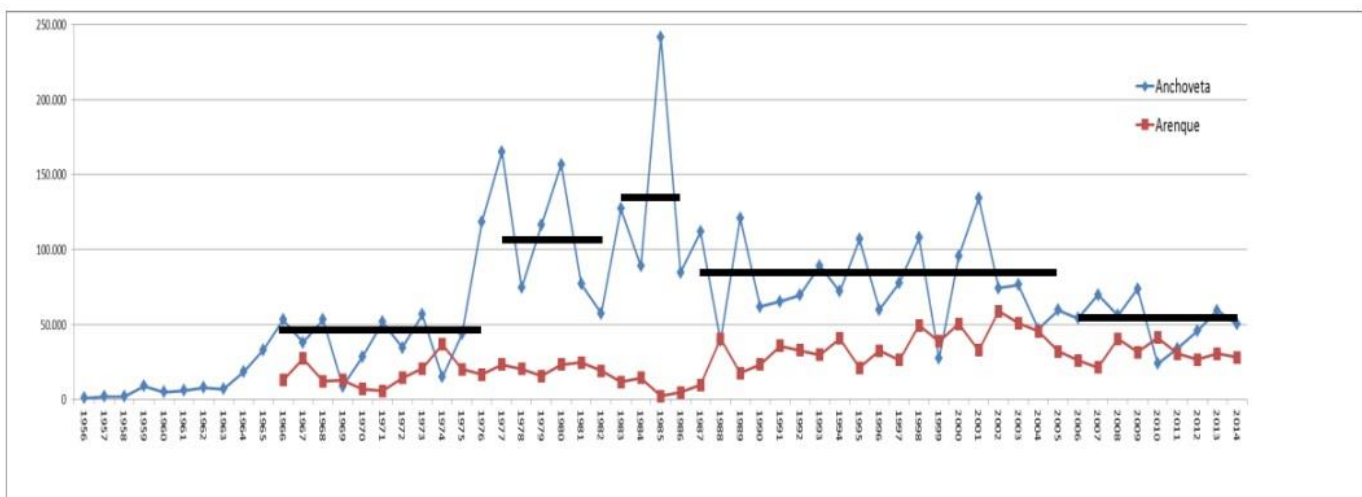


FIGURE 8 HISTORIC EVOLUTION IN SMALL PELAGIC FISHERY 1956-2014 (SOURCE: CEDEPESCA 2015 FROM FISTAT AND PROMARINA DATA)

See also the new information (biomass and catches) for the most recent period (2017-2023) provided in the Pacific anchoveta section.

Landing data is collected and used for assessing the stock, **sub-clause A1.1 is met.**

A1.2 Sufficient additional information is collected to enable an indication of stock status to be estimated.

Apart from landing data, CPUEs, size classes from landing data (since 2014) and biomass estimates from hydroacoustic surveys are also available. These different sources of data were also used for assessing the stock in 2020.

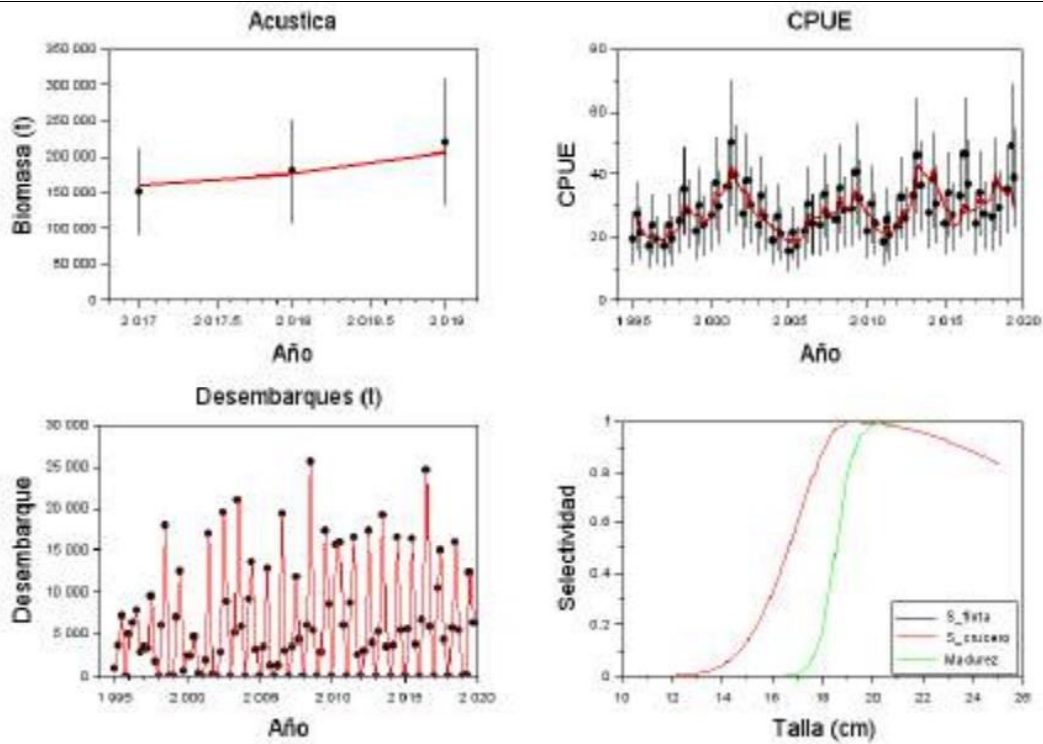


FIGURE 9 ADDITIONAL INFORMATION AVAILABLE FOR THE ASSESSMENT OF PACIFIC THREAD HERRING (CANALES 2020)

Sufficient additional information is collected to enable an indication of stock status to be estimated. **Sub-clause A1.2 is met.**

References

Canales 2020. Evaluación de los stocks de anchoveta (*Cetengraulis mysticetus*) y arenque (*Opisthonema sp.*) en el Golfo de Panama. CeDePesca. 48 pp.

Links

MARINTRUST Standard clause	1.3.2.1.1, 1.3.2.1.2, 1.3.2.1.4, 1.3.1.2
FAO CCRF	7.3.1, 12.3
GSSI	D.4.01, D.5.01, D.6.02, D.3.14

A2 Stock Assessment - Minimum Requirements		
A2.1	A stock assessment is conducted at least once every 3 years (or every 5 years if there is substantial supporting information that this is sufficient for the long-term sustainable management of the stock), and considers all fishery removals and the biological characteristics of the species.	Yes
A2.2	The assessment provides an estimate of the status of the biological stock relative to a reference point or proxy.	Yes
A2.3	The assessment provides an indication of the volume of fishery removals which is appropriate for the current stock status.	Yes
A2.4	The assessment is subject to internal or external peer review.	Yes
A2.5	The assessment is made publicly available.	Yes
Clause outcome:		PASS

A2.1 A stock assessment is conducted at least once every 3 years (or every 5 years if there is substantial supporting information that this is sufficient for the long-term sustainable management of the stock) and considers all fishery removals and the biological characteristics of the species.

Stock assessments for Pacific anchoveta and Pacific thread herring were conducted in 2015, 2016 and more recently in 2020 under the umbrella of the Fisheries Improvement Project. In the last assessment landing data (for the period 1956-2019), CPUEs, size classes from landing data (available since 2014) and biomass estimates from hydroacoustic surveys conducted in 2017, 2018 and 2019 were used in order to assess the stock status of the species.

		2017			2018			2019		
		Sardina	Arenque	Ambas	Sardina	Arenque	Ambas	Sardina	Arenque	Ambas
Biomassas (t)	Puntual	233,138	151,042	384,180	249,851	180,493	430,344	135,596	220,587	356,183
	Límite superior	342,509	209,927		372,787	284,864		248,675	297,679	
	Límite inferior	123,787	92,157		126,915	95,122		22,517	143,496	
Límite de confianza		48.91%	38.99%		49.20%	46.74%		83.39%	34.95%	

FIGURE 10 BIOMASS ESTIMATES FOR PACIFIC ANCHOVETA (SARDINA) AND PACIFIC THREAD HERRING (ARENQUE) FOR THE PERIOD 2017-2019 (CANALES 2020).

No new full assessments have been conducted since Canales 2020. However, before the annual fishing season, the authorities (ARAP) in collaboration with ALBOR tecnologico and CeDePesca conduct a hydroacoustic survey to assess the status of the stocks and based on that information a potential catch for the fishing season is estimated.

AÑO	BIOMASA ESTIMADA (t)			CAPTURAS (t)		
	Anchoveta	Arenque	Total	Anchoveta	Arenque	Total
2017	233,138	151,042	384,180	29,858	20,156	50,014
2018	249,851	180,493	430,344	46,657	27,334	73,991
2019	135,596	220,587	356,183	124,888	20,417	145,305
2020	NO HUBO PROSPECCIÓN			49,516	24,785	74,301
2021	115,775	154,844	270,619	35,250	22,259	57,509
2022	292,864	92,650	385,514	44,661	23,356	68,017
2023	225,523	112,316	337,839	EN TEMPORADA		

FIGURE 11 BIOMASS AND CATCHES OF THE TARGET SPECIES DURING THE PERIOD 2017 – 2023 (ARAP 2023)

Although it does not constitute a full stock assessment, catches in recent years of both target species have been well below the MSY estimated by Canales 2020 (MSY for both species was estimated at 137 mil tonnes). In the most recent evaluation, ARAP recommend conducting another evaluation in the middle of the fishing season in order to assess the spawning status of the species and the behaviour of the stocks during the fishing season. It is therefore understood that the fishery is managed in real time and **Sub-clause A2.1 is met. However, it is recommended to undertake a full stock assessment for the target species before the five-year period indicated in the standard is exhausted.**

A2.2 The assessment provides an estimate of the status of the biological stock relative to a reference point or proxy.

A management objective has been established for these stocks to ensure that at least 60% of the virgin biomass (Target reference point) is kept for both stocks. A Blimit of 20% of the virgin biomass was also established by Canales 2020, although the review conducted by Minte-Vera 2021 indicated that this last value was not conservative enough for key stocks. Hydroacoustic surveys are carried out before the fishing season to provide an estimation of the biomass and inform the maximum allowable catch (CMA) for the season. The spawning biomass for Pacific thread herring was estimated to be at 86% of the virgin biomass in 2020 (Canales 2020). The last hydroacoustic survey conducted in 2023 estimated a total biomass of 337,839 mt in waters of Panama, which corresponded to 225,523 mt of anchoveta and 112,316 mt of anchoveta (ARAP 2023), a 10% below the average total biomass of the last 6 years.

