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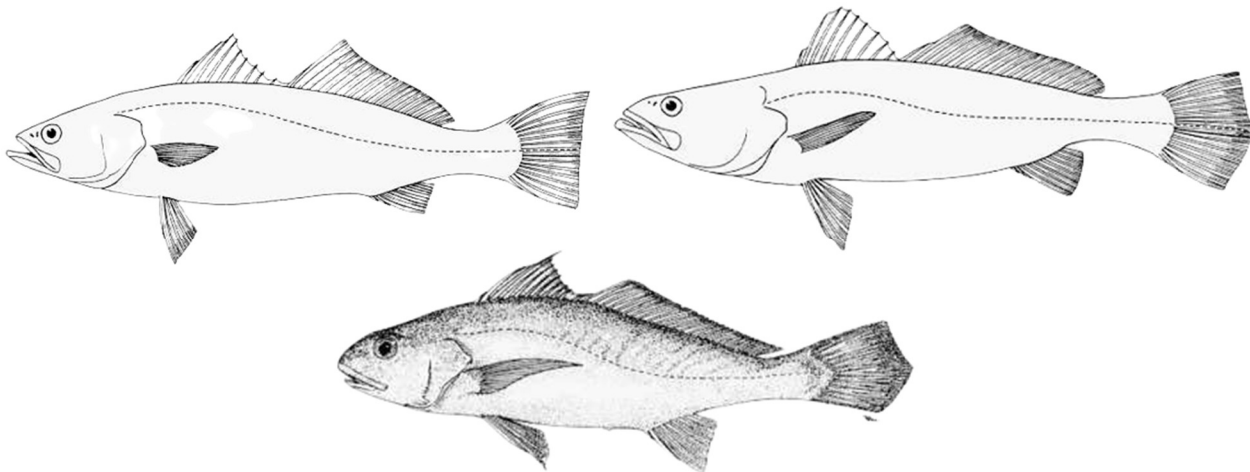
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Mexico Upper Gulf of California Finfish – Hooks & Lines

Pre-Assessment Report



Elaborated by

Pronatura Noroeste

February 2025

Organization	Pronatura Noroeste
Fishery client	Pronatura Noroeste
Assessment Type	MSC Pre-assessment
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2 Glossary

CESAIBC	Comité Estatal de Acuícola e Inocuidad de Baja California
CICESE	Centro de Investigación Científica y de Educación Superior de Ensenada, Baja California
CILA	Comisión Internacional de Límites y Aguas entre México y los Estados Unidos
CIRVA	Comité Internacional para la Recuperación de la Vaquita
CITES	Convention of International Trade in Endangered Species of Wild Fauna and Flora
CONANP	Comisión Nacional de Áreas Naturales Protegidas
CONAPESCA	Comisión Nacional de Acuicultura y Pesca
CPUE	Catch Per Unit Effort
DOF	Diario Oficial de la Federación
DOI	Department of the Interior of the United States
ETP	Endangered Threatened or Protected Species
FAO	Food and Agriculture Organization of the United Nations
HCR	Harvest Control Rule
IIO	Instituto de Investigaciones Oceanológicas
IMIPAS	Instituto Mexicano de Investigación en Pesca y Acuicultura Sustentables
LGPAS	Ley General de Pesca y Acuicultura Sustentable
MSC	Marine Stewardship Council
MSY	Maximum Sustainable Yield
PABC	Pesca Alternativa de Baja California
PI	Performance indicator
PNO	Pronatura Noroeste
RAMSAR	The Convention on Wetlands

RBAGCDRC	Reserva de la Biósfera Alto Golfo de California y Delta del Río Colorado
RBF	Risk Based Framework
SCPP	Sociedad Cooperativa de Producción Pesquera
SEPESCA	Secretaria de Pesca y Acuicultura
SI	Scoring issue
SPR	Spawning Potential Ratio
SSQ	Squared Error
UABC	Unidad Autónoma de Baja California
UGC	Upper Gulf of California
UoA	Unit of Assessment
UoC	Unit of Certification
VME	Vulnerable Marine Ecosystem

3 Executive summary

The hook and line finfish fishery of the Upper Gulf of California evaluated under this pre-assessment includes three fish stocks: bigeye Croaker (*Micropogonias megalops*), orangemouth corvina (*Cynoscion xanthulus*), and shortfin corvina (*Cynoscion parvipinnis*). The fishery occurs within a unique Biosphere Reserve where a number of endemic species are at risk of extinction, including vaquita marina (*Phocoena sinus*) and totoaba (*Cynoscion macdonaldi*). Research institutions, environmental NGOs, and government agencies in the region are collaborating with fishers to introduce more selective fishing methods to maintain target stocks at sustainable levels, and protect endangered species and vulnerable ecosystems. Thus, traditional fishing methods that use different types of nets are being substituted with more selective methods, such as handlines. This hook and line fishery is gaining increased acceptance in the region through a Fishery Improvement Project led by Pronatura Noroeste. This pre-assessment aims to analyze the sustainability of this more selective practice and the aspects of the fishery that may require further improvement to fully meet MSC standards.

Considering that it is a new fishery, there is not sufficient information available to carry out a default MSC analysis for some outcome (status) Principle 1 and Principle 2 indicators. Thus, the pre-assessment leveraged both the Default Assessment Tree and the Risk-Based Framework (RBF) to comprehensively evaluate the fishery. This dual approach ensured a robust evaluation, considering both standardized criteria and specific risk factors associated with the fishery.

The Default Assessment Tree provided a systematic structure for the evaluation, enabling uniform and consistent comparisons across different fisheries. On the other hand, the Risk-Based Framework (RBF) offered flexibility in assessing uncertainties and unique risks inherent in fishery. This balanced methodology allowed for a thorough and nuanced evaluation of the fishery's performance and of the areas that require further study or reinforcement.

Through this comprehensive analysis, it was confirmed that this fishery meets the scope requirements as outlined in section 7.4 of version 2.2 of the Fisheries Certification Process (FCP) for MSC fishery assessments. However, since information is still limited and the fishery is not yet fully managed or regulated, it will require a number of improvements before it can be considered sustainable relative to the MSC standard.

The pre-assessment showed that the fishery at this initial stage has some strengths and weaknesses. In general, the target stocks appear to be relatively stable, but data for corvinas is insufficient to assess their status relative to targets or limits and there is certain risk of overfishing based on productivity and sustainability analysis. The bigeye croaker stock is above the PRI and within MSY limits. Importantly, a harvest strategy and harvest controls are yet to be developed for all stocks.

With regard to environmental impacts, it is clear that handlines are a very selective method with negligible impact to other species, habitats, or ecosystems, but information still needs to be collected to verify that the fishery represents minimal risk, in particular to the most vulnerable species in the area. Finally, there is a solid legal framework guided by the Fisheries Law and implemented by competent federal and regional institutions but the fishery-specific management system is still non-existent. This analysis can help to guide the development of those aspects of management required for a sustainable fishery under international MSC standards.

A pre-assessment is a critical initial step towards guiding the long-term sustainability of the fishery. This analysis and the initiation of a FIP underscore the commitment to responsible fishing practices and the conservation of marine resources in the UGC. The engagement and collaboration of all stakeholders will be paramount in the continuous success and improvement of the fishery management practices.

3.1 Assessment team

Mónica Valle-Esquivel, PhD., is currently an independent consultant, who worked at MRAG Americas from 2010 to 2023, performing as a Principal Scientist. She has over 24 years of experience in sustainable management of marine fisheries. She specialized in fish and shellfish population dynamics, stock assessment, design and evaluation of management strategies, statistical analysis, risk analysis, and fishery simulation modelling. Dr. Valle worked with the University of Miami and NOAA Fisheries as a post-doctoral stock assessment scientist, and has provided scientific advice to FAO, CITES, CARICOM, ACP Fish II, and other international organizations for the management of tropical marine species in the US, Latin America, and the Caribbean. In Mexico she coordinated a United Nations (UNIDO) coastal management project within the Gulf of Mexico Large Marine Ecosystem program. At MRAG, Dr. Valle worked with institutions, scientists, fishers, managers, NGOs, and other stakeholders to promote and achieve sustainability of fishery resources around the world. She is a certified Marine Stewardship Council lead assessor, and for fifteen years has served as a team leader and member for several fisheries, ranging from invertebrate fisheries to highly migratory fish. Among other professional achievements, Dr. Valle has acquired wide experience in the development and implementation of fishery improvement projects and fishery management plans, in the design and analysis of various monitoring programs, and in essential fish habitat and ecosystem assessments. Dr. Valle received a B.S. degree in Biology from the National Autonomous University of Mexico (UNAM), and a Ph.D. in Marine Biology and Fisheries from the Rosenstiel School of Marine and Atmospheric Science, University of Miami.

Biol. María Aquino, graduated from the Autonomous University of Baja California, I currently lead projects dedicated to the conservation of the vaquita marina. Among these efforts, promoting sustainable fishing in the community is essential. I have been part of the Pronatura Noroeste A.C. team since 2019.

Carlos Álvarez-Flores, PhD. graduated from the National Autonomous University of Mexico, holds a PhD in Fisheries from the University of Washington. Dr. Alvarez-Flores devoted the early stage of his career working on the assessment of stocks of fish, birds and marine mammals subject to human extraction or affected as fisheries bycatch. Some of his investigations involved the bycatch of dolphins in the pelagic purse seine tuna fisheries of the Eastern Tropical Pacific, the hunt of beluga whales in West Greenland and the bycatch of albatrosses in pelagic fisheries in the central Pacific. More recently, Carlos has been involved in investigations examining the status and potential of several small-scale fisheries, among others, the spiny lobster in the Mexican Caribbean, the two spotted octopus and the barred sand bass off the Baja California Peninsula. Presently he is a senior auditor for MSC certification assessments and Fishery Science Coordinator at Pronatura Noroeste, one of the largest and oldest NGOs in Mexico. At Pronatura Noroeste he and his coworkers currently work with several small-scale fishers in fishery improvement projects as part of the Fish for Good project of the Marine Stewardship Council.

Pablo Álvarez-Morales, PhD., coordinator of sustainable fisheries projects, with emphasis on the implementation of Fisheries Improvement Projects in the Conservation Department at Pronatura Noroeste, since 2017. Associate Technical Consultant in the Marine Stewardship Council (MSC) registry of technical consultants to provide support to fisheries around the world. Oceanologist with a Master of Science and a PhD in Environment and Development. He has worked in northwestern Mexico since 2002, with fishing communities and organizations.

3.2 Description of the fishery.

The artisanal fishery from Baja California, Mexico is conducted from small boats in nearshore waters, and from fishing camps located along the coast. The Bigeye Croaker (*Micropogonias megalops*) is caught in the Upper Gulf of California (UGC¹) by local fishing communities from San Felipe in Baja California, El Golfo de Santa Clara, and Puerto Peñasco in Sonora, Mexico. The Bigeye Croaker fishery represents approximately 27% of the volume of the fish species captured in the UGC. Based on catch volume and onshore economic value, this is one of the five most important fisheries in the UGC (Rodríguez-Quiroz 2010).

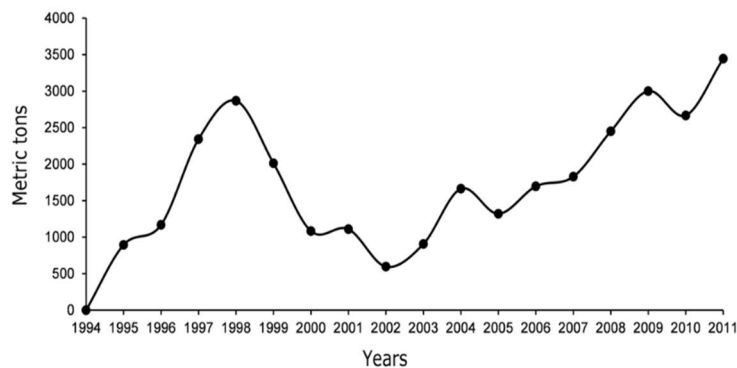


Figure 1. Annual catch of Northern Bigeye Croaker in the area, according to official records in the 3 main fishing grounds. (Aragón-Noriega, 2015)

There is no available fishery information on the Orangemouth corvina (*Cynoscion xanthulus*), another species of economic importance. This species is native to the coastal ecosystems of the Gulf of California and the Mexican Pacific and is one of the most abundant species with an important role in local fisheries, due to its large size, abundance, and quality of meat (Robertson & Allen, 2006).

The shortfin corvina (*Cynoscion parvipinnis*, Ayres 1861), a related sciaenid species also found in the Gulf of California, is appreciated locally as a food and game fish. Natural populations of *C. parvipinnis* have declined over time due to habitat changes and overfishing (Fischer et al., 1995). This species is currently being evaluated as a possible candidate for aquaculture in northwest Mexico.

¹ From Spanish AGC= Alto Golfo de California

4 Report details

4.1 Aims and constraints of the pre-assessment

This pre-assessment report provides an interim assessment of the fishery and is not a substitute for a full assessment against the MSC Fisheries Standard.

4.2 Version details

Available information regarding Fisheries Program documents versions is presented in Table 1.

Table 1. Fisheries program documents versions

Document	Version number
MSC Fisheries Certification Process	Version 2.3
MSC Fisheries Standard	Version 2.01
MSC Pre-Assessment Reporting Template	Version 3.1

5 Unit of Assessment

5.1 Unit of Assessment

The Upper Gulf finfish fishery is a multi-species fishery conducted with handlines and hooks. The target species are the orangemouth croaker (*Cynoscion xanthulus*), the shortfin croaker (*Cynoscion parvipinnis*) and the bigeye croaker (*Micropogonias megalops*) (Table 2). Although these species have a larger range, it is considered appropriate to assume local management units that represent stocks that can be managed independently from the rest of the population throughout their range of distribution. The fishery takes place off San Felipe, Baja California and Puerto Peñasco, Sonora (Gulf of California), by fishers from the town of San Felipe, both at the lower end of the Biosphere Reserve of the Upper Gulf of California (Figure 2). It should be noted that finfish fishing grounds for both towns include areas within and outside of the Reserve (Figure 3). The fishery is within the scope for the MSC certification through the following determinations (FCP v2.3.7.4):

1. The following taxa are not target species under Principle 1:
 - a. Amphibians
 - b. Reptiles
 - c. Birds
 - d. Mammals
2. The fishery does not use poisons or explosives.
3. The fishery is not conducted under a controversial unilateral exemption to an international agreement.

4. No member of the client group has been successfully prosecuted for a forced or child labor violation in the last 2 years.
5. The fishery has not been convicted for a shark finning violation in the last 2 years.
6. The fishery has a mechanism for resolving disputes and disputes do not overwhelm the fishery.
7. The fishery is not enhanced.
8. The fishery is not based on introduced species.

The fleet consists of small fiberglass boats known as “pangas” of different sizes (7-12 m long), equipped with outboard engines (75 to 115 hp). Seven *pangas* (boats) are registered for Finishing in the UoAs (Table 3).

Table 2. Units of Assessment (UoAs)

UoA	Description
Species	UoA 1: <i>Cynoscion xanthalmus</i> (Orangemouth corvina, Corvina aleta amarilla) UoA 2: <i>Cynoscion parvipinnis</i> (Shortfin corvina, Corvina plateada) UoA 3: <i>Micropogonias megalops</i> (Bigeye, Chano norteño)
Stock	<i>Cynoscion xanthalmus</i> : Upper Gulf of California, Mexico. <i>Cynoscion parvipinnis</i> : Upper Gulf of California, Mexico. <i>Micropogonias megalops</i> : Upper Gulf of California, Mexico.
Fishing gear type(s) and, if relevant, vessel type(s)	Hook & Line Small open boats 7 to 12 m long (pangas) with outboard engines 75 to 115 hp.
Client group	Fishers that are members of the following cooperatives: Alto Golfo de Baja California S.C.P.P. Ribereña Torres S.C.L. de R.L. S.C.P.P. Ribereña Alto Golfo de Baja California S.C.L. de R.L. S.C.P.P. Ribereña Ruben’s S.C.L. de R.L.
Other eligible fishers	The UoCs will be a subset of the UoAs’ cooperatives (above), and other members can join the UoC if they volunteer to use alternative fishing methods.
Geographical area	The coasts of San Felipe, Baja California and Puerto Peñasco, Sonora in the Upper Gulf of California.
Justification for choosing the Unit of Assessment	The selected geographic region involves fishers interested in using alternative fishing methods that reduce the impact of traditional fishing with gillnets.

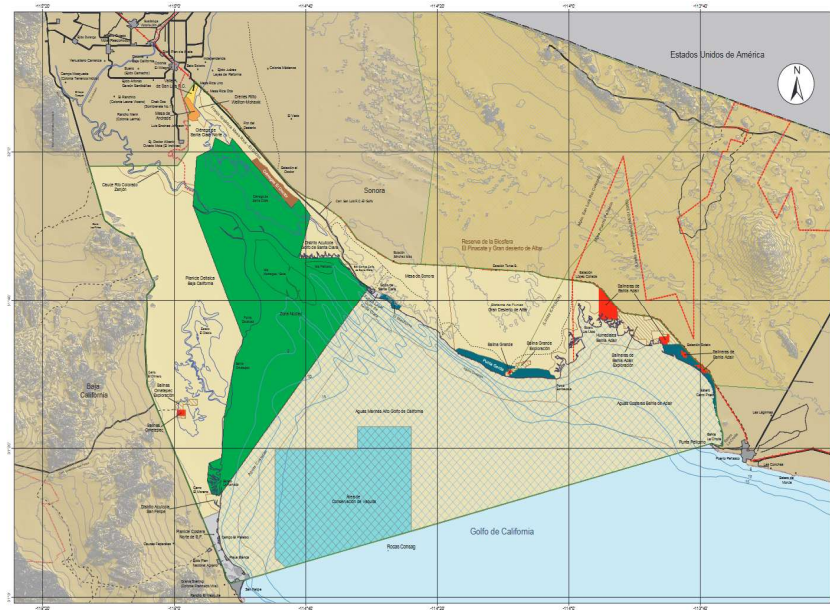


Figure 2. Boundaries of the Upper Gulf of California Biosphere Reserve and areas within. Green shade is the core, and the gridded area is the buffer. Gridded dark blue is the vaquita protection zone. Reproduced from CONANP (2007).

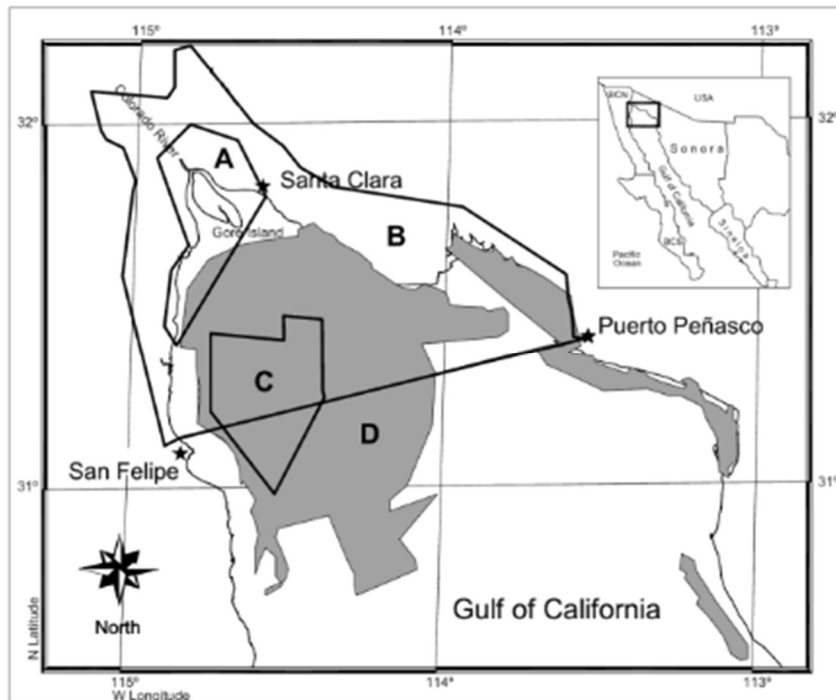


Figure 3. The Upper Gulf of California includes the Biosphere Reserve and a shaded area representing fishing grounds. Reproduced from Rodríguez Gerardo et al (2012).

Table 3. Landing locations for finfish UoA in the Upper Gulf of California and number of boats with permits.

Location	Number of boats with permits
San Felipe	2
Puerto Peñasco	5
Total	7

5.2 Fishing locations and seasons

A total of seven small boats are participating in the fishery (Table 4). In Puerto Peñasco, croakers are fished mainly from September to February and bigeye from March to June in the coastal region of El Borrascoso, Estero Morúa, Estero La Pinta, La Cholla and the reef off Las Conchas. The bigeye is fished in a wider area from San Jorge Island to areas close to La Tomentosa. In San Felipe this species is fished near the small fishing ports San Luis Gonzaga and San Felipe.

Table 4. Cooperative associations that constitute the Unit of Assessment and the number of boats with permits for finfish fishing in May 2023.

Cooperative	Number of boats with permit
S.C.P.P. Ribereña Torres S.C.L. de R.L.	5
S.C.P.P. Ribereña Alto Golfo de Baja California S.C.L. de R.L.	1
S.C.P.P. Ribereña Ruben's S.C.L. de R.L.	1
Total	7

5.3 Fishing gear and fishery unit

The fishing gear is hook and line. The line is a nylon thread of different diameters (sizes) with some variations. When the line has weight, a barrel swivel, and a single hook it is known as “*taponeado*.” When this method has more than one hook, it is known as “*palangre*” (longline). On some occasions, the hook and line have no weight and have only one hook, and it is known simply as a “hand line” (Gómez-Gauna et al. 2015).

6 Traceability

6.1 Traceability within the fishery

Available information regarding traceability aspects of the fishery is presented in Table 5.

Table 5. Traceability within the fishery.

Factor	Description
<p>Will the fishery use gears that are not part of the Unit of Certification (UoC) If yes, please describe: If this may occur on the same trip, on the same vessels, or during the same season. How any risks are mitigated.</p>	<p>No</p>
<p>Will vessels in the UoC also fish outside the UoC geographic area? If yes, please describe: - If this may occur on the same trip. - How any risks are mitigated.</p>	<p>No</p>
<p>Do the fishery client members ever handle certified and non-certified products during any of the activities covered by the fishery certificate? This refers to both at-sea activities and on-land activities.</p> <ul style="list-style-type: none"> - Transport - Storage - Processing - Landing - Auction <p>If yes, please describe how any risks are mitigated.</p>	<p>No</p>
<p>Does transshipment occur within the fishery? If yes, please describe: If the transshipment takes place at sea, in port, or both. If the transshipment vessel may handle products from outside the UoC. How any risks are mitigated.</p>	<p>No</p>
<p>Are there any other risks of mixing or substitution between certified and non-certified fish? If Yes, please describe how any risks are mitigated.</p>	<p>No</p>

7 Pre-assessment results

7.1 Pre-assessment results overview

An overview of the pre-assessment results is presented in Tables 6 and 7.

Table 6. Summary of Principle level scores.

Principle of the Fisheries Standard	Number of PIs with draft scoring ranges <60
Principle 1 – Stock status	3
Principle 2 – Minimizing environmental impacts	0
Principle 3 – Effective management	3

Table 7. Summary of Performance Indicator level scores.

Performance Indicator	Draft scoring range
1.1.1 – Stock status	UoA 1 (Orangemouth corvina): 60–79 (RBF)
	UoA 2 (Shortfin corvina): 60-79 (RBF)
	UoA 3 (Bigeye Croaker): ≥80
1.1.2 – Stock rebuilding	UoA 1: RBF applied (N/A)
	UoA 2: RBF applied (N/A)
	UoA 3: N/A
1.2.1 – Harvest Strategy	3 UoAs <60
1.2.2 – Harvest control rules and tools	3 UoAs: <60
1.2.3 – Information and monitoring	3 UoAs: <60
1.2.4 – Assessment of stock status	UoA1: ≥80 (RBF)
	UoA2: ≥80 (RBF)
	UoA3: ≥80
2.1.1 – Primary Outcome	≥80
2.1.2 – Primary Management	≥80
2.1.3 – Primary Information	60 - 79
2.2.1 – Secondary Outcome	≥80 (RBF)

Performance Indicator	Draft scoring range
2.2.2 – Secondary Management	60 - 79
2.2.3 – Secondary Information	60 - 79
2.3.1 – ETP Outcome	≥80
2.3.2 – ETP Management	≥80
2.3.3 – ETP Information	60 - 79
2.4.1 – Habitats Outcome	≥80
2.4.2 – Habitats Management	≥80
2.4.3 – Habitats Information	60 - 79
2.5.1 – Ecosystems Outcome	≥80 (RBF)
2.5.2 – Ecosystems Management	≥80
2.5.3 – Ecosystems Information	≥80
3.1.1 – Legal and customary framework	≥80
3.1.2 – Consultation, roles and responsibilities	≥80
3.1.3 – Long term objectives	≥80
3.2.1 – Fishery specific objectives	<60
3.2.2 – Decision making processes	<60
3.2.3 – Compliance and enforcement	60-79
3.2.4 – Management performance evaluation	<60

8 Principle 1 background

8.1 Orangemouth corvina

Target species common name: Orangemouth corvina, Yellowfin Croaker (English); Corvina Aleta amarilla (Spanish).

Phylum: Chordata

Class: Teleostei

Family: Sciaenidae

Genus: *Cynoscion*

Species: *Cynoscion xanthulus*

8.1.1 Biology

The species inhabits mainly in brackish environments such as coastal lagoons and marine environments where sandy, muddy, rocky and vegetation-covered bottoms predominate (Castro-Aguirre et al, 1999; IUCN, 2020; Fricke et al. 2020). The distribution of this species in the water column is of the bento-pelagic type, normally found in depths ranging from 1 to 50 m (Castro-Aguirre et al, 1999). This species is also known to have been depleted in the waters of the Salton Sea in southern California, United States for use in sport fishing (IUCN, 2020; FAO, 2023).

This species is distributed throughout the Eastern Tropical Pacific, from California, including the Upper Gulf of Baja California to the waters of Chiapas, Mexico, in coastal areas close to smooth bottoms and at depths less than 50 m (DOF, 2021). However, the San Felipe-based fishery works in a unit that is considerably isolated by the presence of large islands in the central region of the Gulf of California (Castro-Aguirre et al. 1999). The distribution of this species in the water column is of the bento-pelagic type, normally found in depths ranging from 1 to 50 m (Castro-Aguirre et al., 1999). There is currently no information available about the reproduction of this species.

8.1.2 Catch size-structure

In a study conducted by the National Institute of Fisheries and Aquaculture (INAPESCA) between 2009 and 2016, the Fisheries Management Plan for species such as snook, red snapper and corvina in the national marshes of Nayarit and Sinaloa was evaluated. These regions share similar environmental characteristics with the Upper Gulf of California, suggesting that the study findings could be relevant for the latter area. Over a thousand (1,151) specimens of Orangemouth corvina were collected (DOF, 2021).

The size structure (in total length, TL) of individuals of both sexes combined was the following: minimum 25.3 cm, maximum 100.2 cm and average 51.6cm TL. In the same study, the reported weight was: minimum 0.12 kg, maximum 3.37 kg and average 1.16 kg (DOF, 2021). Given the environmental similarities between the regions studied and the Upper Gulf of California, it is possible that the management strategies proposed by INAPESCA could be adapted and applied in the AGC, in order to promote the conservation and sustainable use of these important fishery species.

8.1.3 Maximum sustainable yield and stock status

Currently there is no available information about estimates of the MSY for this particular stock, although INAPESCA has conducted production model assessments for the “Corvina group”, which includes a total of 34 species of commercial interest (INAPESCA, pers. comm, Nov/2023). These analyses use the catch-MSY method (Martell and Froese, 2012) to apply a Bayesian approximation of the Schaefer model, using catch series as an abundance indicator and *a priori* parameters (r , K) to estimate BMSY, FMSY, and MSY. These stock assessments are only used internally within INAPESCA to provide a scientific basis to update the exploitation status of species or groups of species in the *Carta Nacional Pesquera* and thus references are not available to the public and results are not provided here.

The status of the Orangemouth corvina stock in the upper Gulf of California is not known.