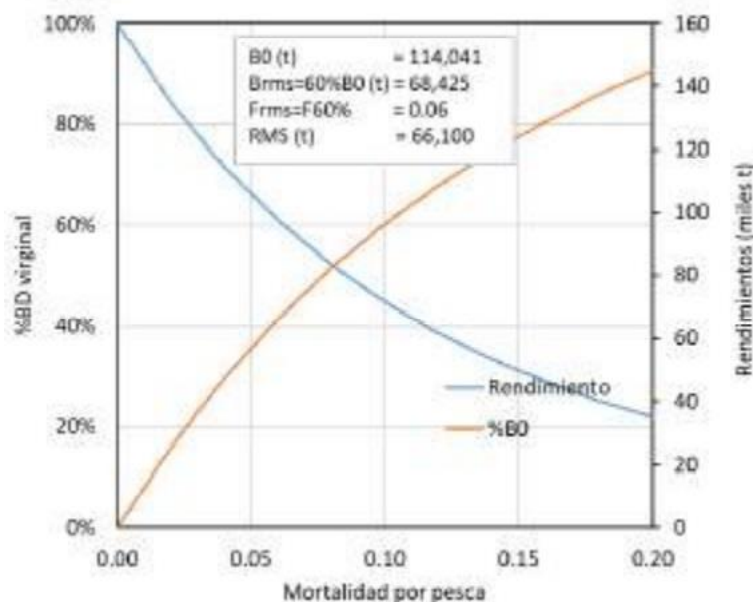


FIGURE 12 BIOMASS ESTIMATES FOR DIFFERENT FISHING MORTALITIES FOR THE HERRING STOCK (CANALES 2020).

The assessment considered all fishery removals and biological characteristics of the species. **Sub-clause A2.1 is met.**

A2.3 The assessment provides an indication of the volume of fishery removals which is appropriate for the current stock status.

During the assessment of the stock F_{msy} for this stock was estimate at 0.06. This low value is due to the low selectivity of the fleet for this species (juveniles are regularly caught in the fishery). Anyway, Canales 2020 considers that the stock has never been overexploited ($F > F_{msy}$) and that the current mortality (catches of around 25,000 mt) was well below F_{msy} (catches of 67,000 mt which corresponded to a F of 0.019). Catches in recent years have been well below that value (see previous sections).

The assessment provides an indication of the volume of fishery removals which is appropriate for the current stock status. **Sub-clause A2.3 is met.**

A2.4 The assessment is subject to internal or external peer review.

The assessment of the Panamanian pelagic fishery was conducted by Canales 2020 and reviewed by Minter-Vera 2021. A number of short- and medium-term recommendations were given in the review to improve the assessment of the stocks. The assessor has not been made aware of posterior reviews.

The assessment is subject to internal and external review. Sub-clause A2.4 is met.	
A2.5 The assessment is made publicly available.	
Stock Assessments can be accessed from the Marin Trust and CeDePesca websites.	
The assessment is made publicly available. Sub-clause A2.5 is met.	
References	
Canales 2020. Evaluación de los stocks de anchoveta (<i>Cetengraulis mysticetus</i>) y arenque (<i>Opisthonema sp.</i>) en el Golfo de Panama. CeDePesca. 48 pp.	
Minte-Vera, C.V. 2021. Revisión por pares de la evaluación de los stocks de anchoveta (<i>Cetengraulis mysticetus</i>) y arenques de hebra (<i>Opisthonema spp.</i>) en el Golfo de Panamá 2021 (informe no-publicado. 35 pgs).	
Links	
MARINTRUST Standard clause	1.3.2.1.2, 1.3.2.1.4, 1.3.1.2
FAO CCRF	12.3
GSSI	D.5.01, D.6.02, D.3.14

A3	Harvest Strategy – Minimum Requirements	
	A3.1	There is a mechanism in place by which total fishing mortality of this species is restricted. Yes
	A3.2	Total fishery removals of this species do not regularly exceed the level indicated or stated in the stock assessment. Where a specific quantity of removals is recommended, the actual removals may exceed this by up to 10% ONLY if the stock status is above the limit reference point or proxy. Yes
	A3.3	Commercial fishery removals are prohibited when the stock has been estimated to be below the limit reference point or proxy (small quotas for research or non-target catch of the species in other fisheries are permissible). Yes
Clause outcome:		Pass
A3.1 There is a mechanism in place by which total fishing mortality of this species is restricted.		
<p>Article 15 of Executive Decree No. 107 of March 2016 indicates that the opening of the small pelagic fishing season will be carried out every year by resolution of the ARAP considering the availability of the resource and the size structures of the target species. That information is collected through biological samplings, carried out in a pre-season fishing survey, which is conducted by Albor Tecnológico, support by the fishmeal and fish oil processing companies and coordinated by the ARAP (CeDePesca 2021).</p> <p>The fishing season starts when the average size of the specimens of Pacific anchoveta and Pacific thread herring in each fishing ground is greater than sizes that have been historically considered as acceptable and which coincide with average size at first maturity in the literature (12.5 cm for Pacific anchoveta and 17 cm for Pacific thread herring). Pacific anchoveta is the first target species of the fishery until July, when spawning is about to reach its peak. From July onwards, Pacific thread herring becomes the target species until October, when weekly yields start to decrease, and the fishery is closed through an ARAP administrative resolution. The fishery is closed by ARAP’s resolution, according to the scientific reports based on the monitoring and research on the fishery during the season, as defined by Article 16 of Executive Decree No. 107 of March 2016.</p> <p>Article 1 and Article 3 of Executive Decree 107 of May 2016 states that all vessels targeting anchoveta, herring or bumper must possess and carry a fishing license issued for those species specifically. The total number of licenses available are a maximum of 20 licenses for large (industrial) vessels and 10 for small vessels. Small vessels must be below 8m in length, and</p>		

must have a fish storage hold smaller than 3 cubic metres; industrial vessels are limited to a maximum hold size of 188 cubic metres. Licensed vessels of any size may only be replaced if completely removed from the fishery, and the new vessel will be issued the same licence number as the replaced vessel.

The stock is managed under the Small pelagic management plan. Hydroacoustic surveys are conducted before the fishing season. The fishing season starts and the TACs are set taking into consideration the data collected during the survey (biomass estimates, size structure, etc). The main mechanisms by which total removals are currently restricted are seasonal closures and restrictions on total fishing licences. The fishery is closed by the authorities based on the monitoring of the fishery. Therefore, it is understood that a management mechanism is in place to restrict fishing mortality. **Sub-clause A3.1 is met.**

A3.2 Total fishery removals of this species do not regularly exceed the level indicated or stated in the stock assessment. Where a specific quantity of removals is recommended, the actual removals may exceed this by up to 10% ONLY if the stock status is above the limit reference point or proxy.

As indicated previously, catches of Pacific anchoveta and Pacific thread herring in the last 10 years have been at around 50,000 mt and 33,000 mt respectively. Canales 2020 indicated sustainable catch values of 71,000 mt and 66,000 mt as sustainable for the anchoveta and herring stocks respectively. Therefore, catches have been below sustainable levels in recent years. Hydroacoustic surveys are carried out before the fishing season to provide an estimation of the biomass and inform the maximum allowable catch (CMA) for the fishing season. The last hydroacoustic survey conducted in 2023 estimated a total biomass of 337,839 mt in waters of Panama, which corresponded to 225,523 mt of anchoveta and 112,316 mt of anchoveta (ARAP 2023), a 10% below the average total biomass of the last 6 years.

Total fishery removals of this species do not regularly exceed the level indicated or stated in the stock assessment. **Sub-clause A3.2 is met.**

A3.3 Commercial fishery removals are prohibited when the stock has been estimated to be below the limit reference point or proxy (small quotas for research or non-target catch of the species in other fisheries are permissible).

Limit reference points have been established for these stocks at 0.2SSB0. They are currently well above the Bmsy, but it is considered that the fishery would stop if the annual hydroacoustic surveys indicate that the stocks has been reduced to low levels below Blim.

Commercial fishery removals are prohibited when the stock has been estimated to be below the limit reference point. **Sub-clause A3.3 is met.**

References

Canales 2020. Evaluación de los stocks de anchoveta (*Cetengraulis mysticetus*) y arenque (*Opisthonema sp.*) en el Golfo de Panama. CeDePesca. 48 pp.

Minte-Vera, C.V. 2021. Revisión por pares de la evaluación de los stocks de anchoveta (*Cetengraulis mysticetus*) y arenques de hebra (*Opisthonema spp.*) en el Golfo de Panamá 2021 (informe no-publicado. 35 pgs).

Standard clause 1.3.2.1.3

Links	
MARINTRUST Standard clause	1.3.2.1.3, 1.3.2.1.4
FAO CCRF	7.2.1, 7.22 (e), 7.5.3
GSSI	D3.04, D6.01

A4	A4.1	The stock is at or above the target reference point, OR IF NOT:	Yes
		The stock is above the limit reference point or proxy and there is evidence that a fall below the limit reference point would result in fishery closure OR IF NOT:	
		The stock is estimated to be below the limit reference point or proxy, but fishery removals are prohibited.	

Clause outcome: Pass

A4.1 The stock is at or above the target reference point, OR IF NOT:

The stock is above the limit reference point or proxy and there is evidence that a fall below the limit reference point would result in fishery closure OR IF NOT:

The stock is estimated to be below the limit reference point or proxy, but fishery removals are prohibited.

The stock of Pacific thread herring was assessed by Canales 2020. A target and limit reference point of 60% and 20% of the virgin biomass were selected respectively. The spawning biomass for Pacific thread herring in 2023 was estimated to be 112,316 mt (at 40% of the virgin biomass estimated by Canales 2020). Catches of Pacific thread herring in 2023 has been low, only 3,409 mt until October 2023.