8.1.4 Catch profiles and Total Allowable Catch (TAC)

In the AGC, the group of croakers is represented by several species. The Orangemouth corvina is a fishery resource with landings data adequately reported in San Felipe (CONAPESCA records from landing slips or “avisos de arribo”; [Datos Abiertos de México - Producción Pesquera](#)). It is possible, however, that this is not the case in the Gulf of Santa Clara or Puerto Peñasco, where landings may not be adequately reported; therefore the data presented in Table 8 may underestimate the total catch in the upper Gulf. The alternative is that while this species is an important fishing resource in San Felipe, it is significantly less important in both Santa Clara and Puerto Peñasco (Table 8 and Figure 4). The fishery is not managed using TACs.

Table 8. Landings (t) of Orangemouth corvina in the AGC, during the period 2006 – 2021. Data from the public archives of CONAPESCA. [Datos Abiertos de México - Producción Pesquera](#).

Year	Landings (mt)			Total
	Golfo de Santa Clara	Puerto Peñasco	San Felipe	
2006		0.7		2006.7
2009			0.07	2009.07
2010		1.21	15.51	2026.72
2012	2.7		8.51	2023.21
2013		4.5	34.24	2051.74
2014	1.46		14.66	2030.12
2015			11.86	2026.86
2016			13	2029
2017			23.61	2040.61
2018			36.35	2054.35
2019			22.55	2041.55
2020		0.04	5.46	2025.5
2021		0.04	27.63	2048.67
Total	4.16	6.48	213.43	26414.1
Proportion (%)	0.0%	0.0%	0.8%	

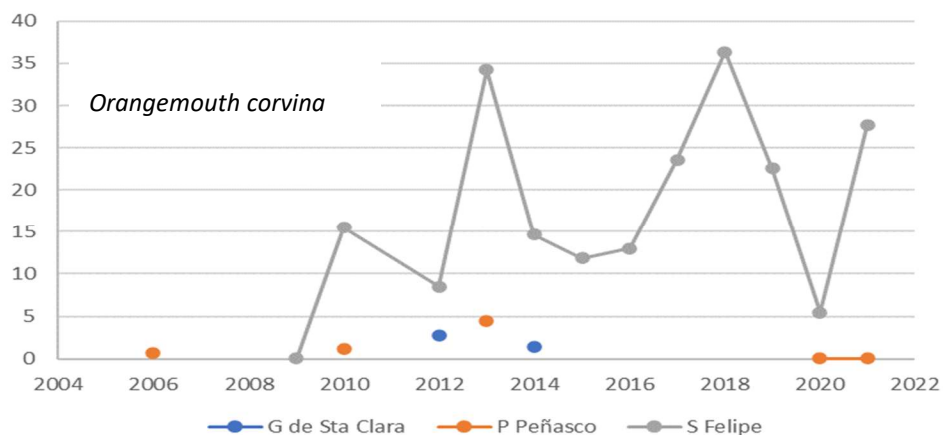


Figure 4. Catch history of Orangemouth corvina reported by the CONAPESCA offices of San Felipe, Puerto Peñasco and Santa Clara. Data available in: [Datos Abiertos de México - Producción Pesquera](#)

8.2 Shortfin corvina

Target species common name: Shortfin corvina, Silver corvina (English), Corvina plateada, (Spanish)

Phylum: Cordata

Class: Teleostei

Family: Sciaenidae

Genus: *Cynoscion*

Species: *Cynoscion parvipinnis*

8.2.1 Biology

The Shortfin corvina is a demersal finfish, living and feeding near the sandy or gravelly bottoms of shallow coastal (inshore) waters, although they can be found at depths up to 100 meters. Individuals found north of Point Banda, Mexico are most common in protected bays and estuaries and are also found in mangrove forests. This species is often associated with beds of eelgrass (*Zostera marina*) and river mouths (Chao, et al., 2012; Fischer, et al., 1995; Froese and Béarez, 2012; Pondella and Williams, 2008; Pondella and Williams, 2009; Tenera Environmental, 2004).

The Shortfin corvina (*Cynoscion parvipinnis*) is found in the eastern Pacific Ocean, from southern California to Mazatlán, Mexico, including the Gulf of California (Fischer, et al., 1995). It commonly inhabits sandy and rocky bottoms of shallow coastal waters, although they can be found at depths of up to 100 meters; it can also be found in bays, estuaries and kelp forests (Chao, 1995; Fischer, et. al., 1995). This species is a pelagic broadcast spawner (Fischer, et al., 1995).

8.2.2 Maximum sustainable yield and stock status

Currently there is no available information about estimates of the MSY, except for the “Corvina group” described above. Also, there is no data available on the size structure of the catch for this species.

There is not enough data (biological or fisheries) to carry out a stock analysis on the Shortfin corvina. In general, there are few biological and stock assessment studies on this species.

8.2.3 Catch profiles

All available catch records presented in this section were obtained from the official records of CONAPESCA known as “avisos de arribo” or trip tickets, as reported to the local offices of the three locations: San Felipe, Santa Clara and Puerto Peñasco.

Catch statistics in the Upper Gulf of California (AGC) started in 2006. Records show a total of 2,265.95 t of Shortfin corvina (*Cynoscion parvipinnis*) landed during the period 2006 – 2021 (Table 9). San Felipe was the fishing port that recorded the highest catch volumes (915.28 t) in the AGC, followed by Puerto Peñasco (850.80 t) and the Gulf of Santa Clara (499.87 t), with marked fluctuations over the years (Figure 5). It is important to clarify that these data may be underestimating the actual catch volumes of this species in the AGC due to undetermined amounts of illegal fishing. This fishery is not managed using TACs.

Table 9. Official records of landed volume of Shortfin corvina in the AGC during the period 2006 – 2021. Data from the public archives of CONAPESCA. <https://datos.gob.mx/busca/dataset/produccion-pesquera>

Year	Landings (t)			Total
	Golfo de Santa Clara	Puerto Peñasco	San Felipe	
2006	4.43			2010.43
2007	5.57			2012.57
2009	17.4	2	5.66	2034.06
2010	16.15		0.61	2026.76
2011	14.25		2.38	2027.63
2012	344.03	14.36	20.27	2390.66
2013	34.78	14.08	93.41	2155.27
2014	57.81	43.47	261.46	2376.74
2015	2.53	90.77	20.43	2128.73
2016	1.79	132.18	22.43	2172.4
2017	0.47	69.37	77.32	2164.16
2018		213.76	89.9	2321.66
2019		109.12	84.22	2212.34
2020		97.55	111.63	2229.18
2021	0.68	64.13	125.56	2211.37
Total	499.87	850.8	915.28	2265.95
Proportion (%)	22.1%	37.5%	40.4%	

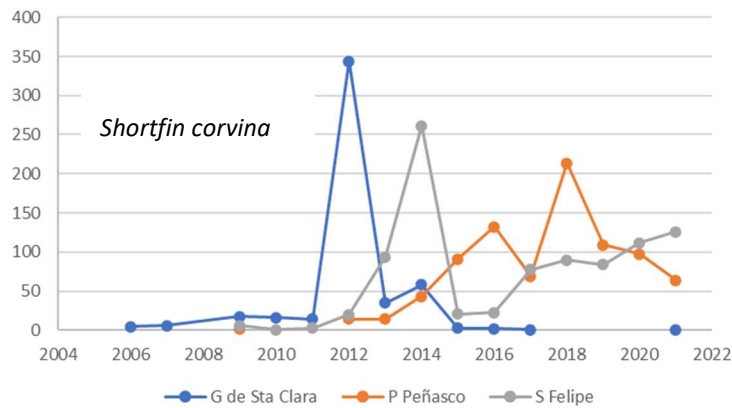


Figure 5. Catch history of Shortfin corvina reported in the CONAPESCA offices of San Felipe, Puerto Peñasco and Santa Clara. Data available in: [Datos Abiertos de México - Producción Pesquera](#)

8.3 Bigeye croaker

Target species common name: Bigeye croaker (English), *Chano norteño* (Spanish)

Phylum: Cordata

Class: Teleostei

Family: Sciaenidae

Genus: *Micropogonias*

Species: *Micropogonias megalops*

8.3.1 Biology

The bigeye croaker (*M. megalops*) or chano norteño is a finfish from the Sciaenidae family commonly known in Spanish as curvinas, corvinas or roncadores. The bigeye croaker is an endemic species of the Upper Gulf of California (AGC) that occurs in the coastal waters of San Felipe, Baja California, the Gulf of Santa Clara and Puerto Peñasco, Sonora (Aragón-Noriega et. all., 2015; Figure 6). It is a demersal fish that inhabits brackish and marine waters in coastal environments such as lagoons, estuaries and inlets up to 9-67 m deep waters in muddy or sandy-muddy bottoms, typical of the AGC (Arzola-Sotelo, 2013).



Figure 6. Map of the Upper Gulf of California showing georeferenced satellite records. Reproduced from Román-Rodríguez (2021).

The first maturity of the bigeye croaker is approximately 357.8 mm TL (Arzola-Sotelo, 2018). Regarding the sex ratio, a study found that there were more females than males in the population, with an accentuated difference in the summer months where there is low reproductive activity (Román-Rodríguez, 2000).

8. 3. 2 Catch Size structure

In a study carried out by Arzola-Sotelo with catch data from the industrial (2010-2012) and artisanal fleets (only 2012), the size distribution ranged between 210 mm and 430 mm in total length.

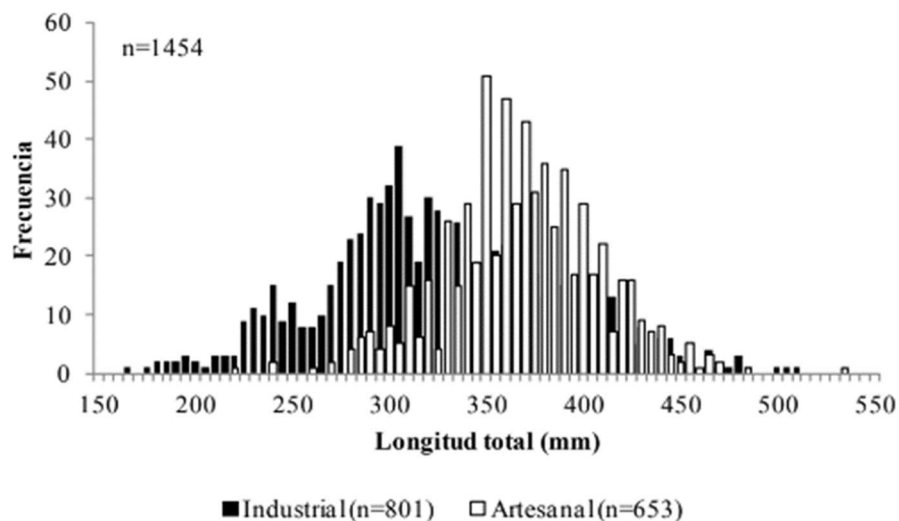


Figure 7. Size structure of *M. megalops* obtained from the industrial (2010-2012) and artisanal (2012) fisheries. Reproduced from Arzola-Sotelo (2018).

8.3.3 Maximum sustainable yield and stock status

Currently there is no public information available on MSY estimates. However, there are recent Bayesian Schaeffer model assessments carried out by INAPESCA that are for internal institutional use to update status of stocks and groups of species in the Carta Nacional Pesquera (see description in Section 8.1- Orangemouth corvina).

The biological studies, including population dynamics of *M. megalops*, aimed at evaluating the stock status of this species are limited. Assessing stock status is difficult because fishing is carried out on reproductive aggregations, making catch per unit of effort a biased index of population abundance.

In 2018, a study estimated the first maturity of the bigeye croaker at 357.8 mm. In addition, the selectivity of the industrial fleet averaged 325.6 mm and the artisanal fleet 367.85 mm; that is, the artisanal fleet is more selective for bigger fish, while the industrial fleet is selecting a larger proportion of younger individuals (Arzola-Sotelo, 2018).

The most recent assessment of the status of the bigeye croaker was conducted using stock reduction analysis (Urias-Sotomayor et al, 2022). Given a series of annual catch data, the stock reduction analysis (SRA, Kimura et al. 1982) consists of obtaining the solution of the Baranov catch equation (Baranov, 2018), which links the size of the stock, the instantaneous rate of natural mortality, the fishing mortality for each year and the size of the annual catch. Additionally, the change in the initial biomass due to the years of fishing is simultaneously resolved as a reduction ratio $B_{final}/B_{initial}$. The biomass at the beginning of each year results from the decrease in the biomass at the beginning of the previous year because of the total mortality (natural and due to fishing) plus the biomass of the recruitment (that includes growth and recruitment).

Bigeye croakers catch data from 1984 to 2020 were treated through the stock reduction analysis procedure. The model was fit searching for solutions of stock biomass in 2011 starting around 14,412 t, which was previously estimated for that year in the same area (Arzola-Sotelo et al. 2018). The most viable solution estimated the initial biomass at 22,186 t. The stock was reduced to approximately 0.5 B_0 between 1983 and 2013.

The acceptable solution of the set of Baranov catch equations by the least squares procedure, means minimizing the sum of the squared error (SSQ) between the observed and estimated catch. There is no single solution to this set of equations, so additional information is required to find the solution. In this assessment, this information included the assumption of initial biomass (B_0) described above. SRA is a deterministic procedure, however, using the 95% confidence interval of M and biomass in 2011 allowed an approximation of the uncertainty estimate of the stock condition.

After measures were implemented to protect the vaquita, the biomass bounced back up to a level between 60 and 80% of B_0 , depending on the assumption about natural mortality. This means that between 2014 and 2019, the population had a recovery of about 10-30%, corresponding to a final decline of 73.6% for B_0 (Urias-Sotomayor et al. 2022). When this analysis investigated the potential effect of unreported catches between 20% and 40% of the reported catch, the level of decline only changed by 6 and 10%, respectively, relative to the original estimated decline.

The assessment by Urias-Sotomayor et al. (2022) also investigated the possible effect of hyperstability by adjusting different versions of the Cobb-Douglas catch function (Hannesson, 1983) to the estimated biomass data, the effort of both fleets and total catch during the period from 2008 to 2020. The results

suggest that the catch of bigeye croaker in the upper Gulf of California does not depend on biomass levels and is directly proportional to the applied fishing effort. Therefore, it is possible that CPUE is not a suitable indicator of stock abundance, and the assessment methods and abundance indicators should be carefully selected.