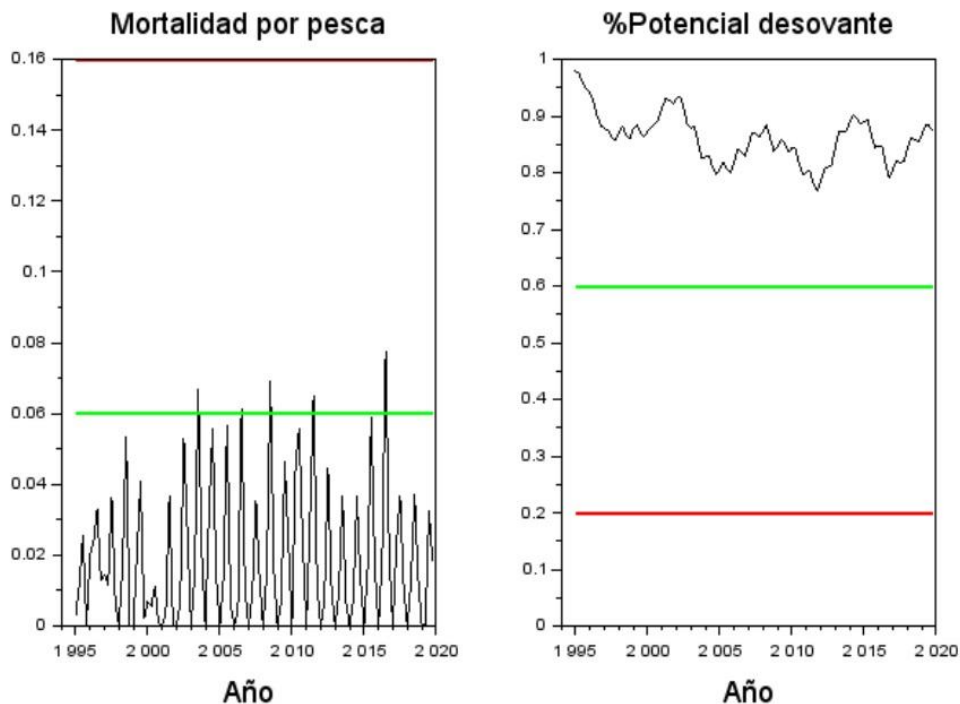


FIGURE 13 STATUS (F AND SSB) OF PACIFIC THREAD HERRING IN REFERENCE TO TARGET AND LIMIT REFERENCE POINTS (CANALES 2020)

The stock is above the limit reference point. **Sub-clause A4.1 is met.**

References

ARAP 2023. Informe técnico de la captura máxima admisible 2023. 5 pp.

Canales 2020. Evaluación de los stocks de anchoveta (*Cetengraulis mysticetus*) y arenque (*Opisthonema sp.*) en el Golfo de

Panama. CeDePesca. 48 pp.	
Links	
MARINTRUST Standard clause	1.3.2.1.4
FAO CCRF	7.2.1, 7.2.2 (e)
GSSI	D6 01

CATEGORY D SPECIES - Pacific bumper (*Chloroscombrus orqueta*)

D1	Species Name	Pacific bumper (<i>Chloroscombrus orqueta</i>)*		
	Productivity Attribute	Value	Score	
	Average age at maturity (years)	<2 years	1	
	Average maximum age (years)	<10 years	1	
	Fecundity (eggs/spawning)	300000 – 4.000.000	1	
	Average maximum size (cm)	30 cm	1	
	Average size at maturity (cm)	12 cm	1	
	Reproductive strategy	Broadcast spawner	1	
	Mean trophic level	2.5	1	
			Average Productivity Score	1.00
	Susceptibility Attribute	Value	Score	
	Availability (area overlap)	<10% overlap	1	
	Encounterability (the position of the stock/species within the water column relative to the fishing gear)	High overlap with fishing gear (high encounterability)	3	
	Selectivity of gear type	Species > 2 times	3	
	Post-capture mortality	Retained species	3	
			Average Susceptibility Score	2.50
			PSA Risk Rating (From Table D3)	PASS
			Compliance rating	PASS
	<p>No changes have occurred from the previous surveillance audit. Please, see the 1st SA report for more information about the changes occurred since the initial assessment.</p> <p>*Although this species is included in the management plan no reference points have been defined and no stock assessments are conducted. So, it is considered a category D species.</p> <p>References</p> <p>Froese, R. and D. Pauly. Editors. 2023. FishBase. World Wide Web electronic publication. www.fishbase.org, (10/2023).</p>			
	<i>Standard clauses 1.3.2.2</i>			

Category D species are those which make up less than 5% of landings and are not subject to a species-specific management regime. In the case of mixed trawl fisheries, Category D species may make up the majority of landings. The comparative lack of scientific information on the status of the population of the species means that a risk-assessment style approach must be taken.

D1	Species Name	Peruvian moonfish (<i>Selene peruviana</i>)		
	Productivity Attribute	Value	Score	
	Average age at maturity (years)	1.6 years	1	
	Average maximum age (years)	6.5 years	1	
	Fecundity (eggs/spawning)	>20,000 eggs per year	1	
	Average maximum size (cm)	40 cm	1	
	Average size at maturity (cm)	16 cm	1	
	Reproductive strategy	Broadcast spawner	1	
	Mean trophic level	4.3	3	
			Average Productivity Score	1.29
	Susceptibility Attribute	Value	Score	
	Availability (area overlap)	<10% overlap	1	
	Encounterability (the position of the stock/species within the water column relative to the fishing gear)	High overlap with fishing gear (high encounterability)	3	
	Selectivity of gear type	Species > 2 times	3	
	Post-capture mortality	Retained species	3	
			Average Susceptibility Score	2.50
			PSA Risk Rating (From Table D3)	PASS
			Compliance rating	PASS
	No changes have occurred from the previous surveillance audit. Please, see the 1 st SA report for more information about the changes occurred since the initial assessment.			
	References			
Froese, R. and D. Pauly. Editors. 2023. FishBase. World Wide Web electronic publication. www.fishbase.org, (10/2023).				
<i>Standard clauses 1.3.2.2</i>				

CATEGORY D SPECIES – Peruvian moonfish (*Selene peruviana*)

Category D species are those which make up less than 5% of landings and are not subject to a species-specific management regime. In the case of mixed trawl fisheries, Category D species may make up the majority of landings. The comparative lack of scientific information on the status of the population of the species means that a risk-assessment style approach must be taken.

D1	Species Name	Pacific harvestfish (<i>Prepilus medius</i>)		
	Productivity Attribute	Value	Score	
	Average age at maturity (years)	Less than 2 years	1	
	Average maximum age (years)	3 years	1	
	Fecundity (eggs/spawning)	Unknown	-	
	Average maximum size (cm)	31.6 cm	1	
	Average size at maturity (cm)	18 cm	1	
	Reproductive strategy	Broadcast spawner	1	
	Mean trophic level	4	3	
	Average Productivity Score		1.33	
	Susceptibility Attribute	Value	Score	
	Availability (area overlap)	<10% overlap	1	
	Encounterability (the position of the stock/species within the water column relative to the fishing gear)	Medium overlap (neritic)	2	
	Selectivity of gear type	Species > 2 times	3	
	Post-capture mortality	Retained species	3	
	Average Susceptibility Score		2.25	
	PSA Risk Rating (From Table D3)		PASS	
	Compliance rating		PASS	
	Depth range of the species – 10-60 m			
	References			
Froese, R. and D. Pauly. Editors. 2023. FishBase. World Wide Web electronic publication. www.fishbase.org, (10/2023).				
<i>Standard clauses 1.3.2.2</i>				

CATEGORY D SPECIES – Pacific harvestfish (*Prepilus medius*)

Category D species are those which make up less than 5% of landings and are not subject to a species-specific management regime. In the case of mixed trawl fisheries, Category D species may make up the majority of landings. The comparative lack of scientific information on the status of the population of the species means that a risk-assessment style approach must be taken.

D1	Species Name	Silver drum (<i>Larimus argenteus</i>)	
	Productivity Attribute	Value	Score
	Average age at maturity (years)	1.6 year	1
	Average maximum age (years)	6.3 year	1
	Fecundity (eggs/spawning)	Unknown	-
	Average maximum size (cm)	36.1 cm	1
	Average size at maturity (cm)	21.7 cm	1
	Reproductive strategy	Broadcast spawner	1
	Mean trophic level	3.1	2
	Average Productivity Score		1.16
	Susceptibility Attribute	Value	Score
	Availability (area overlap)	>10% overlap	2
	Encounterability (the position of the stock/species within the water column relative to the fishing gear)	Medium overlap (neritic)	2
	Selectivity of gear type	Species > 2 times	3
	Post-capture mortality	Retained species	3
	Average Susceptibility Score		2.25
	PSA Risk Rating (From Table D3)		PASS
Compliance rating		PASS	
References			
Froese, R. and D. Pauly. Editors. 2023. FishBase. World Wide Web electronic publication. www.fishbase.org, (10/2023).			
<i>Standard clauses 1.3.2.2</i>			

CATEGORY D SPECIES – Silver drum (*Larimus argenteus*)

Category D species are those which make up less than 5% of landings and are not subject to a species-specific management regime. In the case of mixed trawl fisheries, Category D species may make up the majority of landings. The comparative lack of scientific information on the status of the population of the species means that a risk-assessment style approach must be taken.

D1	Species Name	Brassy grunt (<i>Orthopristis chalceus</i>)		
	Productivity Attribute	Value	Score	
	Average age at maturity (years)	2.5 years	2	
	Average maximum age (years)	10.2 years	2	
	Fecundity (eggs/spawning)	Unknown	-	
	Average maximum size (cm)	45 cm	1	
	Average size at maturity (cm)	22.2 cm	1	
	Reproductive strategy	Broadcast spawner	1	
	Mean trophic level	3.5	3	
	Average Productivity Score		1.66	
	Susceptibility Attribute	Value	Score	
	Availability (area overlap)	<10% overlap	1	
	Encounterability (the position of the stock/species within the water column relative to the fishing gear)	Medium overlap (neritic)	2	
	Selectivity of gear type	Species > 2 times	3	
	Post-capture mortality	Retained species	3	
	Average Susceptibility Score		2.25	
	PSA Risk Rating (From Table D3)		PASS	
	Compliance rating		PASS	
	The species is found from the Gulf of Mexico to Panama, found between 10 and 60 m			
	References			
Froese, R. and D. Pauly. Editors. 2023. FishBase. World Wide Web electronic publication. www.fishbase.org, (10/2023)				
<i>Standard clauses 1.3.2.2</i>				

CATEGORY D SPECIES – Brassy grunt (*Orthopristis chalceus*)

Category D species are those which make up less than 5% of landings and are not subject to a species-specific management regime. In the case of mixed trawl fisheries, Category D species may make up the majority of landings. The comparative lack of scientific information on the status of the population of the species means that a risk-assessment style approach must be taken.