Finally, a ban on the use of gillnets caused fishing effort to be reduced noticeably with the corresponding decline in catch from 2015 to 2018 and in 2020 (

Figure 8). In conclusion, the current condition of stock biomass of bigeye croaker in the Upper Gulf is estimated to be above 0.5 B_0 , even considering the worst-case scenario of unrecorded catch at 40% (Urias-Sotomayor et al. 2022). However, a cautious approach should be taken because a potential hyperstability situation may be taking place. It is also noted that a reference point of 0.5 B_0 is very conservative because demersal fish are known to have B_{msy} levels under 0.5 B_0 .

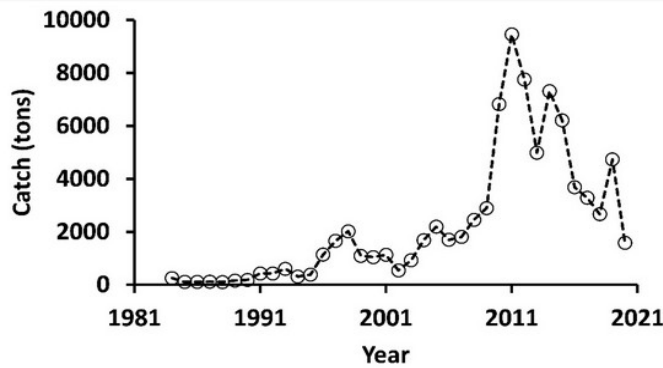


Figure 8. Trend in annual catch of bigeye croakers in the upper Gulf of California. Reproduced from Urias-Sotomayor et al. (2022).

8.3.4 Catch profiles and Total Allowable Catch (TAC)

The time series of total catch of the bigeye croaker in the upper Gulf of California is presented in

Figure 8 above. Trends and data for the towns of Puerto Peñasco and San Felipe, and for the Gulf of Santa Clara are provided in Figure 9 and Table 10. This fishery is not managed using TACs.

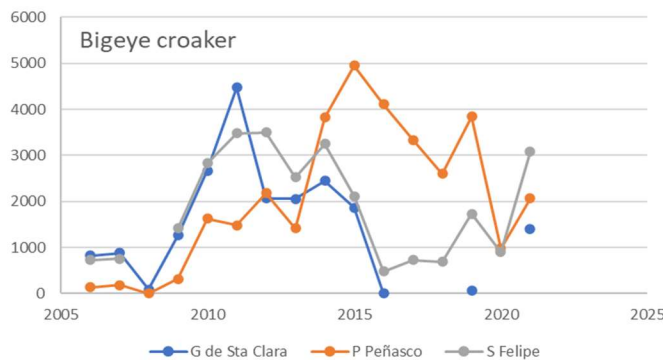


Figure 9. Catch history of bigeye croaker reported by the CONAPESCA offices of San Felipe, Puerto Peñasco and Santa Clara. Data available in: [Datos Abiertos de México - Producción Pesquera](#)

Table 10. Official records of landed weight of Bigeye croaker in San Felipe, Puerto Peñasco and Santa Clara during the period 2006 – 2021. Data from the public archives of CONAPESCA. [Datos Abiertos de México - Producción Pesquera](#).

Year	Landings (t)			Total
	Golfo de Santa Clara	Puerto Peñasco	San Felipe	
2006	828	136	731	1695
2007	885	183	760	1828
2008	90	2		92
2009	1,266	317	1,418	3001
2010	2,665	1,632	2,834	7131
2011	4,472	1,480	3,481	9433
2012	2,066	2,184	3,500	7750
2013	2,054	1,418	2,521	5993
2014	2,446	3,826	3,249	9521
2015	1,869	4,954	2,119	8942
2016	1	4,108	484	4593
2017		3,338	728	4066
2018		2,597	696	3293
2019	61	3,838	1,730	5629
2020		979	906	1885
2021	1,407	2,068	3,080	6555
Total	20,108	33,059	28,236	81403
Proportion (%)	24.7%	40.6%	34.7%	

8.4 Finfish management in the Upper Gulf of California

There are no specific fishing regulations for these species other than those applicable to other marine finfish species in general (CNP in DOF 2021). These regulations include fishing permits or concessions, however, since these fisheries operate partly within marine protected areas, other restrictions apply as determined by the management plan prepared by the National Commission for Protected Natural Areas (CONANP).

The Management Plan of the Upper Gulf of California Biosphere Reserve and Colorado River Delta (CONANP 2007) has determined that no extractive activities or changes in land use are allowed within the core area of the Reserve. Therefore, all fishing activities are forbidden within the Core Zone, and this restriction is included in the permits issued by SADER (formerly SAGARPA) for the use of fishing resources within the protected area. In addition, there is a goal to maintain permanent surveillance in the core area.

The Reserve's Management Plan also establishes that the buffer zone is where communities can carry out activities that are compatible with the objective of sustainable use of natural resources. However, the Plan has no details about the allowable intensity of fishing effort, fishing seasons or any other control to assure compliance with the stated conservation objective.

9 Principle 1 Performance Indicator scores and rationales

PI 1.1.1 – Stock status

Notes: RBF was used to score UoA1 and UoA2.

The default assessment tree (below) was used to score UoA3.

PI 1.1.1		The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing		
Scoring Issue		SG 60	SG 80	SG 100
Stock status relative to recruitment impairment				
a	Guide post	It is likely that the stock is above the point where recruitment would be impaired (PRI).	It is highly likely that the stock is above the PRI.	There is a high degree of certainty that the stock is above the PRI.
	Met?	UoA1 and UoA2-RBF UoA3 Bigeye Croaker: Yes	UoA1 and UoA2-RBF UoA3: Bigeye croaker – Yes	UoA1 and UoA2-RBF UoA3: Bigeye croaker- Yes
Stock status in relation to achievement of Maximum Sustainable Yield (MSY)				
b	Guide post		The stock is at or fluctuating around a level consistent with MSY.	There is a high degree of certainty that the stock has been fluctuating around a level consistent with MSY or has been above this level over recent years.
	Met?		UoA1 and UoA2-RBF UoA3 Bigeye croaker - Yes	UoA1 and UoA2-RBF UoA3 Bigeye croaker - Yes
Rationale				

UoA 1 – UoA 2- UoA 3

The status of orangemouth and shortfin corvinas is unknown. There is no stock assessment nor any other informal measure of status for these stocks, except for a Bayesian Schaeffer model assessment of a Corvina group, made up of 34 commercial species (INAPESCA, pers. comm, Nov-2023). For orangemouth and shortfin corvinas, the following represents the only information that could be inferred from official catch records from the CONAPESCA offices of San Felipe, Puerto Peñasco and the Gulf of Santa Clara. Nominal fishing effort from the participating cooperatives can be estimated, however, no quantitative evaluation of effort is available at the present time.

Given the lack of stock assessments or stock status indicators, the **RBF** was applied to orangemouth (UoA1) and shortfin corvina (UoA2). Both, consequence analysis (CA) and productivity-susceptibility analysis (PSA) were conducted. Assumptions for the proportion of catches from other fisheries impacting the stocks were made based on stakeholder input obtained at the site visit. The average catch of each corvina species between 2006 and 2021 was used as a reference to calculate the catch for other fisheries, based on estimated proportions per fishery (see PSA Susceptibility tables).

For the bigeye croaker (uOa3) there is considerably more information and stock assessments have been conducted in recent years.

UoA 1- Orangemouth corvina

The trend in the catch from 2009 to 2021 fluctuates between less than 1 t in 2009 to a little more than 35 t at its highest production. In the case of Puerto Peñasco, leaders of the two San Felipe cooperatives that obtain most of the catch, indicated that the number of fishers and boats has remained relatively constant or with a minimal increase.

The status of orangemouth corvinas is not known and RBF was conducted to score this indicator. The average catch (2006-2021) of 2032mt was used to calculate catch for other fisheries, using 25% as the assumed proportion representing this UoA (hook and line fishery). The MSC PSA score was 62, corresponding to a medium risk category and a scoring guidepost of 60-79. Combined with the consequence score of 80, the final MSC score for this species was 71.

UoA 2- Shortfin corvina

The trend in the catch for the town of San Felipe between 2009 and 2021 fluctuated between less than 1 t in 2010 to 261 t in its highest production in 2018. In the case of Puerto Peñasco, the catches have fluctuated between 2 and 213 t during the same period.

Leaders of two of the San Felipe cooperatives that obtain most of the catch indicated that the number of fishers and vessels has remained relatively constant or with a minimal increase.

The status of the shortfin corvina stock is not known and RBF was conducted to score this indicator. The average catch (2006-2021) of 2165 mt was used to calculate catch for other fisheries, using 25% as the assumed proportion representing this UoA (hook and line fishery). The MSC PSA score was 65, corresponding to a medium risk category and a scoring guidepost of 60-79. Combined with the consequence score of 80, the final MSC score for this species was 73.

UoA 3- Bigeye croaker

S1a -Catch trends for fishers in the Gulf of Santa Clara, Puerto Peñasco, and San Felipe increased from less than 1000 t in 2006 to levels varying differently in each town from 3,500 to nearly 5,000 t in 2015. After that year, catches declined, probably related to a ban on gillnets introduced in 2015 intended to protect the endangered vaquita. However, leaders of two of the San Felipe cooperatives that obtain most of the catch, indicated that the number of fishers and boats has remained relatively constant over the past twenty years.

The latest stock assessment for the AGC bigeye croaker estimated biomass to be above 0.5 B₀, even considering the worst-case scenario of unrecorded catch at 40% (Urias-Sotomayor et al. 2022). This means that the stock is above the default PRI of B₀/2, so SG60 and SG80 are met. This assessment accounted for different sources of uncertainty (in parameters, in catch levels and hyperstability effects (please see description of the assessment in Section 0), including 95% confidence intervals, which also produce estimates of uncertainty in the estimated stock status. Thus, there is evidence from the most recent assessment that there is a 95% probability that the stock is likely above the PRI and SG100 is met.

S1b -The SRA model estimates catch, biomass (B_i), and instantaneous fishing mortality rate each year (F_i), as well as recruitment (R) and the ratio of reduction of the stock during the fishing years over the number of years of catch analyzed (n). This methodology, however, does not estimate MSY or MSY reference points directly, but assesses stock status with respect to initial biomass values based on the catch history.

While the stock assessment (Urias-Sotomayor, 2022) does not refer to MSY specifically, it does mention stability in catch levels, which are likely to have been fluctuating around MSY because the biomass has been maintained at levels above 50% B₀, which produce catches at or greater than MSY. Thus, the assessment of bigeye croaker indicates that the stock has been fluctuating around MSY and actually increasing since 2016. Thus, this UoA is also likely to meet S1b at the SG100 level.

General Considerations

Recruitment impairment is a level of stock abundance that is usually very low for most species, the default value for the MSC is 20% of the unfinished abundance (See Guidance to the Fisheries Standard GSA2.2.3). If recruitment impairment was affecting these stocks, it would not be possible to support the constant reported catches for the available time series. Based on the available catch history and the informal estimation of the number of participating fishers, it is likely that the stocks are above the point where recruitment would be impaired. However, it is not yet possible to determine the status of Orangemouth and Shortfin corvina with sufficient level of certainty to assert that it is highly likely that these stocks are above the PRI nor that they are fluctuating around a level consistent with MSY. Thus, RBF was applied to these two corvina species.

The assessment of the bigeye croaker indicates that the stock has been historically at or above a conservative level producing MSY assuming that this is at 50% of B₀.

References

Urias-Sotomayor et al. 2022

Personal communications from fishers from San Felipe, Baja California (meetings, interviews, site visit, Oct. 2023).

Overall Performance Indicator (PI) Rationale

A formal assessment is only available for the bigeye croaker, therefore, the status of the other two species is unknown. The only informal measure of status available for the two unassessed stocks is the trend in catch history and some idea of effort. RBF was used for Orangemouth and Shortfin corvina to score this indicator.

Draft scoring range	UoA 1 – Orangemouth corvina – 60-79 (RBF) UoA 2 – Shortfin corvina- 60-79 (RBF) UoA 3- Bigeye croaker- >=80
Information gap indicator	More information sought to score UoA1 and Uoa2 Information sufficient for UoA3
Data-deficient? (Risk-Based Framework needed)	RBF was needed to score UoA1 and UoA2

PI 1.1.2 Stock rebuilding

PI 1.1.2		Stock rebuilding		
Scoring Issue		SG 60	SG 80	SG 100
a	Rebuilding timeframes			
	Guide post	A rebuilding timeframe is specified for the stock that is the shorter of 20 years or 2 times its generation time . For cases where 2 generations are less than 5 years, the rebuilding timeframe is up to 5 years.		The shortest practicable rebuilding timeframe is specified which does not exceed one generation time for the stock.
	Met?	3 UoAs: N/A	3 UoAs: N/A	3 UoAs: N/A
b		Rebuilding evaluation		

Guide post	Monitoring is in place to determine whether the rebuilding strategies are effective in rebuilding the stock within the specified timeframe.	There is evidence that the rebuilding strategies are rebuilding stocks, or it is likely based on simulation modelling, exploitation rates or previous performance that they will be able to rebuild the stock within the specified timeframe .	There is strong evidence that the rebuilding strategies are rebuilding stocks, or it is highly likely based on simulation modelling, exploitation rates or previous performance that they will be able to rebuild the stock within the specified timeframe. al role of the stock, and there is evidence that the HCRs are robust to the main uncertainties.
	Met?	3 UoAs: N/A	3 UoAs: N/A
Rationale			

UoA 1- UoA 2

There are no stock assessments for the orangemouth or shortfin corvina stocks, and status based on assessments is unknown. RBF results showed a medium risk category for both stocks from PSA. However, quantitative assessments of stock status are needed, which will be part of a fishery improvement plan. Importantly, if RBF is used to score PI 1.1.1, this PI is not scored, regardless of the outcome from RBF.

UoA 3

The stock is fluctuating around the MSY level and therefore is not depleted and does not need rebuilding, so this indicator is not applicable.

Draft scoring range	UoA 1- UoA 2- RBF applied (N/A) UoA 3- N/A
Information gap indicator	N/A

PI 1.2.1 – Harvest strategy

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
Scoring Issue	SG 60	SG 80	SG 100	
Harvest strategy design				
a	Guide post	The harvest strategy is expected to achieve stock management objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving stock management objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and is designed to achieve stock management objectives reflected in PI 1.1.1 SG80.
	Met?	3 UoAs: No	3 UoAs: No	3 UoAs: No
Harvest strategy evaluation				
b	Guide post	The harvest strategy is likely to work based on prior experience or plausible argument.	The harvest strategy may not have been fully tested but evidence exists that it is achieving its objectives.	The performance of the harvest strategy has been fully evaluated, and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels.
	Met?	3 UoAs: No	3 UoAs: No	3 UoAs: No
Harvest strategy monitoring				
c	Guide post	Monitoring is in place that is expected to determine whether the harvest strategy is working.		
	Met?	3 UoAs: No		
Harvest strategy review				
	Guide post	The harvest strategy is periodically reviewed and improved as necessary.		
	Met?	3 UoAs: No		

Shark finning				
e	Guide post	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	NA	NA	NA
Review of alternative measures				
f	Guide post	There has been a review of the potential effectiveness and practicality of alternative measures to minimize UoA-related mortality of unwanted catch of the target stock.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimize UoA-related mortality of unwanted catch of the target stock and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimize UoA-related mortality of unwanted catch of the target stock, and they are implemented, as appropriate.
	Met?	NA	NA	NA
Rationale				

The status of the target stocks is only known for the bigeye croaker (UA3). However, these fisheries are too small to conduct regular assessments of stock status. There is no harvest strategy or monitoring program for these fisheries. Although there are small groups of fishers who have decided to limit their choice of gear to handline and hooks only, which makes fishing very selective and reduces catchability, it is not a strategy that responds to stock status. Therefore, neither **S1a**, **S1b** nor **S1c** can reach the SG60 level for any of the UoAs.

None of the target species (UoAs) are sharks so **S1e** is not applicable and not scored. Also, there is no unwanted catch of the target species because all the fish caught by the gear are retained and used by the fishers; **S1f** is not scored.

Overall, none of the UoAs can reach a score of 60 for this PI because three out of five SIs do not meet the requirements at SG60. Importantly, most elements of the harvest strategy are missing (stock assessment, formal monitoring, control rules or regulations), catch monitoring is incipient, but there is certain compliance with gear restrictions. This alone is not likely to achieve the stock management objectives reflected in PI 1.1.1 SG80.

References

Communications with local fishers (meetings, interviews & site visit Oct. 2023)
 Experience of local partners, Pesca Alternativa BC, AC.

Overall Performance Indicator (PI) Rationale

Overall, the fishery cannot reach a score of 60 in this PI because three out of five **PIs do not meet the requirements at SG60**. Mainly, important elements of the strategy are missing (monitoring, stock assessment and control rules).

Draft scoring range	3 UoAs<60
Information gap indicator	More information sought

PI 1.2.2 – Harvest control rules and tools

PI 1.2.2		There are well-defined and effective harvest control rules (HCRs) in place		
Scoring Issue		SG 60	SG 80	SG 100
a	HCRs design and application			
	Guide post	Generally understood HCRs are in place or available that are expected to reduce the exploitation rate as the point of recruitment impairment (PRI) is approached.	Well defined HCRs are in place that ensure that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock fluctuating around a target level consistent with (or above) MSY, or for key LTL species a level consistent with ecosystem needs.	The HCRs are expected to keep the stock fluctuating at or above a target level consistent with MSY, or another more appropriate level taking into account the ecological role of the stock, most of the time.
	Met?	3 UoAs: No	3 UoAs: No	3 UoAs: No
b	HCRs robustness to uncertainty			
	Guide post		The HCRs are likely to be robust to the main uncertainties.	The HCRs take account of a wide range of uncertainties including the ecological role of the stock, and there is evidence that the HCRs are robust to the main uncertainties.
	Met?		3 UoAs: No	3 UoAs: No
Rationale				

The history of fishery does not present events where relevant changes have occurred that would trigger reductions in fishing effort when decreases in abundance are detected. There are no generally understood HCRs in place or available that are expected to reduce the exploitation rate as the point of recruitment impairment (PRI) is approached and **Sl**a does not meet SG60

Since there are no HCRs, uncertainties are not addressed, so **Sl**b does not meet SG60. Therefore, it is concluded that there is no evidence that even an informal system exists that is prepared to reduce fishing rates if required by monitoring. The fishery does not meet the requirements at SG60.

References

NA.

Overall Performance Indicator (PI) Rationale

There are no generally understood harvest control rules in place or available that are expected to reduce the exploitation rate as the point of recruitment impairment (PRI) is approached. The fishery does not meet the requirements at SG60.

Draft scoring range	3 UoAs <60
Information gap indicator	More information sought

PI 1.2.3 – Information and monitoring

PI 1.2.3		Relevant information is collected to support the harvest strategy		
Scoring Issue		SG 60	SG 80	SG 100
a	Range of information			
	Guide post	Some relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.	Sufficient relevant information related to stock structure, stock productivity, fleet composition and other data are available to support the harvest strategy.	A comprehensive range of information (on stock structure, stock productivity, fleet composition, stock abundance, UoA removals and other information such as environmental information), including some that may not be

			directly related to the current harvest strategy, is available.
Met?	3 UoAs: Yes	3 UoAs: No	3 UoAs: No
Monitoring			
b	Guide post	Stock abundance and UoA removals are monitored and at least one indicator is available and monitored with sufficient frequency to support the harvest control rule.	Stock abundance and UoA removals are regularly monitored at a level of accuracy and coverage consistent with the harvest control rule , and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule.
			All information required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of inherent uncertainties in the information [data] and the robustness of assessment and management to this uncertainty.
Met?	3 UoAs: No	3 UoAs: No	3 UoAs: No
Comprehensiveness of information			
c	Guide post	There is good information on all other fishery removals from the stock.	
	Met?	3 UoAs: No	
Rationale			

This fishery does not have sufficient information on stock structure and productivity to support a harvest strategy. Until recently, the UoA cooperatives did not have a system for recording catches, however, extractions must be communicated to the fishing authority in mandatory official landing tickets (“*avisos de arribo*”). In 2022 the fishers that volunteered to be part of the UoAs started a monitoring program to get information about their catch, effort, size of fish caught, and other biological information. Therefore, although there is some basic information, there is not enough information to meet the requirements at SG60 and the PI does not reach a score of 60.

References

NA

Overall Performance Indicator (PI) Rationale

The only data available from this fishery is the catch that has been recorded since the mid-80s. Biological data are scarce as are other relevant fisheries data such as effort or any other indicator that could be useful to monitor the fishery. An incipient monitoring program is being developed by fishers of some cooperatives in San Felipe. **The fishery (the three UoAs in this case) does not meet the requirements at SG60.**

Draft scoring range	3 UoAs<60
Information gap indicator	More information sought

PI 1.2.4 – Assessment of stock status

Note: RBF was used to score P1.1.1 for UoA1 and UoA2. Based on the MSC FCP2.3 (Table PF1), if the RBF is used to score PI1.1.1, a default score of 80 shall be awarded to PI 1.2.4. Overall RBF results are provided after the scoring table for PI 1.2.4 **Only UoA3 was scored under the default assessment tree table for PI 1.2.4 below.**

PI 1.2.4		There is an adequate assessment of the stock status		
Scoring Issue		SG 60	SG 80	SG 100
a	Appropriateness of assessment to stock under consideration			
	Guide post		The assessment is appropriate for the stock and for the harvest control rule.	The assessment takes into account the major features relevant to the biology of the species and the nature of the UoA.
	Met?		UoA3: Bigeye croaker -Yes	UoA3: No
b	Assessment approach			
	Guide post	The assessment estimates stock status relative to generic reference points appropriate to the species category.	The assessment estimates stock status relative to reference points that are appropriate to the stock and can be estimated.	
	Met?	UoA3: Yes	UoA3: Yes	
c	Uncertainty in the assessment			

	Guide post	The assessment identifies major sources of uncertainty.	The assessment takes uncertainty into account.	The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a probabilistic way.
	Met?	UoA3: Yes	UoA3: - Yes	UoA3: No
Evaluation of assessment				
d	Guide post			The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.
	Met?			UoA3: No
Peer review of assessment				
e	Guide post		The assessment of stock status is subject to peer review.	The assessment has been internally and externally peer reviewed.
	Met?		UoA3: Yes	UoA3: No
Rationale				

For the Orangemouth and shortfin corvinas (UoA 1 and UoA2), there is no stock assessment; there are only trends in total catch and anecdotal effort estimates. However, an official stock assessment analysis was carried out for the Corvina group by INAPESCA (2022), which encompasses approximately 34 species of commercial fish.

The bigeye croaker (UoA3) was last assessed in 2022 (Urias-Sotomayor et al., 2022), using catch-reduction analysis. This work was able to reconstruct biomass trends and provide an estimate of the status relative to default reference points. The stock assessment is appropriate for the stock .Even if there is not formal HCR, this analysis would be appropriate to guide the application of a rule to regulate fishing effort. Thus, **Sl**a meets SG80. Since stock status is estimated relative to appropriate reference points that can be estimated, **Sl**b meets SG80.

Also, the assessment investigated the impact of some important uncertainties such as under-reporting and the potential impact of hyperstability in CPUE. It was published in a peer reviewed journal. **Sl**c meets SG80.

Despite data limitations, the assessment by Urias-Sotomayor and colleagues (2022) is statistically robust, but it is unlikely that results from research papers are used in the management of this UoA. In addition, CNP updates are likely to use INAPESCA’s own assessment results for the grouped corvinas and croakers.

The last INAPESCA assessment for croakers (“Chano” group) was also conducted in 2022 (INAPESCA, pers. comm.). The Croaker group includes three main target species: *Micropogonias megalops*, *M. altipinnis* and *M. ectenes*. Stock assessments conducted by INAPESCA are the technical basis to update stock status in the CNP, but their analyses are for internal use and are not available to the public. The independent assessment has tested different hypotheses, but there was no information to determine if the official assessment has also been tested and shown to be robust, or if alternative hypotheses have been used, so **Sid** does not fully meet SG100.

While we are unable to determine if (official) stock assessments are reviewed internally and/or externally, it is likely that both the independent research paper and the official stock assessment analyses are peer reviewed, so SG80 is likely met for **Sle**. It is however not known if the official INAPESCA assessment is peer reviewed externally, so SG100 is not likely to be met.

Considering that there are no assessments for the Orangemouth or Shortfin corvina stocks, even if they are part of the larger Corvina group assessed, **RBF was used to score PI1.1.1**. Based on the MSC FCP2.3 (Table PF1), **if the RBF is used to score PI1.1.1, a default score of 80 shall be awarded to this PI**.

References

INAPESCA, pers. comm., 2023; Urias-Sotomayor et al. (2022).

Draft scoring range	<p>UoA1-2: 80 (RBF)</p> <p>UoA3 >=80</p>
Information gap indicator	<p>More information sought</p>

10 Principle 2

10.1 Principle 2 background

The Upper Gulf of California (AGC) region is a particularly dynamic area, where there is a great diversity of species with high economic value, as well as high endemism (Quiroz et al., 2008), which is why it was decreed by the Government of Mexico as the Biosphere Reserve of the Upper Gulf of California and Colorado River Delta (D.O.F, 1993). This region is located to the northwest of the Mexican Republic, it is shared by the States of Baja California and Sonora. It is located less than 60 km from the border with the United States of America, it has a total area of 934,756-25-00 ha, of which approximately 82.5% constitutes the Buffer Zone (769,976-50-00 ha) and the rest (17.5%) is the Core Zone called "Delta del Río Colorado" with 164,779-75-00 ha.

The Core Zone includes the mouth of the Colorado River in the state limits of Baja California and Sonora, which includes the main channel, the Montague, Gore and Pelicano Islands, most of the Ciénega de Santa Clara, the La Ramada estuaries (Esteros Primero, Segundo and Tercero) and the channels and shallow areas (less than 10 meters deep) to the north of the town of El Golfo de Santa Clara and in front of Punta Zacatosa and El Chinero, Baja California (Rodríguez Gerardo et al, 2012).

10.2 Ecosystem

The Upper Gulf includes remnant habitats of the old Colorado River delta such as the Santa Clara Swamp and important freshwater outcrops in the desert coastal strip, such as the El Doctor Swamps and the Adair Bay wells; these outcrops constitute unique microhabitats. The wells are resting places for migratory birds and sites that have characteristics not found anywhere else, in addition to maintaining an environment that has not been significantly altered by man. In the coastal environment there are limited intertidal rocky beach formations, located in Punta Borrascosa, Punta Pelicano and Punta Machorro. They are small emergent rocks that generate a unique habitat with a high diversity of species, especially invertebrates and marine fish.

The Upper Gulf of California belongs to the physiographic province of the Sonoran Desert within the Lower Colorado River Valley Subdivision (Brown, 1982). In its marine portion it includes the "Upper Gulf of California" region. The fauna of the Gulf of California is representative of three zoogeographic regions: the Eastern Pacific region; the Caribbean region and the Californian Province. There is a significant number of both cosmopolitan and endemic species in the Gulf of California. After the connection between the Atlantic and Pacific Oceans was closed at present-day Panama, some temperate species were "trapped" in the upper gulf (DOF, 2018).

10.3 Faunal groups

The fish fauna of the Gulf of California is representative of the zoogeographic regions of the Eastern Pacific that correspond to the Warm-Temperate (California and its San Dieguense and Cortesian provinces) and the Tropical Ocean (Mexican and Panamanian provinces) (Briggs, 1974). Species with

cosmopolitan and circumtropical affinity occur in the gulf, in addition to those exclusive to this region (Brusca, 1980).

10.4 Physiography

The Upper Gulf of California (UGC) has been recognized by its high primary productivity and abundant fishery resources (Aragon-Noriega & Calderon-Aguilera, 2000). Sediments and nutrients from the Colorado River and complex hydrodynamics render this as an important site for spawning, mating and nursing for numerous species of commercial and ecological importance (Cundey & Turk, 1998; Ramirez-Rojo & Aragón-Noriega 2006). Temperature, salinity and abundance of nutrients in this region vary depending on freshwater runoff from the Colorado River (Alvarez-Borrego et al., 1975; Hernández-Ayón et al., 1993; Lavín & Sánchez, 1999).