D1	Species Name	Mexican barracuda (<i>Sphyraena ensis</i>)		
	Productivity Attribute	Value	Score	
	Average age at maturity (years)	2 years	2	
	Average maximum age (years)	8 years	1	
	Fecundity (eggs/spawning)	69,689 to 944,793 eggs	1	
	Average maximum size (cm)	127 cm	2	
	Average size at maturity (cm)	39.4 cm	2	
	Reproductive strategy	Broadcast spawner	1	
	Mean trophic level	4	3	
			Average Productivity Score	1.71
	Susceptibility Attribute	Value	Score	
	Availability (area overlap)	<10% overlap	1	
	Encounterability (the position of the stock/species within the water column relative to the fishing gear)	Medium overlap (neritic)	2	
	Selectivity of gear type	Species > 2 times	3	
	Post-capture mortality	Retained species	3	
			Average Susceptibility Score	2.25
			PSA Risk Rating (From Table D3)	PASS
			Compliance rating	PASS
	<p>For some productivity attributes data from other similar barracuda species has been used (in that case precautionary figures are applied).</p> <p>The species is found from Mexico to Panama, found between 10 and 60 m.</p> <p>References</p> <p>Froese, R. and D. Pauly. Editors. 2023. FishBase. World Wide Web electronic publication. www.fishbase.org, (10/2023)</p> <p>K.M. Rajesh, Prathibha Rohit, E.M. Abdussamad, Divya Viswambharan. Reproductive biology of the sawtooth barracuda, <i>Sphyraena putnamae</i> (Jordan and Seale, 1905) along the coastal waters of Karnataka, southeastern Arabian Sea, Regional Studies in Marine Science, Volume 36, 2020, 101314, ISSN 2352-4855, https://doi.org/10.1016/j.rsma.2020.101314.</p> <p>https://marinespecies.wildlife.ca.gov/pacific-barracuda/the-species/</p>			
	<i>Standard clauses 1.3.2.2</i>			

CATEGORY D SPECIES – Mexican barracuda (*Sphyraena ensis*)

Category D species are those which make up less than 5% of landings and are not subject to a species-specific management regime. In the case of mixed trawl fisheries, Category D species may make up the majority of landings. The comparative lack of scientific information on the status of the population of the species means that a risk-assessment style approach must be taken.

CATEGORY D SPECIES – Pacific smalleye croaker (*Nebris*

D1	Species Name	Pacific smalleye croaker (<i>Nebris occidentalis</i>)		
	Productivity Attribute	Value	Score	
	Average age at maturity (years)	Unknown	-	
	Average maximum age (years)	Unknown	-	
	Fecundity (eggs/spawning)	Unknown	-	
	Average maximum size (cm)	60 cm	1	
	Average size at maturity (cm)	20-30 cm	2	
	Reproductive strategy	Broadcast spawner	1	
	Mean trophic level	3.7	3	
	Average Productivity Score		1.75	
	Susceptibility Attribute	Value	Score	
	Availability (area overlap)	<10% overlap	1	
	Encounterability (the position of the stock/species within the water column relative to the fishing gear)	Medium overlap (benthopelagic)	2	
	Selectivity of gear type	Species > 2 times	3	
	Post-capture mortality	Retained species	3	
	Average Susceptibility Score		2.25	
	PSA Risk Rating (From Table D3)		PASS	
	Compliance rating		PASS	
	Found from Guatemala to Peru. Benthopelagic.			
	References			
	Froese, R. and D. Pauly. Editors. 2023. FishBase. World Wide Web electronic publication. www.fishbase.org, (10/2023)			
<i>Standard clauses 1.3.2.2</i>				

occidentalis)

Category D species are those which make up less than 5% of landings and are not subject to a species-specific management regime. In the case of mixed trawl fisheries, Category D species may make up the majority of landings. The comparative lack of scientific information on the status of the population of the species means that a risk-assessment style approach must be taken.

D1	Species Name	Red sea catfish (<i>Bagre pinnimaculatus</i>)		
	Productivity Attribute	Value	Score	
	Average age at maturity (years)	Unknown	-	
	Average maximum age (years)	Unknown	-	
	Fecundity (eggs/spawning)	<100 (low fecundity)	3	
	Average maximum size (cm)	95 cm	2	
	Average size at maturity (cm)	30 cm	2	
	Reproductive strategy	Live bearer	3	
	Mean trophic level	4.5	3	
	Average Productivity Score		2.6	
	Susceptibility Attribute	Value	Score	
	Availability (area overlap)	<10% overlap	1	
	Encounterability (the position of the stock/species within the water column relative to the fishing gear)	Low encounterability	1	
	Selectivity of gear type	Species > 2 times	3	
	Post-capture mortality	Retained species	3	
	Average Susceptibility Score		2	
	PSA Risk Rating (From Table D3)		TABLE D4	
	Compliance rating		TABLE D4	
	North, Central and South America. Demersal.			
	References			
Froese, R. and D. Pauly. Editors. 2023. FishBase. World Wide Web electronic publication. www.fishbase.org, (10/2023)				
<i>Standard clauses 1.3.2.2</i>				

CATEGORY D SPECIES – Red sea catfish (*Bagre pinnimaculatus*)

Category D species are those which make up less than 5% of landings and are not subject to a species-specific management regime. In the case of mixed trawl fisheries, Category D species may make up the majority of landings. The comparative lack of scientific information on the status of the population of the species means that a risk-assessment style approach must be taken.

Table D2 - Productivity / Susceptibility attributes and scores.

Productivity attributes	Low productivity/ High risk	Medium productivity/ Medium risk	High productivity/ Low risk
	Score 3	Score 2	Score 1
Average age at maturity (years)	>4	2 to 4	<2
Average maximum age (years)	>30	10 to 30	<10
Fecundity (eggs/spawning)	<1 000	1 000 to 10 000	>10 000
Average maximum size (cm)	>150	60 to 150	<60
Average size at maturity (cm)	>150	30 to 150	<30
Reproductive strategy	Live bearer, mouth brooder or significant parental investment	Demersal spawner "berried"	Broadcast spawner
Mean trophic level	>3.25	2.5–3.25	<2.5

Susceptibility attributes		High susceptibility/ High risk	Medium susceptibility/ Medium risk	Low susceptibility/ Low risk
		Score 3	Score 2	Score 1
Availability	1) Overlap of adult species range with fishery	>50% of stock occurs in the area fished	Between 25% and 50% of the stock occurs in the area fished	<25% of stock occurs in the area fished
	2) Distribution	Only in the country/ fishery	Limited range in the region	Throughout region/ global distribution
Encounterability	1) Habitat	Habitat preference of species make it highly likely to encounter trawl gear (e.g. demersal, muddy/sandy bottom)	Habitat preference of species make it moderately likely to encounter trawl gear (e.g. rocky bottom/reefs)	Depth or distribution of species make it unlikely to encounter trawl gear (e.g. epi-pelagic or meso-pelagic)
	2) Depth range	High overlap with trawl fishing gear (20 to 60 m depth)	Medium overlap with trawl fishing gear (10 to 20 m depth)	Low overlap with trawl fishing gear (0 to 10 m, >70 m depth)
Selectivity		Species >2 times mesh size or up to 4 m length	Species 1 to 2 times mesh size or 4 to 5 m length	Species <mesh size or >5 m length
Post capture mortality		Most dead or retained Trawl tow >3 hours	Alive after net hauled Trawl tow 0.5 to 3 hours	Released alive Trawl tow <0.5 hours

Note: Availability 2 is only used when there is no information for Availability 1; the most conservative score between Encounterability 1 and 2 is used.

D3		Average Susceptibility Score		
		1 - 1.75	1.76 - 2.24	2.25 - 3
Average Productivity Score	1 - 1.75	PASS	PASS	PASS
	1.76 - 2.24	PASS	PASS	TABLE D4
	2.25 - 3	PASS	TABLE D4	TABLE D4

D4		Species Name	Red sea catfish (<i>Bagre pinnimaculatus</i>)
Impacts On Species Categorised as Vulnerable by D1-D3 - Minimum Requirements			
D4.1	The potential impacts of the fishery on this species are considered during the management process, and reasonable measures are taken to minimise these impacts.		Yes
D4.2	There is no substantial evidence that the fishery has a significant negative impact on the species.		Yes
Outcome:			PASS
<p>Evidence</p> <p>D4.1: The potential impacts of the fishery on this species are considered during the management process, and reasonable measures are taken to minimise these impacts.</p> <p>D4.2 There is no substantial evidence that the fishery has a significant negative impact on the species.</p> <p>Catch data is collected in the fishery. An on-board observer programme has also been implemented in recent years which has helped to improve the knowledge about the impact of the fishery on bycatch species. In general, bycatch levels in pelagic fisheries targeting small pelagic species are low. In this fishery the catch of sea catfish is 5.2 % of the bycatch or 0.05% of the total catch. This species is abundant in many parts of its range and it is listed as Least Concern by the IUCN Red List (Cooke et al., 2019). One of the main objectives (Objective 5) of the management plan for the small pelagic fishery in Panama indicates: “<i>monitor the bycatch in the fishery and implement measures (if necessary)</i>”. In this case, it is considered that due to the relatively low impact of the fishery on these species and their healthy status no management measures are necessary. However, with the current better understanding of the impacts of the fishery on this and other species, if the impact increases, it would be considered during the management process and measures would be implemented to minimise that impact. Sub-clause D4.1 and D4.2 are met.</p>			
<p>References</p> <p>Cooke, R., Acero, A., Betancur, R., Rojas, P., Cotto, A. & Daniels, A. 2019. <i>Bagre pinnimaculatus</i>. The IUCN Red List of Threatened Species 2019: e.T183986A1744285. https://dx.doi.org/10.2305/IUCN.UK.2019-2.RLTS.T183986A1744285.en. Accessed on 08 March 2024.</p>			
Links			
MARINTRUST Standard clause		1.3.2.2, 4.1.4	
FAO CCRF		7.5.1	
GSSI		D.5.01	

FURTHER IMPACTS

The three clauses in this section relate to impacts the fishery may have in other areas. A fishery must meet the minimum requirements of all three clauses before it can be recommended for approval.