10.5 Primary species

Species that are in scope of the MSC program, that are not covered in P1 and are subject to management are considered primary. There are no Primary species caught in this fishery.

According to anecdotal experience from local fishermen, no primary species were identified in the UoA, since there is almost no bycatch and none of the incidental-catch species are subject to management.

10.6 Secondary species

Any other species that is within the scope of the MSC program, that is not in P1 nor a Primary species, is a Secondary species. If a secondary species is 5% or more by weight of the total catch of all species by the UoA it is considered a Main Secondary species, otherwise it is included in the Minor Secondary species group, unless the species is considered “less resilient”, then the cutoff percentage is reduced to 2% (see SA3.4.2.1 and SA3.4.2.2 in the MSC Fisheries Standard V2.01).

10.6.1 Main secondary species

This pre-assessment/ FIP is based on a relatively new fishery, so there is only an incipient monitoring program. However, the people responsible for the program indicated that, when fishing with single lines and hooks, there are no species caught other than those in P1 and infrequently the gray smooth-hound shark, *Mustelus californicus* (Gill 1864). This is a benthic coastal predator commonly found on continental shelves, and in shallow muddy bays in the region (Miller and Lea, 1982; Espinoza, 2011).

During the site visit, the pre-assessment team inquired whether this information was accurate to confirm whether bycatch with hand lines was indeed insignificant, as reported from previous interviews with fishers. The information provided (Stakeholder comments from site visit, Oct. 2023) suggests that fishing with hook and line is quite selective, and therefore this fishery would have a low level of interaction with secondary species. There is no data available to determine if the reported shark species (Smoothhound shark, *Mustelus californicus*) is the only bycatch species or if it is a main or minor species. However, the

team decided to take a precautionary approach and to classify it as main species, even though technical staff from various organizations suggested that although frequent, the catch is very small, and when these sharks are caught, the entire shark is used for self-consumption and no finning takes place because there is no commercial incentive.

10. 6. 2 Minor secondary species

As mentioned in the previous section, there is only one shark species (Smoothhound shark, *Mustelus californicus*) that has the potential to be a minor secondary species. However, it was decided to assume a precautionary approach and keep it as main because there is not sufficient information about the potential level of impact of the UoA on that species.

During the site visit, stakeholders also mentioned the rare occurrence of undefined species of eels, octopi and crabs in the catch. Other species include *listón*, *abujón*, *tiburón arenero* (nurse shark, dusky shark, *Carcharhinus obscurus*). Almost none of the bycatch fish or shellfish are returned to sea; they are generally retained for subsistence. These incidental species were only mentioned as other fish that occur in the UoA area and that are rarely caught in very small amounts, but no formal information exists, so they were considered negligible for this pre-assessment but may become secondary species as the monitoring program for the fishery is developed through the FIP.

Fishers also noted that hooks and lines do not have an impact on any other species, which is not the case with nets (*chinchorros*) that catch the target species “and everything else” (Stakeholder comments from site visit, Oct. 2023).

10.7 ETP Species

This pre-assessment/FIP is based on a new fishery, so there is no monitoring system yet, however, a consultation with technicians working close to the fishers reported that they have no information about species that are listed in the Mexican NOM059 that interact with the fishery or are present in the in the catch. This suggests that this fishery has a low or negligible level of interaction with ETP species but this has to be confirmed through literature or preliminary data available from this or similar fisheries that occur within the UoA area.

During the site visit, fishers reported that interactions with sea turtles occur occasionally around “the Consag island”, but they are liberated and no deaths have been reported. It is highly unlikely that sea turtles get entangled with handlines, but they are attracted by the bait used in the fishery. Further investigation into turtle interactions or bycatch is recommended for the FIP. Stakeholders reported sightings of dolphins, birds, and other marine mammals during fishing trips, but no interactions or entanglements (Stakeholder comments from site visit, Oct. 2023).

11 Principle 2 Performance Indicator scores and rationales

P2 2.1.1 – Primary species outcome

PI 2.1.1	The UoA aims to maintain primary species above the point where recruitment would be impaired (PRI) and does not hinder recovery of primary species if they are below the PRI			
Scoring Issue	SG 60	SG 80	SG 100	
Main primary species stock status				
a	Guide post	<p>Main primary species are likely to be above the PRI.</p> <p>OR</p> <p>If the species is below the PRI, the UoA has measures in place that are expected to ensure that the UoA does not hinder recovery and rebuilding.</p>	<p>Main primary species are highly likely to be above the PRI.</p> <p>OR</p> <p>If the species is below the PRI, there is either evidence of recovery or a demonstrably effective strategy in place between all MSC UoAs which categorise this species as main, to ensure that they collectively do not hinder recovery and rebuilding.</p>	<p>There is a high degree of certainty that main primary species are above the PRI and are fluctuating around a level consistent with MSY.</p>
Met?	Yes	Yes	Yes	
Minor primary species stock status				
b	Guide post		<p>Minor primary species are highly likely to be above the PRI.</p> <p>OR</p> <p>If below the PRI, there is evidence that the UoA does not hinder the recovery and rebuilding of minor primary species.</p>	
Met?			Yes	
Rationale				

SI a, b- There are no Primary species caught in this fishery. None of the species mentioned by stakeholders as possible bycatch are managed, and the default score if there is no impact on primary species is SG100. RBF was not applied because it was assumed that there are no primary species. This rationale applies to main (SIa) and minor (SIb) primary species. **There is limited information on catch composition or bycatch from the UoAs; thus, the team was unable to determine if there are primary species, main or minor. The assumption of no primary species is reasonable given the existing information, however, pending better data collection on catches and discards, the evaluation under this PI may change (i.e. go down) if primary species are discovered which will need to be evaluated.**

References
Stakeholder comments from site visit (Oct., 2023). No catch composition data are available.
Overall Performance Indicator (PI) Rationale
There are no Primary species caught in this fishery.

Draft scoring range	≥80
Information gap indicator	Information needed to score PI
Data-deficient? (Risk-Based Framework needed)	No primary species identified; catch composition data are needed.

PI 2.1.2 – Primary species management strategy

PI 2.1.2	There is a strategy in place that is designed to maintain or to not hinder rebuilding of primary species, and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch		
Scoring Issue	SG 60	SG 80	SG 100
a	Management strategy in place		
	Guide post	There are measures in place for the UoA, if necessary, that are expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are likely to be above the PRI.	There is a partial strategy in place for the UoA, if necessary, that is expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are highly likely to be above the PRI.
Met?	NA	NA	No

Management strategy evaluation				
b	Guide post	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is some objective basis for confidence that the measures/partial strategy will work, based on some information directly about the fishery and/or species involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the fishery and/or species involved.
	Met?	Yes	Yes	No
Management strategy implementation				
c	Guide post		There is some evidence that the measures/partial strategy is being implemented successfully .	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its overall objective as set out in scoring issue (a) .
	Met?		Yes	No
Shark finning				
d	Guide post	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	NA	NA	NA
Review of alternative measures				
e	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of all primary species, and they are implemented, as appropriate.
	Met?	NA	NA	NA
Rationale				

Sla- There are no Primary species caught in this fishery and thus management actions to keep primary species above the PRI are not necessary. While SA3.5.1 still requires this PI to be scored, GSA3.5.1 specifies that only SG100 for Sla needs be scored due to the absence of “if necessary”. Therefore, SG60 and SG80 are not scored.

Further guidance on GSA3.5.1 notes that the strategy at SG100 should be in place because of gear loss or other incidental impacts could still occur. The use of handlines is in itself a strategy that is highly selective, although the loss of lines could still occur, with a minimal impact on other species. Potential impacts on potential primary species would also be mitigated by spatial and seasonal closures existing within the reserve, size limits on key species, and some monitoring and reporting of catches. Given that this is still a fishery in development, these and other measures or elements of the strategy can still be reinforced, so SG100 is not met. Also, an analysis of the catch composition is necessary to define whether indeed no primary species are impacted.

Slb- The general measures described above for the UoA area that can potentially protect Primary species, if any. In particular, the use of handlines in the UoA areas, is the main part of the strategy. Handlines are a highly selective gear that aims specifically to catch the target species in known areas at known seasons. Anecdotal experience constitutes plausible argument that these measures are likely to work, and SG60 is met. Also, preliminary data from the fishery shows that there are no primary species, and this is an objective basis of confidence that the measures/partial strategy works, meeting SG80. However, testing (in the form of complete studies of catch composition) has not yet occurred, so SG100 is not met.

Sic- Fishers & managers have indicated (Site visit interviews, Oct. 2023) that there is negligible incidental catch in the fishery, and that no primary species are harvested within the UoA. According to managers, the limited catch records available support these observations. Thus, there is some evidence that the measures/ partial strategy, in particular the hook and line gear, is being implemented successfully, so SG80 is met. However, given the lack of substantial data, evidence is not yet clear, so SG100 is not met.

Sid- There are no primary shark species so this issue is not scored (GSA3.5.1).

Sie- There is no unwanted catch of primary species, or no primary species at all, thus this issue is not scored (GSA3.5.3).

References

Preliminary monitoring program data 2023; Site visit information (Oct., 2023).

Overall Performance Indicator (PI) Rationale

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

PI 2.1.3 – Primary species information

PI 2.1.3	Information on the nature and extent of primary species is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage primary species		
Scoring Issue	SG 60	SG 80	SG 100
Information adequacy for assessment of impact on main primary species			
a	<p>Qualitative information is adequate to estimate the impact of the UoA on the main primary species with respect to status.</p> <p>OR</p> <p>If RBF is used to score PI 2.1.1 for the UoA:</p> <p>Qualitative information is adequate to estimate productivity and susceptibility attributes for main primary species.</p>	<p>Some quantitative information is available and is adequate to assess the impact of the UoA on the main primary species with respect to status.</p> <p>OR</p> <p>If RBF is used to score PI 2.1.1 for the UoA:</p> <p>Some quantitative information is adequate to assess productivity and susceptibility attributes for main primary species.</p>	<p>Quantitative information is available and is adequate to assess with a high degree of certainty the impact of the UoA on main primary species with respect to status.</p>
Met?	Yes	Yes	No
Information adequacy for assessment of impact on minor primary species			
b			<p>Some quantitative information is adequate to estimate the impact of the UoA on minor primary species with respect to status.</p>
Met?			Yes
Information adequacy for management strategy			
c	<p>Information is adequate to support measures to manage main primary species.</p>	<p>Information is adequate to support a partial strategy to manage main primary species.</p>	<p>Information is adequate to support a strategy to manage all primary species, and evaluate with a high degree of certainty</p>

				whether the strategy is achieving its objective.
Met?	Yes	No	No	
Rationale				

Sia- The fishery has recently started a program to record all removals by fishers in the participating cooperatives. Some biological data are also collected and it is expected that this monitoring program will continue and eventually grow to have a good understanding of the target and associated (bycatch) species. It is expected that the program will provide basic information to determine if there are primary species, to assess the impact of the UoAs on the status of main primary species, and to support some measures for their management.

Since there is qualitative information and some quantitative information indicating that there are no main primary species and is therefore adequate to assess that there is no impact on main primary species status, SG60 and SG80 are met.

Slb- The rationale for SI(a) generally applies to minor species; thus SG100 is met.

Sic- While the qualitative and quantitative information available indicate that there are no main primary species, the data collection program is still incipient and only adequate to support some measures for their management; thus only SG60 is met.

References

Preliminary monitoring program data 2023; Site visit information (Oct., 2023).

Overall Performance Indicator (PI) Rationale

The UoC has recently started a program to record all removals by fishers from the participating cooperatives. The fishery meets the requirements of Sia at SG80, Slb at SG100, and Sic at SG60.

Draft scoring range	60 - 79
Information gap indicator	Information sufficient to score PI

PI 2.2.1 – Secondary species outcome

PI 2.2.1		The UoA aims to maintain secondary species above a biologically based limit and does not hinder recovery of secondary species if they are below a biological based limit		
Scoring Issue		SG 60	SG 80	SG 100
Main secondary species stock status				
a	Guide post	<p>Main secondary species are likely to be above biologically based limits.</p> <p>OR</p> <p>If below biologically based limits, there are measures in place expected to ensure that the UoA does not hinder recovery and rebuilding.</p>	<p>Main secondary species are highly likely to be above biologically based limits.</p> <p>OR</p> <p>If below biologically based limits, there is either evidence of recovery or a demonstrably effective partial strategy in place such that the UoA does not hinder recovery and rebuilding.</p> <p>AND</p> <p>Where catches of a main secondary species outside of biological limits are considerable, there is either evidence of recovery or a, demonstrably effective strategy in place between those MSC UoAs that have considerable catches of the species, to ensure that they collectively do not hinder recovery and rebuilding.</p>	<p>There is a high degree of certainty that main secondary species are above biologically based limits.</p>
		Met? RBF	RBF	RBF
Minor secondary species stock status				
b	Guide post			<p>Minor secondary species are highly likely to be above biologically based limits.</p> <p>OR</p>

		If below biologically based limits', there is evidence that the UoA does not hinder the recovery and rebuilding of secondary species
	Met?	RBF

Rationale

There is only anecdotal information on likely secondary species, but the catch composition of the UoA is not yet known. The only secondary species that has been reported to be caught in this fishery is the smoothhound shark *Mustelus californicus*. However, there is not sufficient information to determine the proportion of the catch that this species represents or to quantify the volume caught across the geographic range of the fishery. When this shark appears in the catch, it is normally sold or consumed in the same town and no finning takes place. Presently, without formal catch data, it is not possible to determine if this shark species can be classified as a main or minor secondary species. However, the team decided to take a precautionary approach and assumed it to be a main species, but it is also not possible to determine if it is above biologically based limits. Due to the limited information available, RBF was used to assess this indicator for Smoothhound sharks.

The RBF analysis for the Smoothhound sharks caught incidentally in the UoAs included only PSA. Results showed an MSC PSA-derived score of 82, suggesting that there is a low risk that the UoAs have a significant impact on this species, and the MSC scoring guidepost is ≥ 80 .