Impacts on ETP Species - Minimum Requirements
--

F1	F1.1	Interactions with ETP species are recorded.	Yes
	F1.2	There is no substantial evidence that the fishery has a significant negative effect on ETP species.	Yes
	F1.3	If the fishery is known to interact with ETP species, measures are in place to minimise mortality.	Yes
Clause outcome:			PASS

F1.1 Interactions with ETP species are recorded.

Interactions with ETP species are monitored by the On-Board Observer Program (OBOP) since 2016, including sea turtles, sharks and rays. A number of observers have been trained and ID keys are used. During the 2023 fishing season which extended between May and October 2023, 64 trips and 356 hauls were monitored. As indicated previously, a 20% coverage objective for operative vessels has been set by the management plan (<http://www.viceipup.up.ac.pa/cidim/files/ARAP-Decreto-Ejecutivo-107-de-2016.pdf>) but based on the data provided, it is unclear to which proportion of vessels or fishing trips that observer effort corresponds (Ceballes et al., 2024).

TABLE 7 FISHING TRIPS OBSERVED BY THE OBOP (CEBALLES ET AL., 2024)

Viajes de Pesca monitoreados	May	Jun	Jul	Ago	Sep	Oct	Total
	19	7	13	13	10	5	67
Embarcación	Lances monitoreados por embarcación por mes						Total de lances por embarcación
Bayano IV			30	49			79
Bayano VI		11			44	38	93
Bayano VII	36						36
Bayano VIII			4				4
Anchovetas II	13	21	24	12		6	76
Central Pacific				3			3
Isla Melones	4						4
Isla Santhelmo					6		6
Kristen P.	17						17
Los Farallones			6	2			8
Pleamar					6		6
Promar				1			1
Puerto Caimito					13		13
Tabor	7			3			10
Total Mensual	77	32	64	70	69	44	356

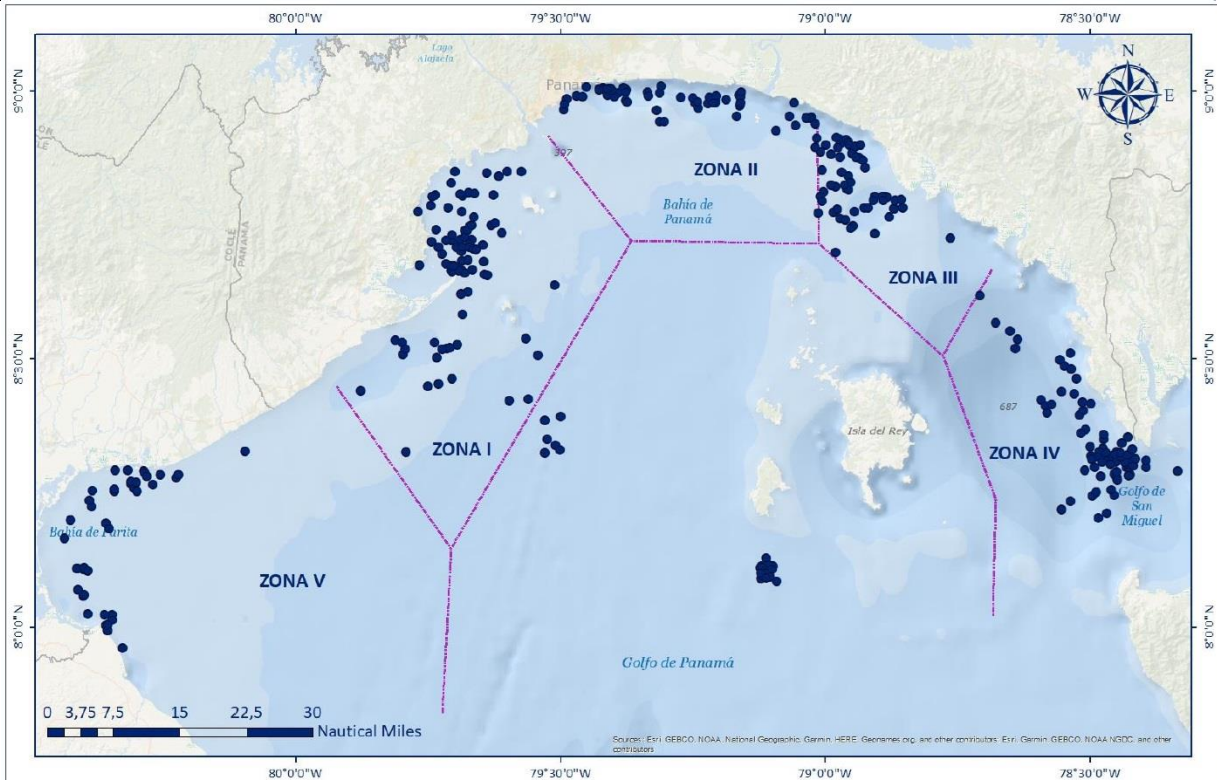


FIGURE 14. FISHING SETS OBSERVED BY THE POAB DURING THE 2023 FISHING SEASON (CEBALLES ET AL., 2024)

Interactions with seabirds do not seem to be recorded in the fishery although mortality of pelicans has been documented in the fishery. However, no endangered pelicans seem to be present in the area (<https://www.iucnredlist.org/search?query=pelecanus&searchType=species>).

Interactions with ETP species are recorded for the main ETP species with which the fishery interacts. **Sub-clause F1.1 is met. F1.2 There is no substantial evidence that the fishery has a significant negative effect on ETP species.**

There is clear evidence of interactions with ETP species. In 2023, 356 fishing sets were observed. During that year, the fleet encountered 18 sea turtles, 132 sharks and 1,320 rays.

In the case of turtles, interaction with three species were reported (9 olive ridley sea turtles (*Lepidochelys olivacea*), 8 green sea turtle (*Chelonia mydas*) and 1 unidentified turtle. All the individuals were liberated by the crew.

In the case of sharks, in 2023, the most significant shark interaction, in terms of numbers, was with the scalloped hammerhead (*Sphyrna lewini*) (132 individuals) which is listed as Critically endangered (Rigby et al., 2019). Other species caught by the fishery were: smalltail shark (*Carcharhinus porosus*) (12 individuals) and Pacific smalltail shark (*Carcharhinus cerdale*) both listed as Critically endangered (Pollo et al., 2020a and b). 77% of the sharks (mainly *Carcharhinus* sp.) were released alive. As indicated also 1,320 rays were reported (all of them identified as a *Urotrygon* spp., although other years other species such as *Urotrygon urogersi*, *Dasyatis longus*, *D. brevis*, *Aetobatus narinari* and *Minatura pacifica* have been also reported by the fishery).

In the case of seabirds, 70 pelicans (*Pelecanus occidentalis*) interacted with the fishery (81% of the total interactions with seabirds). The species is listed as Least Concern (Birdlife International 2018).

No interactions with marine mammals were reported, although marine mammals' sights were also reported (60 dolphins in 2023).

Of most concern is the Critically Endangered scalloped hammerhead. Also, in the case of the round rays (*Urotrygon* spp.) at least 6 different species have been found in Pacific waters and all of them fall within endangered categories (from VU to CR (Kyne et al., 2020a and b)

According to the observer report provided, for the 2023 fishing season, 38% of the scalloped hammerhead caught by the fishery, 38% were released. The post-release mortality is higher for injured released sharks and has been reported as 100% for the Scalloped Hammerhead in purse seines although this information is based on a limited number of sharks caught (Eddy et al. 2016). The species is caught globally as target and bycatch in pelagic commercial and small-scale longline, purse seine, and gillnet fisheries, and is retained for the meat and fins. The Scalloped Hammerhead has undergone steep declines in all oceans, with some signs of stabilization and possible recovery in response to management only in the Northwest Atlantic and Gulf of Mexico (Rigby et al., 2019). All the rays caught by the fishery were released by the crew.

Those species are critically endangered and even a low level of bycatch can have an impact in the population. However, these catch numbers are very much lower than in other fisheries operating in the area, such as the longline and gillnet fisheries (Yehudi Rodriguez 2013, Vega et al., 2023). Therefore, it is considered that the impact of the assessed fishery on ETP species is low and **sub-clause F1.2 is met**. However, the assessor recommends for the fishery to release all sharks caught.

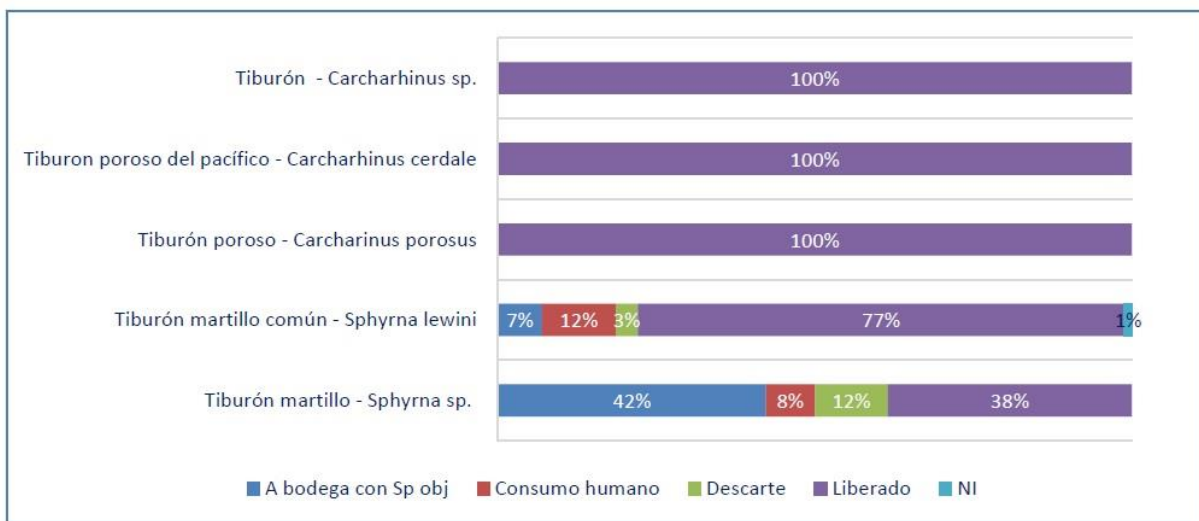


FIGURE 15 FATE OF THE SHARK SPECIES CAUGHT DURING THE 2023 FISHING SEASON (CEBALLES ET AL., 2023)

F1.3 If the fishery is known to interact with ETP species, measures are in place to minimise mortality.

As indicated above, the fishery interacts with sharks, sea turtles and seabirds.

To reduce the impacts of fisheries on sea turtles, Panama adopted the Declaration of the Inter-American Commission for the Protection and Conservation of Sea Turtles (CIT), which prohibits the retention of these species (via Law No. 8 of January 4, 2008). In addition, the creation of several Wildlife Refuge Areas with the purpose of protecting the nesting areas of sea turtles, for example on Isla Caña, La Barqueta Beach, La Marinera Beach as a special management area, among others, indicate State interest in conserving these species. These species are leased alive when caught.

For seabirds, the crew try to avoid the catch of birds and when caught (for example pelicans) they are released the as soon as possible. Marine-coastal bird workshop has also been conducted with fishermen to understand the impact of those species and how to minimise it (<https://cedepesca.net/proyectos/panamanian-small-pelagics/>).

For elasmobranch species, a number of workshops have been conducted in this fishery to improve data collection on interactions and release of bycatch specimens, and stakeholders in the fishery have also signed a voluntary code of conduct which includes among its objectives to comply with laws and regulations to protect ETP species and release them as soon as possible. According to new information provided, the combination of observer education, workshops, and the Code of Conduct meant that in 2019 the majority of scalloped hammerhead bycatch was released alive (around 58%) (Archer & Peacock 2021). Furthermore, a collaboration agreement has been also recently established by Promarina with a shark specialist to launch a shark monitoring and release project to further improve these numbers (Promarina pers. comm.). There is also an ongoing study to define zones and time periods where this kind of bycatch is higher in order to analyse if it is worth avoiding these areas along the fishing season or even to create a protected area. However, the available information does not indicate that spatial or seasonal measures could minimize the impact on this species (CeDePesca 2021).

Therefore, management measures are in place in the fishery to minimise mortality of sensitive species, **sub-clause F1.3 is met.**

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Yehudi Rodríguez, A. 2013. Análisis De La Situación Pesquera De Tiburones Para La Costa Pacífica De Panamá. 48 pp.

Links	
MARINTRUST Standard clause	1.3.3.1
FAO CCRF	7.2.2 (d)
GSSI	D4.04, D.3.08

F2 Impacts on Habitats - Minimum Requirements		
F2.1	Potential habitat interactions are considered in the management decision-making process.	Yes
F2.2	There is no substantial evidence that the fishery has a significant negative impact on physical habitats.	Yes
F2.3	If the fishery is known to interact with physical habitats, there are measures in place to minimise and mitigate negative impacts.	Yes
Clause outcome:		Pass
F2.1 Potential habitat interactions are considered in the management decision-making process.		
<p>The Pacific anchoveta occurs inshore, principally over mud flats. Apparently, it does not make long migrations along sandy or rocky areas (Di Dario 2020). Pacific thread herring is also a coastal pelagic fish found over soft substrate near the surface in both coastal and offshore waters (Cotto et al.,2010). The fishery occurs therefore in coastal areas where the gear can impact the seabed. Interactions with the seabed were also reported by the observer program (Ceballes et al., 2024).</p>		

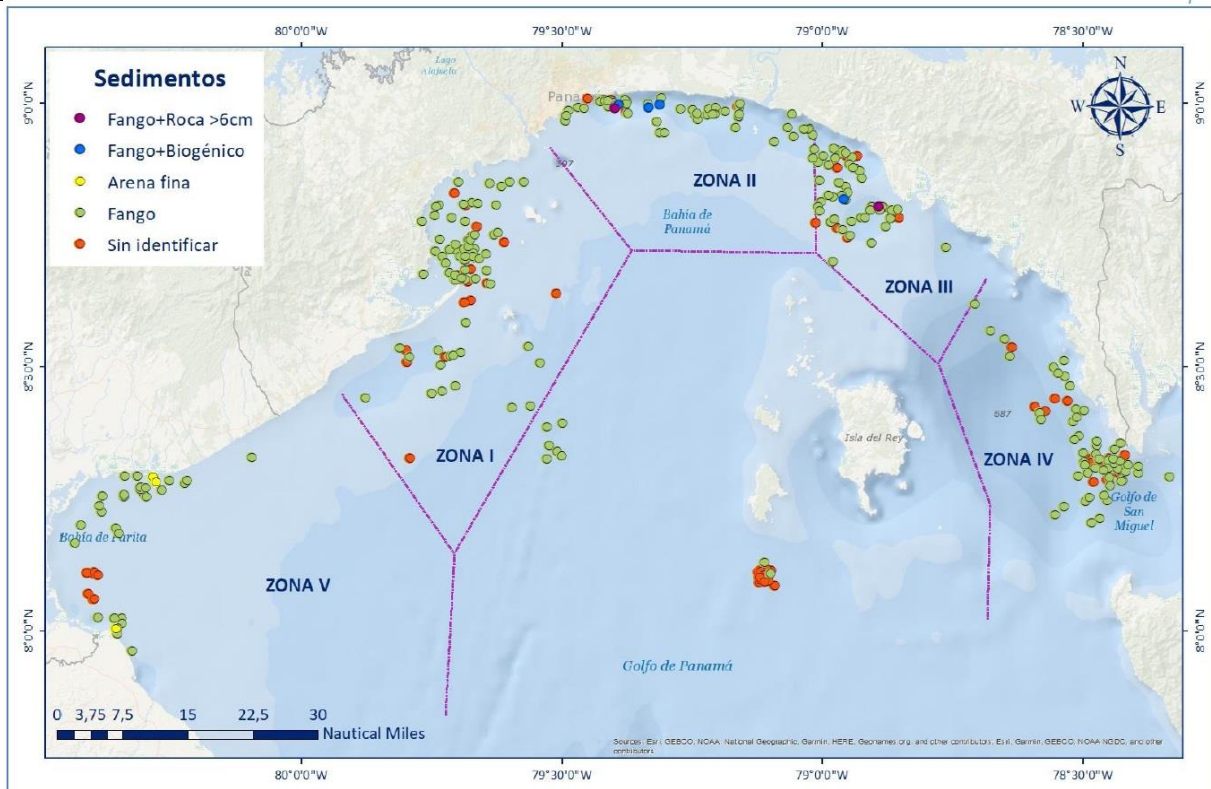


FIGURE 16 INTERACTIONS WITH THE SEABED DURING THE 2023 FISHING SEASON (CEBALLES ET AL., 2024)

As seen interactions mainly occurred on muddy areas and the impact of the gear on those areas is expected to be low.

Moreover, a number of non-take zones have been implemented in Panama in order to protect mangroves and river mouths (CeDePesca 2015). The use of VMS in industrial vessels is currently mandatory which has improved compliance with these spatial measures. Furthermore, the use of purse seines in areas with hard bottoms is reportedly avoided by fishers, to limit gear damage. It also seems that very recently the country reached a 30% protection of its marine areas after protecting the Coiba ridge (<https://mission-blue.org/2021/06/panama-achieves-30x30-ocean-protection-goals-in-newly-expanded-cordillera-de-coiba-marine-protected-area/>).

Therefore, potential habitat interactions are considered in the advice and in the management decision-making process. **Sub-clause F2.1 is met.**

F2.2 There is no substantial evidence that the fishery has a significant negative impact on physical habitats.

Purse seine are designed to catch shoals of pelagic species and they use to operate in the water column without contacting the seabed. However, as this fishery occurs in coastal areas, purse seines for Pacific anchoveta and herring do contact the seabed. However, the fishery occurs over mud where the impact is reduced, and a number of non-take zones have been established in order to protect the vulnerable habitats in the area (mangroves). Therefore, physical impacts of pelagic fisheries are considered insignificant. **Sub-clause F2.2 is met.**

F2.3 If the fishery is known to interact with physical habitats, there are measures in place to minimise and mitigate negative impacts.

As indicated above, non-take zones have been established in the area. Therefore, **sub-clause F2.3.**

References	
Ceballes, A., Palacios, M. & Palacios, M. 2024. INFORME TÉCNICO PROGRAMA PRIVADO DE OBSERVADORES A BORDO. Pesquería de Pequeños Pelágicos de Panamá. Temporada 2023. CeDePesca. 50 pp.	
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Links	
MARINTRUST Standard clause	1.3.3.2
FAO CCRF	6.8
GSSI	D.2.07, D.6.07, D3.09

F3	Ecosystem Impacts - Minimum Requirements	
	F3.1	The broader ecosystem within which the fishery occurs is considered during the management decision-making process.
	F3.2	There is no substantial evidence that the fishery has a significant negative impact on the marine ecosystem.
	F3.3	If one or more of the species identified during species categorisation plays a key role in the marine ecosystem, additional precaution is included in recommendations relating to the total permissible fishery removals.
Clause outcome:		Pass
F3.1 The broader ecosystem within which the fishery occurs is considered during the management decision-making process.		
<p>Pacific anchoveta occurs inshore, principally over mud flats and forms large schools. Juveniles feed principally on diatoms, and also silico-flagellates, dinoflagellates and small crustaceans. Adults feed mainly on benthic diatoms and are oviparous with pelagic larvae. In Panama, this species is associated with upwelling events in the Gulf of Panama and migrate to shallower waters between February and April (Di Dario 2020). Pacific thread herring is a coastal pelagic fish is found over soft substrate near the surface in both coastal and offshore waters. It forms dense schools and feeds on phytoplankton (Cotto et al., 2010). Small pelagic species play a key role in the general health of marine ecosystems, as they feed from plankton and are a prey for other fish, birds, reptiles and marine mammals.</p> <p>In 2005/2006 the Smithsonian Institute and the Audubon Society STRI and the Audubon Society of Panama carried out a survey of marine and wading birds in the Gulf of Panama, estimating the total bird population in the area in more than 50,000 individuals that belong to 20 species. The pelican was the predominant species.</p> <p>That study indicated that interactions with the small pelagic fishery with seabirds during the nesting and feeding period was low due to the restricted (coastal) area of operation of the fishery, the between the fishery and the feeding season. And concluded: ““there is no evidence in the long run of declining marine or wading birds in the Gulf of Panama” (Angehr et al, 2007) and fishing was not among the potential threats listed.</p> <p>The on-board observer program currently in place collect data on ETP and habitat interactions, which is used to assess the impact of the fishery on hat elements of the ecosystem. And conversations with the University of Panama and the Ministry of Environment have been undertaken to conduct monitoring of seabirds interacting with the fishery. Seminars, training</p>		

workshops and camera trials have been also conducted in order to monitor and minimise the impact of the fishery on several elements of the ecosystem (seabirds, sharks, etc.).