References
NA

Overall Performance Indicator (PI) Rationale
Currently it is not possible to determine if the only main secondary species that has been reported by this fishery, the shark *Mustelus californicus* above biologically based limits RBF was required to assess this indicator

Draft scoring range	Smoothhound shark ≥ 80 (RBF)
Information gap indicator	The fishery requires to improve its monitoring program to collect the necessary information to identify and assess potential impacts from the UoA on secondary species. Catch composition data is required.
Data-deficient? (Risk-Based Framework needed)	Yes

PI 2.2.2 – Secondary species management strategy

PI 2.2.2		There is a strategy in place for managing secondary species that is designed to maintain or to not hinder rebuilding of secondary species and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch		
Scoring Issue		SG 60	SG 80	SG 100
Management strategy in place				
a	Guide post	There are measures in place, if necessary, which are expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be above biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a partial strategy in place, if necessary, for the UoA that is expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be above biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a strategy in place for the UoA for managing main and minor secondary species.
	Met?	Yes	Yes	No
Management strategy evaluation				
b	Guide post	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/species).	There is some objective basis for confidence that the measures/ partial strategy will work, based on some information directly about the UoA and/or species involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or species involved.
	Met?	Yes	No	No
Management strategy implementation				
c	Guide post		There is some evidence that the measures/partial strategy is being implemented successfully .	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its

				objective as set out in scoring issue (a).
	Met?		No	No
d	Shark finning			
	Guide post	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	Yes	No	No
e	Review of alternative measures to minimise mortality of unwanted catch			
	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main secondary species.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main secondary species and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of all secondary species, and they are implemented, as appropriate.
	Met?	NA	NA	NA
Rationale				

S1a- The National Plan for the Conservation and Management of Sharks and Rays is an official document with guidelines to conduct research, regulation, surveillance and outreach & education programs. Its purpose is to achieve a level of management in the fishery that optimizes the use and conservation of these resources in Mexico’s federal waters. However, the Plan does not provide specific management actions to be conducted by species or groups of species to achieve specific management goals. In particular, the gray smooth-hound shark does not have any specific plan for monitoring or management, but the official norm NOM-029-PESC-2006 indicates that all shark specimens must be retained on board commercial fishing vessels for their full use. Also, the exclusive use of fins from any shark species is prohibited. In no case may shark fins be brought onboard if the sharks’ bodies are not on the boat. It is understood from the above that there is a partial strategy for the UoA that is expected to either maintain or not hinder the rebuilding of major secondary species at levels that are likely to be above biological limits or to ensure that the UoA does not hinder their recovery, so S1a meets SG 80.

S1b-The measures are considered likely to work because the shark *Mustelus californicus* is a small shark that is not suitable for finning and the local culture favors the full use of species like this,. Therefore, the fishery meets S1b at SG 60 but not SG 80 because there is no objective basis for confidence that the

measures/ partial strategy will work, based on some information directly about the UoA and/or species involved.

Sic-There is no evidence that the measures/ partial strategy is being implemented successfully, so the fishery cannot meet the requirements of SIc at the SG80 level.

Sid-When *M. californicus* is caught, it is sold whole or consumed in town so there is a high degree of certainty that shark finning is not taking place. Sid meets SG 100.

Sie-Due to the use of hand line and hook in this fishery there are no unwanted catches of secondary species, so the Sie is not evaluated.

References

Preliminary monitoring program information 2023; Stakeholder comments from site visit (Oct., 2023).

Overall Performance Indicator (PI) Rationale

The measures are considered likely to work because the shark *Mustelus californicus* is a small shark that is not suitable for finning and the local culture favors the full use of species like this. Therefore the fishery meets SIb at SG 60 but no SG 80 because there is no objective basis for confidence that the measures/ partial strategy will work, based on some information directly about the UoA and/or species involved.

Draft scoring range	60 - 79
Information gap indicator	Information sufficient to score PI

PI 2.2.3 – Secondary species information

PI 2.2.3	Information on the nature and amount of secondary species taken is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage secondary species		
Scoring Issue	SG 60	SG 80	SG 100
a	Information adequacy for assessment of impacts on main secondary species		
	Guide post	Qualitative information is adequate to estimate the impact of the UoA on the main secondary species with respect to status.	Some quantitative information is available and adequate to assess the impact of the UoA on main

	OR If RBF is used to score PI 2.2.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for main secondary species.	secondary species with respect to status. OR If RBF is used to score PI 2.2.1 for the UoA: Some quantitative information is adequate to assess productivity and susceptibility attributes for main secondary species.	secondary species with respect to status.
Met?	Yes	No	No
Information adequacy for assessment of impacts on minor secondary species			
b	Guide post		Some quantitative information is adequate to estimate the impact of the UoA on minor secondary species with respect to status.
	Met?		No
Information adequacy for management strategy			
c	Guide post	Information is adequate to support measures to manage main secondary species.	Information is adequate to support a partial strategy to manage main secondary species. Information is adequate to support a strategy to manage all secondary species, and evaluate with a high degree of certainty whether the strategy is achieving its objective .
Met?	Yes	No	No
Rationale			

The UoAs have recently started a program to record all removals by fishers in the participating cooperatives. Some biological data are also collected, and it is expected that this monitoring program will continue to be implemented and eventually grow to have a better understanding of the target and associated species. It is expected that the program will provide basic information to assess the impact of the UoAs on the main species with respect to status and to support some measures for their management. The fishery meets the requirements at SG80 of SIa and the requirements of Sib at SG60 but not SG80.

S1a- The fishery has recently started a program to record all removals by fishers in the participating cooperatives. Some biological data are also collected and it is expected that this monitoring program will continue and eventually grow to have a good understanding of the target and associated (bycatch) species. It is expected that the program will provide basic information to determine if there are other secondary species, to assess the impact of the UoAs on the status of main secondary species, and to support some measures for their management.

RBF was used to score PI 2.2.1 and qualitative information was considered adequate to estimate productivity and susceptibility attributes for the only main secondary species identified, *Mustelus californicus*; thus S1a meets SG60. Since there is limited or no quantitative information, SG80 is not met.

S1b- There is no quantitative information to determine if there are minor secondary species or their status with respect to impacts from the UoA; thus SG100 is not met.

S1c- While the qualitative information available suggests that there is only one main secondary species, the data collection program is still incipient and only adequate to support some measures for management for this or other main species; thus only SG60 is met.

References

Preliminary monitoring program information 2023; Stakeholder comments from site visit (Oct., 2023).

Overall Performance Indicator (PI) Rationale

The UoC has recently started a program to record all removals by fishers in the participating cooperatives. The fishery meets the requirements of S1a and S1c at SG60, but S1b does not meet the standard because there is no information on minor species.

Draft scoring range	60 -79
Information gap indicator	<p>More information required to score indicator.</p> <p>The fishery is required to improve its monitoring program to collect more complete information to identify and assess potential impacts from the UoA on secondary species.</p>

PI 2.3.1 – ETP species outcome

PI 2.3.1		The UoA meets national and international requirements for the protection of ETP species		
		The UoA does not hinder recovery of ETP species		
Scoring Issue	SG 60	SG 80	SG 100	
Effects of the UoA on population/stock within national or international limits, where applicable				
a	Guide post	Where national and/or international requirements set limits for ETP species, the effects of the UoA on the population/ stock are known and likely to be within these limits.	Where national and/or international requirements set limits for ETP species, the combined effects of the MSC UoAs on the population /stock are known and highly likely to be within these limits.	Where national and/or international requirements set limits for ETP species, there is a high degree of certainty that the combined effects of the MSC UoAs are within these limits.
	Met?	NA	NA	NA
Direct effects				
b	Guide post	Known direct effects of the UoA are likely to not hinder recovery of ETP species.	Direct effects of the UoA are highly likely to not hinder recovery of ETP species.	There is a high degree of confidence that there are no significant detrimental direct effects of the UoA on ETP species.
	Met?	Yes	Yes	Yes
Indirect effects				
c	Guide post		Indirect effects have been considered for the UoA and are thought to be highly likely to not create unacceptable impacts.	There is a high degree of confidence that there are no significant detrimental indirect effects of the UoA on ETP species.

	Met?	Yes
Rationale		

SIa - This is a fishery that uses hand-lines and hooks and is considered to have little or no interaction with ETP species. Sea turtles, dolphins, other marine mammals, and birds have been sighted by fishers in the UoA area, but they have not identified the species or reported interactions with any species in particular.

The fishery occurs within a Biosphere Reserve (RBAGCDRC) that has clear conservation measures for the protection and recovery of endemic ETP species (vaquita and totoaba in particular) and management of shrimp and Gulf corvina fisheries (CONANP, 2007). However, there are no national and/or international requirements that set limits for ETP species that may interact with the UoAs. This SI is therefore not considered applicable to the fishery.

SIb- This pre-assessment is based on a new fishery, so there is only an incipient monitoring system. Interviews with fishers indicated that there is very limited interaction with ETP species, sea turtles in particular, which are sighted and are sometimes attracted by the hooked bait. In the extremely rare case that turtles are caught, they are released alive. Dolphins, birds, and other marine mammals have also been sighted during fishing trips, but fishers indicate that no interactions with the gear occur, and certainly, no interactions with the most vulnerable ETP species (vaquita, totoaba, or birds listed in the RBAGCDRC Management Program). The turtles, mammals & birds sighted by fishers have, however, not been identified to the species level.

Thus, direct effects of the UoA are highly likely to not hinder recovery of ETP species and SG60 and SG80 are likely met. Also, there is a high degree of confidence that there are no significant detrimental direct effects of the UoAs on ETP species and SG100 is likely met.

SIc- The above observations suggest that this fishery has a low level of interaction with ETP species or none at all. No direct or indirect effects are expected to occur that are attributable to the UoA and are thought to be highly likely to not create unacceptable impacts and SG80 is met. Thus, there is a high degree of confidence that there are no significant detrimental indirect effects of the UoA on ETP species and SG100 is likely met.

Based on the above and per SA3.2.1, the team determines that a UoA has negligible or no impact on ETP species, and thus it shall receive a score of 100 under the Outcome PI (this indicator, PI 2.3.1).

References

Stakeholder comments from site visit, October 2023.

Overall Performance Indicator (PI) Rationale

The fishery uses hand-lines and hooks and has been considered to have little or no interaction with ETP species; thus, it is expected that no direct or indirect effects occur that are attributable to the UoAs and thus, there are no significant detrimental effects of the UoA on ETP species.

Draft scoring range	≥80
Information gap indicator	It is assumed that all catch in this fishery is obtained with a single type of gear (hook and line). In the future, the monitoring program better document the type of gear associated to the daily landings and to determine the catch composition. It would also be useful to investigate what species included in NOM059 are present in the fishing grounds and may be vulnerable to the fishery.
Data-deficient? (Risk-Based Framework needed)	No

PI 2.3.2 – ETP species management strategy

PI 2.3.2	<p>The UoA has in place precautionary management strategies designed to:</p> <ul style="list-style-type: none"> • meet national and international requirements; • ensure the UoA does not hinder recovery of ETP species. <p>Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species</p>		
Scoring Issue	SG 60	SG 80	SG 100
a	Management strategy in place (national and international requirements)		
	Guide post	There are measures in place that minimise the UoA-related mortality of ETP species, and are expected to be highly likely to achieve	There is a strategy in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to be highly

		national and international requirements for the protection of ETP species.	likely to achieve national and international requirements for the protection of ETP species.	minimise mortality, which is designed to achieve above national and international requirements for the protection of ETP species.
	Met?	NA	NA	NA
Management strategy in place (alternative)				
b	Guide post	There are measures in place that are expected to ensure the UoA does not hinder the recovery of ETP species.	There is a strategy in place that is expected to ensure the UoA does not hinder the recovery of ETP species.	There is a comprehensive strategy in place for managing ETP species, to ensure the UoA does not hinder the recovery of ETP species.
	Met?	Yes	Yes	No
Management strategy evaluation				
c	Guide post	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is an objective basis for confidence that the measures/strategy will work, based on information directly about the fishery and/or the species involved.	The strategy/comprehensive strategy is mainly based on information directly about the fishery and/or species involved, and a quantitative analysis supports high confidence that the strategy will work.
	Met?	Yes	Yes	No
Management strategy implementation				
d	Guide post		There is some evidence that the measures/strategy is being implemented successfully.	There is clear evidence that the strategy/comprehensive strategy is being implemented

				successfully and is achieving its objective as set out in scoring issue (a) or (b).
	Met?		NA	NA
e	Review of alternative measures to minimize mortality of ETP species			
	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality ETP species, and they are implemented, as appropriate.
	Met?	NA	NA	NA
Rationale				

SIa – No ETP species are caught in this selective hook and line fishery (see PI 2.3.1), and any specific requirements for the protection of ETP turtles in the Mexican or international legislation are not applicable to this fishery.

Since it is highly unlikely that ETP species are caught in this fishery and there are no national or international limits for their protection, SI b is scored instead.

SIb- General measures for the protection of ETP species, including turtles, sea birds, marine mammals and fish are included in the Biosphere Reserve’s Management Program. In particular, one of the main objectives of the reserve is to protect vaquita and totoaba, which are critically endangered endemic species. These measures are expected to ensure that no activity or fishery within the Reserve, including the UoA, do not hinder the recovery of ETP species; this meets SG60.

Since the declaration of the Reserve in 1993, it has been included in international (eg., UNESCO, FAO, RAMSAR), Federal (eg., CONABIO, RHRAP, AICA) and regional programs (eg., Programa Ambiental Frontera XXI) that have resulted in specific programs for the protection of ETP species (eg., CIRVA, CILA). Later, in 2000, after the publication of the General Law on Wildlife and the LGEEPA, a suite of legal ordinances were issued for the protection of ecosystems, communities, and wildlife populations, and for the regulation of non-selective gears within the Reserve, including Emergent Norm 139 (NOM-EM-139-

2002) that prohibits gillnets greater than six inches, aiming at reducing vaquita catches by 66%. In 2005, SEMARNAT established a refuge area for vaquita that covers 80% of the area of the Reserve.

The series of programs, decrees, regulations, and measures outlined above constitute a strategy for managing ETP species within the Reserve. The strategy is expected to ensure that no activity or fishery, including the UoAs, hinder the recovery of ETP species within the Reserve. SG80 is met.

Although the Reserve's management program demonstrates consideration of an ecosystem-approach to management and focuses on the vulnerability of some habitats and endangered species, the effects of the UoAs on ETP species, even if unlikely have not been assessed. Any sightings or interactions of the handlines with turtles, dolphins, or ETP fish, must be documented. Therefore, the strategy does not meet the definition of comprehensive, which requires linked monitoring, analyses, and management measures and responses, so SG100 is not met.