Reference points set during the most recent assessment of the target species where set taking into consideration the role of these species in the ecosystem (see F3.3 below).

In March 2021, a new fisheries law was approved in Panama. Article 8 of the law lists the main objectives, among which is the application of the ecosystem approach to regulation fishing activities in the country (<https://cedepesca.net/wp-content/uploads/2021/08/Panama-Ley-de-Pesca-2021.pdf>).

The broader ecosystem within which the fishery occurs is considered during the management decision-making process. **Sub-clause F3.is met.**

F3.2 There is no substantial evidence that the fishery has a significant negative impact on the marine ecosystem.

The main bycatch species in the fishery is *Sphyrna lewini*, as indicated previously the impact on that species is difficult to assess and it is considered that it has already been scored in F1.2. The target species are over Bmsy. No other key elements have been identified. An on-going monitoring is in place in the fishery which will help to further understand the impacts of the fishery on the ecosystem.

Therefore, there is no substantial evidence that the fishery has a significant “general” negative impact on the marine ecosystem due to good status of these species and the increase in the number of predator populations that rely on the stock, it is considered that **sub-clause F3.2 is met.**

F3.3 If one or more of the species identified during species categorisation plays a key role in the marine ecosystem, additional precaution is included in recommendations relating to the total permissible fishery removals.

As indicated above small pelagic play a key role in the ecosystem as they act as a prey of a number of species, such as bigger fish, seabirds or marine mammals. In this case, the most recent assessment of these stocks a precautionary biomass target of 60% of the virgin spawning stock biomass was set as objective to account for the key role of these species (Canales 2020) and

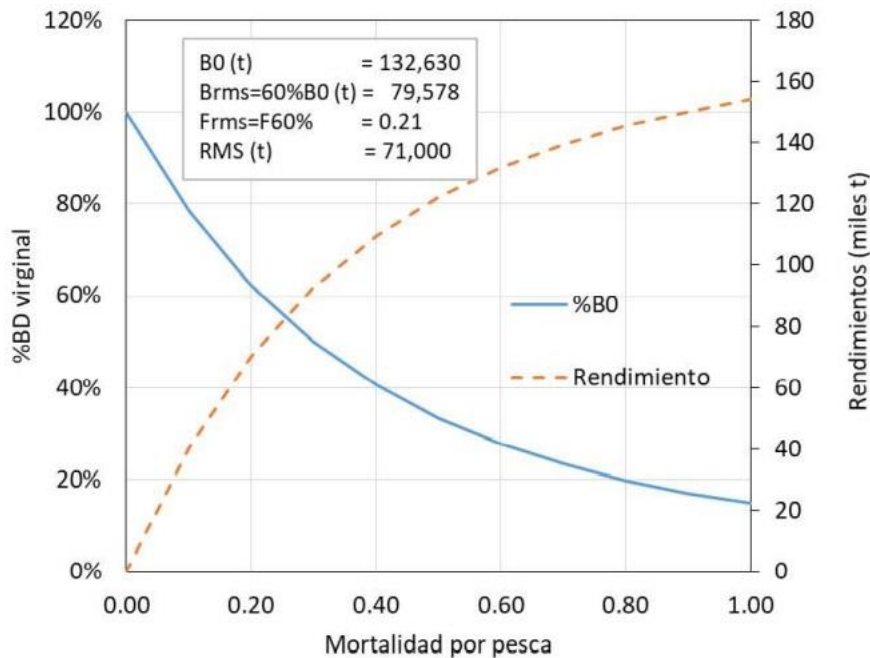


FIGURE 17 REFERENCE POINTS SET FOR PACIFIC ANCHOVETA (CANALES 2020).

Both target species are currently above that precautionary level. The review conducted by Minde-Vera 2021 highlighted the need of a more precautionary approach in this case for the Blim, set by Canales 2020 at 0.2SSB. Annual landings for both species (around 70,000 mt) are below the estimated MSY for both species (137,000 mt).

The key role of the species is taking into consideration when recommending total permissible fishery removals. Therefore, **sub-clause F3.3 is met.**

References

Canales, C. 2020. Evaluación de los stocks de anchoveta (*Cetengraulis mysticetus*) y arenque (*Opisthonema sp.*) en el Golfo de Panamá. CeDePesca. 48 pp.

Minte-Vera, C.V. 2021. Revisión por pares de la evaluación de los stocks de anchoveta (*Cetengraulis mysticetus*) y arenques de hebra (*Opisthonema spp.*) en el Golfo de Panamá 2021 (informe no-publicado. 35 pgs).

Links

MARINTRUST Standard clause	1.3.3.3
FAO CCRF	7.2.2 (d)
GSSI	D.2.09, D3.10, D.6.09

SOCIAL CRITERION

In addition to the scored criteria listed above, applicants must commit to ensuring that vessels operating in the fishery adhere to internationally recognised guidance on human rights. They must also commit to ensuring there is no use of enforced or unpaid labour in the fleet(s) operating upon the resource.

Appendix A - Determining Resilience Ratings

The assessment of Category B species described in this assessment report template utilises a resilience rating system suggested by the American Fisheries Society. This approach was chosen because it is also used by FishBase, and so the resilience ratings for many thousands of species are freely available online. As described by FishBase, the following is the process used to arrive at the resilience ratings:

“The American Fisheries Society (AFS) has suggested values for several biological parameters that allow classification of a fish population or species into categories of high, medium, low and very low resilience or productivity (Musick 1999). If no reliable estimate of r_m (see below) is available, the assignment is to the lowest category for which any of the available parameters fits. For each of these categories, AFS has suggested thresholds for decline over the longer of 10 years or three generations. If an observed decline measured in biomass or numbers of mature individuals exceeds the indicated threshold value, the population or species is considered vulnerable to extinction unless explicitly shown otherwise. If one sex strongly limits the reproductive capacity of the species or population, then only the decline in the limiting sex should be considered. We decided to restrict the automatic assignment of resilience categories in the Key Facts page to values of K , t_m and t_{max} and those records of fecundity estimates that referred to minimum number of eggs or pups per female per year, assuming that these were equivalent to average fecundity at first maturity (Musick 1999). Note that many small fishes may spawn several times per year (we exclude these for the time being) and large live bearers such as the coelacanth may have gestation periods of more than one year (we corrected fecundity estimates for those cases reported in the literature). Also, we excluded resilience estimates based on r_m (see below) as we are not yet confident with the reliability of the current method for estimating r_m . If users have independent r_m or fecundity estimates, they can refer to Table 1 for using this information.”

Parameter	High	Medium	Low	Very low
Threshold	0.99	0.95	0.85	0.70
r_{max} (1/year)	> 0.5	0.16 - 0.50	0.05 - 0.15	< 0.05
K (1/year)	> 0.3	0.16 - 0.30	0.05 - 0.15	< 0.05
Fecundity (1/year)	> 10,000	100 - 1000	10 - 100	< 10
t_m (years)	< 1	2 - 4	5 - 10	> 10
t_{max} (years)	1 - 3	4 - 10	11 - 30	> 30

[Taken from the FishBase manual, “Estimation of Life-History Key Facts”, <http://www.fishbase.us/manual/English/key%20facts.htm#resilience>]

Glossary

Non-target: Species for which the gear is not specifically set, although they may have immediate commercial value and be a desirable component of the catch. OECD (1996), Synthesis report for the study on the economic aspects of the management of marine living resources. AGR/FI(96)12

Target: In the context of fishery certification, the target catch is the catch of stock under consideration by the unit of certification – i.e. the fish that are being assessed for certification and ecolabelling. (GSSI)

MarinTrust Fishery Assessment Peer Review Template

This section comprises a summary of the fishery being assessed against version 2 of the MarinTrust Standard.

Fishery under assessment	Wholefish Assessment WF20, Pacific Thread Herring and Anchovetta (<i>Cetengraulis mysticetus</i> and <i>Opisthonema spp.</i>), FAO77
Management authority (Country/State)	Panama, Aquatic Resources Authority of Panama (Autoridad de los Recursos Acuáticos de Panamá, ARAP)
Main species	<ol style="list-style-type: none"> 1. Pacific anchoveta (<i>Cetengraulis mysticetus</i>) 2. Pacific thread herring (<i>Opisthonema spp.</i>) (noted that it is a complex of at least 3 different species)
Fishery location	Area FAO 77, Eastern Central Pacific, Panama (Gulf of Panama)
Gear type(s)	Purse seine
Overall recommendation. (Approve/ Fail)	Approve

Summary: in this section, provide any additional information about the fishery that the reviewers feel is significant to their decision.

The assessors have provided a detailed examination of the fishery with a high level of evidence, and which follows the standards required.

The additional information provided in response to the 2022 assessment which initially failed clauses F1.2 and F1.3 resulted in the fishery achieving a pass status (referring Archer, M. & Peacock, S. 2021. Panama Small Pelagic Fishery MarinTrust. Application: Additional Evidence in Support of Full Fishery Approval. Prepared by RS Standards on behalf of CeDePesca. 10pp). The evidence presented demonstrated that the relative scale of removals in the Panama small pelagic fishery was unlikely to have a substantial impact, and in practice the actual total mortality in the fishery is likely considerably lower.

However, a comment is raised concerning the ETP observer program for 2023 fishery, concerning the end fate of retained scalloped hammerhead sharks which may be worth considering.

General Comments on the Draft Report provided to the peer reviewer

The peer reviewer has commented specific to some key items raised regarding the scheduling of the next full stock assessment which the external peer reviewer agrees with.

Summary of Peer Review Outcomes

Peer reviewers should review the fishery assessment report with the primary objective of answering the key questions listed in the table below. Where the situation is more complicated, reviewers may instead answer “See Notes”.

	YES	NO	See Notes
A – Fishery Assessment			
1. Has the fishery assessment been fully completed, using the recognised MarinTrust fishery assessment methodology and associated guidance?	✓		
2. Does the Species Categorisation section of the report reflect the best current understanding of the catch composition of the fishery?	✓		
3. Are the scores in the following sections accurate (i.e. do the scores reflect the evidence provided)?	✓		
Section M - Management	✓		
Category A Species	✓		
Category B Species	N/A		
Category C Species	N/A		
Category D Species	✓		
Section F – Further Impacts	✓		✓

Detailed Peer Review Justification

Peer reviewers should provide support for their answers in the boxes provided, by referring to specific scoring issues and any relevant documentation as appropriate.

Detailed justifications are only required where answers given are one of the ‘No’ options. In other (Yes) cases, either confirm ‘scoring agreed’ or identify any places where weak rationales could be strengthened (without any implications for the scores).

Boxes may be extended if more space is required.

1. Is the scoring of the fishery consistent with the MarinTrust standard, and clearly based on the evidence presented in the assessment report?
The scoring is consistent with the MT standard and a high level of evidence is provided within the assessment report. On one occasion, the external peer reviewer could not locate the following report.
Ceballes, A., Palacios, M. & Palacios, M. 2024. INFORME TÉCNICO PROGRAMA PRIVADO DE OBSERVADORES A BORDO. Pesquería de Pequeños Pelágicos de Panamá. Temporada 2023. CeDePesca. 50 pp.

Certification body response

Thanks for your comment. The report has been attached to this review.

2. Has the fishery assessment been fully completed, using the recognised MARINTRUST fishery assessment methodology and associated guidance?

The fishery assessment has been fully completed following the MARINTRUST methodology and guidance. The report provides comprehensive evidence with references in accordance with the requirements and guidance provided.

Comments and notes for possible clarification are added (see specific sections below).

Certification body response

Thanks, noted.

3. Does the Species Categorisation section of the report reflect the best current understanding of the catch composition of the fishery?

The assessor has used the most currently available information to determine the species categorisation, referencing both 2022 and the recent 2023 data for the CAT A species. A comprehensive list of CAT D species is included, updated from the initial assessment to include further species appearing at very low percentages of <0.1% of total catch.

Comment:

The assessor identified that Pacific Harvestfish (*Peprilus medius*) does not appear on the IUCN List. The peer reviewer noted that it does appear to be listed and categorised as Least Concern by IUCN (2008).

<https://www.iucnredlist.org/species/183339/8096349>

No response required unless further information/clarification is necessary.

Certification body response

Corrected, thanks. I think there was a problem in the spelling when I tried to find it in the database.

3M. Are the scores in “Section M – Management” clearly justified?

A thorough explanation of the available evidence has been provided against each M clause, are clearly justified for determining the pass scores for each sub-clause. The assessor refers to the initial assessment and

demonstrates that a thorough review of ‘new’ evidence and evidence specific to the most recent fishery has been conducted.

At M2.3 The assessor notes that ‘Information about the current level of enforcement in the fishery (number of inspections, infractions, etc) is scarce, but the number of vessels in the fishery seems to be relatively low and compliance with the management measures considered adequate’.

The external peer reviewer agrees that the ‘sum’ of all evidences available (logbook declarations, port monitoring of landings, the newly formed stakeholder management committee involving representatives from the fishery and suite of regulations and the observer program) do provide a good level of positive evidence to substantiate the pass mark. Added to this, the fishers appear to be well documented referring to the total number of licenses available are a maximum of 20 licenses for large (industrial) vessels and 10 for small vessels. Licensed vessels of any size may only be replaced if completely removed from the fishery, and the new vessel will be issued the same licence number as the replaced vessel.

The comment made by the assessor and internal peer reviewer regarding the absence of a full stock assessment since 2020 is well noted. Annual hydroacoustic surveys are used to assess the stock and this has also been positively acknowledged and also the continuation of appropriate level of fishery removals in the most recent fishery. The peer reviewer agrees with the pass outcome and the statements made to maintain the situation under review with respect to the requirement and timing of a full stock assessment.

Comment:

The assessor notes that ‘New observer data was provided by CeDePesca for the 2023 fishing season’ and the peer reviewer considered if that data contained any data relevant to compliance which may be of relevance to M2 clauses?

Certification body response

No compliance data included. The report provided is that Ceballes et al., 2024.

3A. Are the “Category A Species” scores clearly justified?

The scores in this section are clearly justified by the assessor with accurate and linked references and provided.

Landing data is collected and compiled on a monthly basis and available for both CAT A species by ARAP, the gov. organisation with overall responsibility. Historical catch data is also available and additional information ranging from CPUE, size, maturity, weight, biomass estimates from hydroacoustic surveys is collected for the main species. The use of this active data collection for management of the fishery is noted by the assessor (e.g. CPUE noted in the text of the closure of the fishery). Whilst no new full stock assessment for the main species has been conducted since 2020, the assessor has identified that annual pre-fishery hydroacoustic surveys are conducted and used as a basis to establish potential catch for the fishing season. The assessor has identified the Miter-Vera (2021) peer review of the 2020 stock assessment conducted by Canales (2020) and notes that several

short- and medium-term recommendations were given in the review to improve the assessment of the stocks and also a comment that the Blim20% of virgin may not be conservative enough for key stocks. The comments are well noted and should ensure the next MT full assessment considers any updates in this regard.

The mechanism for restricting fishing mortality is clearly justified by the assessor, referring to size limits consistent with average size at maturity and CPUE triggers (15% below max. for anchoveta fishery). The assessor references the evidence of the ability of fishery management to prohibit fishing including the resolution decree to open the fishery every year considering resource availability and size structure. Referring to ‘in the event of the stock biomass falling below the limit reference point’, this has not occurred and biomass remains above Blim. A3 and A4 pass scores are justified.

The following observations/comments are made:

Note on the reference to Canales 2020 - MSY for both species at 137 mil tonnes. I understand this to be 137,000 mt for combined species (consisting of 71,000 mt anchoveta and 66,100 mt of thread herring respectively). No response required unless further clarification is required.

Certification body response

Yes, correct. Thanks for your comments.

3B. Are the “Category B Species” scores clearly justified?

No Category B species were identified. The external peer reviewer is in agreement.

Certification body response

3C. Are the “Category C Species” scores clearly justified?

No Category C species were identified. The external peer reviewer is in agreement.

Certification body response

3D. Are the “Category D Species” scores clearly justified?

There are Eight CAT D species identified in the surveillance assessment, representing circa. 1.1% when combined of total catch. The assessor notes that the most frequently encountered (Pacific bumper and Peruvian moonfish) were the only two appearing in previous MT assessments, indicating the variability in catches, although other species identified here do occur at <0.1% of total catch except Pacific harvestfish at 0.12%. The CAT D species scores and pass ratings are clearly justified including clauses under D4 for Red sea catchfish, assessed here, due to the lower productivity of the species and similar relatively high susceptibility score as other Type 2 species.

The External Peer reviewer agrees with the evaluation and all scores are clearly justified.

Certification body response

Thanks

3F. Are the scores in “Section F – Further Impacts” clearly justified?

Since the initial assessment, the management of impacts on ETP species concerning the fishery is described as improving but sufficient to meet the requirements of the MT criteria. The range of ETP species from the evidence includes: sea turtles (including olive ridleys, green sea turtles and possible others not identified, sharks (various *Carcharinus sp.*) and notably, scalloped hammerhead (*Sphyrna lewini*) which is IUCN listed as critically endangered. Various rays species are also encountered and a pelican species (*Pelecanus occidentalis*), representing 81% of total bird interactions, although listed as of Least Concern by Birdlife International, 2018. Marine mammal observations (dolphins) are noted but no interactions were reported in the 2023 observed 356 hauls). There is evidence that interactions with ETP species are recorded through the observation activity, although with some potential gaps e.g. seabirds (except pelican).

The assessor notes that it is uncertain as to the representation of the observed fishery (vessels are listed but no data on which segment they represent) and if it is achieving the target 20%.

That said, the bycatch of scalloped hammerheads is low in the fishery by comparison to other fisheries (e.g. longline), and the reference to the additional information provided in Archer, M. & Peacock, S. 2021. *Panama Small Pelagic Fishery MarinTrust- Application: Additional Evidence in Support of Full Fishery Approval* on behalf of CeDePesca provides further clarification to support a pass mark.

The External Peer reviewer notes that the assessor identifies a recommendation that all sharks should be released by the fishery is made. Of the 132 scalloped hammerheads observed, 38% were released. The Ceballes et al., 2023 (2024) report identifies that 12% of scalloped hammerhead are consumed, 7% Bodega con Sp obj (I could not translate A bodega con Sp obj – grocery store/winery?) and 3% discarded. It might be of value to confirm the fates of the endangered species – for example, it is assumed it is legal to land for human consumption and/or is not against the Code of Conduct signed by fishers? It may also be worth enquiring on if endangered species are rendered at fishmeal facilities approved within the MT program.

The external peer reviewer could not access the report Ceballes, A., Palacios, M. & Palacios, M. 2024. INFORME TÉCNICO PROGRAMA PRIVADO DE OBSERVADORES A BORDO. Pesquería de Pequeños Pelágicos de Panamá. Temporada 2023. CeDePesca. 50 pp.

The report notes that the location (coastal) of the fishing activities can lead to physical contact of purse seine gear and the seabed. This is typically muddy substrate and recently, Panama has both protection zones for mangroves and river mouths and proceeded to place protection zones on important coastal areas such as the Coiba ridge and as such impact from interactions with habitat are considered negligible and measures are in place to protect the more vulnerable habitats.

Comment:

Given the available evidence, and the ongoing activity to limit the impact of ETP interactions; the combination of observer education, workshops, and the Code of Conduct meant that in 2019 the majority of scalloped

hammerhead bycatch was released alive (around 58%) (Archer & Peacock 2021) the peer reviewer agrees that the scores in this section are justified.

However, it may be worth considering if information is available to confirm the end fates of retained EPT species and to confirm that ETP species are not included in MT species destined for marine ingredient production.

Certification body response

Bodega means that the fish went to the vessels' hold with the target species. I have gone back to the Ceballes et al., 2024 report and to be honest with you, it does not specify which is done with those sharks. I understand they are sold but it is true that based on that information, it cannot be confirmed that the species is not destined for marine ingredient production. **I understand it should be confirmed by the chain of custody's auditor.**

Optional: General comments on the Peer Review Draft Report

Notwithstanding, the comments raised, the report provides a very thorough, detailed and well referenced surveillance and update of the conditions of the fishery in the most recent annual period.

Certification body response

Thanks for your review