Sic- Anecdotal information and preliminary data from the fishery suggest that there are no direct impacts on ETP species due to the high selectivity of the harvest method, hand lines. Fishers from the UoAs reported that little to no interactions with ETP species occur, with a very small possibility of turtles ever getting caught. This, and (the limited) data available from the fishery and from the use of handlines in the area, suggest that there is an objective basis for confidence that the measures/ strategy will work to protect ETP species. SG60 and SG80 are met. Since the strategy is not based on information about the fishery and there are no quantitative analyses to support it, SG100 is not met.

Sid- No direct fishery impacts on ETP species including turtles have been reported due to the highly selective harvest method used in the fishery. This is some evidence that the strategy is being implemented successfully. SG80 is met. However, there is not clear evidence that the strategy is implemented successfully in terms of ensuring that the UoA does not hinder the recovery of ETP species. SG100 is not met.

Sie- There is no UoA-related mortality of ETP species so this issue is not scored (GSA3.11.1-3).

References

Stakeholder comments from site visit (Oct., 2023)

Programa de Manejo Reserva de la Biosfera Alto Golfo de California y Delta del Río Colorado. (INE-SEMARNAT 2003; CONANP 2007 (in DOF, 2009).

Overall Performance Indicator (PI) Rationale

There are no ETP species caught in this fishery. However, measures for the protection of ETP species, including turtles, sea birds and marine mammals are included in the Biosphere Reserve’s Management Plan.

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

PI 2.3.3 – ETP species information

PI 2.3.3	Relevant information is collected to support the management of UoA impacts on ETP species, including: <ul style="list-style-type: none"> • Information for the development of the management strategy; • Information to assess the effectiveness of the management strategy; and • Information to determine the outcome status of ETP species 		
Scoring Issue	SG 60	SG 80	SG 100
Information adequacy for assessment of impacts			
a	Guide post Qualitative information is adequate to estimate the UoA related mortality on ETP species. OR If RBF is used to score PI 2.3.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for ETP species.	Some quantitative information is adequate to assess the UoA related mortality and impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species. OR If RBF is used to score PI 2.3.1 for the UoA: Some quantitative information is adequate to assess productivity and susceptibility attributes for ETP species.	Quantitative information is available to assess with a high degree of certainty the magnitude of UoA-related impacts, mortalities and injuries and the consequences for the status of ETP species.
Met?	Yes	Yes	No
b	Information adequacy for management strategy		

Guide post	Information is adequate to support measures to manage the impacts on ETP species.	Information is adequate to measure trends and support a strategy to manage impacts on ETP species.	Information is adequate to support a comprehensive strategy to manage impacts, minimize mortality and injury of ETP species, and evaluate with a high degree of certainty whether a strategy is achieving its objectives.
	Met? Yes	No	No
Rationale			

SIa- The fishery has recently started a program to record all removals and interactions with other species by fishers in the participating cooperatives. Some biological data are also collected, and it is expected that this monitoring program will continue and eventually grow to have a good understanding of the target and associated bycatch and ETP species. It is expected that the program will provide basic information to assess the impact of the UoAs on ETP species with respect to status and to support some measures for their management. SG60 and SG80 are met.

SIb- As noted in previous indicators, there is some qualitative information, based on fishers' experience, as well as preliminary data from the UoAs to determine if there is interaction with ETP species. While a strategy exists within the Reserve (as detailed in SI 2.3.2b) to protect ETP species, the limited information available is not adequate to measure trends or to support the strategy to manage impacts, and SG80 is not met.

References

INE- SEMARNAT 2003; CONANP 2007 (in DOF, 2009).

Overall Performance Indicator (PI) Rationale

There is no adequate qualitative information to determine if there is interaction with ETP species or to estimate UoA-related mortality of ETP species, but a monitoring program to assess impacts has been implemented, which will eventually support a strategy to manage impacts on ETPs in case they occur.

Draft scoring range	60 - 79
Information gap indicator	Information sufficient to score PI

PI 2.4.1 – Habitats outcome

PI 2.4.1	The UoA does not cause serious or irreversible harm to habitat structure and function, considered on the basis of the area covered by the governance body(s) responsible for fisheries management in the area(s) where the UoA operates		
Scoring Issue	SG 60	SG 80	SG 100
Commonly encountered habitat status			
a	Guide post	The UoA is unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	The UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.
	Met?	Yes	No
VME habitat status			
b	Guide post	The UoA is unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	The UoA is highly unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.
	Met?	Yes	No
Minor habitat status			
c	Guide post		There is evidence that the UoA is highly unlikely to reduce structure and function of the minor habitats to a point where there would be serious or irreversible harm.
	Met?		No
Rationale			

S1a- MSC defines commonly encountered habitats as those the target species favors, that the gear is designed to exploit, and/or that make up a reasonable portion of the fishing area (GSA3.13.3.1).

The gear used in this fishery is hook and line, which is known to have negligible impacts on habitats and ecosystems in other fisheries (Fuller et al. 2008). This is because handlines generally do not touch the sea floor or other features of the habitat. Also, if gear loss occurred, the small handlines used by the UoAs are highly unlikely to reduce the structure and functioning of the commonly encountered habitats to a point where serious or irreversible damage can occur. SG 60 and SG 80 are met.

However, there is no direct evidence from the UoAs, other than fishers' interviews, to confirm the statement above, so SG 100 is not met.

It would also be important for the Reserve to carry out studies to identify and map habitats and the level of overlap with human activities and impacts, including fishing. Interviews during the site visit did not reveal that such research exists.

S1b- The Upper Gulf of California encompasses unique ecosystems that are suitable for endemic species of mammals, fish, and invertebrates. The design of the Biosphere Reserve, with core sanctuary areas for vaquita and totoaba, buffer zones, and areas where certain activities are permitted and others totally banned (such as the use of gillnets), aims at protecting essential fish habitats (EFH) for those endemic species and also for some target stocks (eg., corvinas and shrimp).

According to the FAO Guidelines for identifying VMEs (per GSA3.13.3.2), some of these characteristics may apply to portions of the UGC that can be classified as EFH:

- Uniqueness or rarity
- Functional significance of the habitat
- Fragility
- Life-history-traits

Thus, the Reserve's Management Program has provisions to protect EFH for a number of endangered or vulnerable species or some subject to overfishing. Also, considering that handlines operate in the water column and not around sensitive areas (VMEs), and that this gear has minimal or no contact with the bottom, the UoAs are highly unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm, meeting SG60 and SG80. Evidence would be required to fully meet the SG100 requirement, even if this gear is considered innocuous.

S1c- Handlines used by the UoAs are unlikely to make contact with any habitats, including minor habitats, but, as before, there is no evidence of this so SG100 is not met.

References

Fuller et al. (2008).

DOF (2018)

MSC Guidance to the Fisheries Standard v2.01

INE- SEMARNAT 2003; CONANP 2007 (in DOF, 2007).

Overall Performance Indicator (PI) Rationale

The UoAs use handlines as the main fishing gear, so it is very unlikely that they will reduce the structure and functioning of common habitats in the Upper Gulf of California to a point where serious or irreversible damage would occur.

Habitats within the Reserve need to be identified, classified, and mapped, as well as the detailed overlap of habitats and fishing activities.

Draft scoring range	≥80
Information gap indicator	No
Data-deficient? (Risk-Based Framework needed)	RBF is possible, but given the negligible impact of hook and line gear on habitat, it was not considered necessary to apply CSA.

PI 2.4.2 – Habitats management strategy

PI 2.4.2	There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats		
Scoring Issue	SG 60	SG 80	SG 100
	Management strategy in place		
a Guide post	There are measures in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.	There is a partial strategy in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.	There is a strategy in place for managing the impact of all MSC UoAs/non-MSC fisheries on habitats.
Met?	Yes	Yes	No
b	Management strategy evaluation		

	Guide post	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/habitats).	There is some objective basis for confidence that the measures/partial strategy will work, based on information directly about the UoA and/or habitats involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or habitats involved.
	Met?	Yes	Yes	No
Management strategy implementation				
c	Guide post		There is some quantitative evidence that the measures/partial strategy is being implemented successfully.	There is clear quantitative evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective, as outlined in scoring issue (a).
	Met?		Yes	No
Compliance with management requirements and other MSC UoAs'/non-MSC fisheries' measures to protect VMEs				
d	Guide post	There is qualitative evidence that the UoA complies with its management requirements to protect VMEs.	There is some quantitative evidence that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.	There is clear quantitative evidence that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.
	Met?	Yes	Yes	No
Rationale				

Overall Performance Indicator (PI) Rationale

The gear used in this fishery is hook and line, known to have a minimal impact on habitats and ecosystems in other fisheries where this indicator has already been assessed (Fuller et al. 2008) because handlines generally do not touch the seafloor or other features of the habitat and are a very selective gear.

Also, the UoA occurs within an important biosphere reserve (The Upper Gulf of California and Colorado River Delta BR), which is an area of high endemism and a delicate ecosystem structure and balance. The

reserve has a management and conservation program, which includes the protection habitats and ecosystems in the region as part of a comprehensive strategy to protect endangered species (in particular Vaquita and Totoaba) and their habitats (EFHs)

While a management strategy designed specifically to protect habitats and ecosystems from (handline) fishing impacts does not exist, there is no evidence that the UoAs are causing severe damage to habitats (see 2.4.1.) and also, there is a management strategy for the biosphere reserve where the fishery occurs.

It is therefore expected that the structure of the habitat and ecosystem is not compromised, and, on this basis, PI 2.4.1 scoring issues would meet the requirements at the 80 level. Details for each scoring issue are not provided, since they have been outlined in previous indicators and the team does not consider that a strategy designed specifically to manage impacts from this fishery is necessary. The overall management of the Reserve should suffice, as long as habitats are better identified and mapped, along with the overlapping (fishing) activities.

References
 Fuller et al. (2008).
 Programa de Manejo Reserva de la Biosfera Alto Golfo de California y Delta del Río Colorado. (INE- SEMARNAT 2003; CONANP 2007).

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

PI 2.4.3 – Habitats information

PI 2.4.3	Information is adequate to determine the risk posed to the habitat by the UoA and the effectiveness of the strategy to manage impacts on the habitat		
Scoring Issue	SG 60	SG 80	SG 100
a	Information quality		
	Guide post The types and distribution of the main habitats are broadly understood . OR If CSA is used to score PI 2.4.1 for the UoA: Qualitative information is adequate to estimate the	The nature, distribution and vulnerability of the main habitats in the UoA area are known at a level of detail relevant to the scale and intensity of the UoA. OR	The distribution of all habitats is known over their range, with particular attention to the occurrence of vulnerable habitats.

	types and distribution of the main habitats.	If CSA is used to score PI 2.4.1 for the UoA: Some quantitative information is available and is adequate to estimate the types and distribution of the main habitats.	
Met?	Yes	Yes	No
Information adequacy for assessment of impacts			
b	<p>Guide post</p> <p>Information is adequate to broadly understand the nature of the main impacts of gear use on the main habitats, including spatial overlap of habitat with fishing gear.</p> <p>OR</p> <p>If CSA is used to score PI 2.4.1 for the UoA: Qualitative information is adequate to estimate the consequence and spatial attributes of the main habitats.</p>	<p>Information is adequate to allow for identification of the main impacts of the UoA on the main habitats, and there is reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear.</p> <p>OR</p> <p>If CSA is used to score PI 2.4.1 for the UoA: Some quantitative information is available and is adequate to estimate the consequence and spatial attributes of the main habitats.</p>	The physical impacts of the gear on all habitats have been quantified fully.
Met?	Yes	No	No
Monitoring			
c	<p>Guide post</p>	Adequate information continues to be collected to detect any increase in risk to the main habitats.	Changes in all habitat distributions over time are measured.
Met?		No	No
Rationale			

Sl-a- The information on the type of habitats and their distribution is known, therefore the Sl-a meets the requirements of SG 60. However, the information about the nature, distribution and vulnerability of habitats is not at level of detail for the scale and intensity of the UoA, therefore, the fishery cannot meet the requirements of SG 80.

Sl-b- The available information is adequate to broadly understand the nature of the main impacts of gear use on the main habitats, including the general spatial overlap of habitats with fishing gear. However, only anecdotal information on the spatial extent of interaction and on the timing and location of use of the fishing gear was obtained (Site visit interviews, Oct. 2023). While there is limited information to allow for identification of the main impacts of the UoA on the main habitats, it is unlikely that any impacts occur, and if they do, they are likely negligible. However, because the information available is limited, it cannot be considered reliable and the fishery, for Sl-b, meets the requirements at the SG60 level but not at SG80.

Sl-c- Monitoring of this fishery is recent and incipient, so the information collected is not yet adequate to detect any increase in risk to the main habitats. However, considering that impacts on habitats from the UoAs are likely negligible and that the biosphere reserve does have a comprehensive ecosystem health monitoring program (even if not regular or periodic), Sl-c may meet the requirements at SG80.

References

CONANP 2007; Site visit interviews (Oct. 2023)

Overall Performance Indicator (PI) Rationale

The types and distribution of the main habitats within the UoA are generally understood and some information exists about the nature of the main impacts of fishing gear use on the main habitats, including general spatial overlap of gears and habitats. Also, given the knowledge of key habitat and ecosystem features of the biosphere reserve, the negligible impact that hook and line gear pose on habitats, and the small scale and intensity of the UoAs, it is likely that the information available is sufficient to understand the nature, distribution and vulnerability of the main habitats within the UoAs, and therefore the fishery meets the requirements at SG 60 and partially at SG 80.

It is important that the Reserve conducts studies to produce detailed maps of the habitats within the Reserve and the overlap with distinct fishing activities.

Draft scoring range	60 -79
Information gap indicator	Information sufficient to score PI

PI 2.5.1 – Ecosystem outcome

PI 2.5.1	The UoA does not cause serious or irreversible harm to the key elements of ecosystem structure and function			
Scoring Issue	SG 60	SG 80	SG 100	
a	Ecosystem status			
	Guide post	The UoA is unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	The UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	There is evidence that the UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.
	Met?	RBF	RBF	RBF
Rationale				

Considering the small scale and intensity of the fishery, plus the type of low impact gear in use, if the default assessment tree were used to score this indicator, it would be considered highly unlikely that UoAs would disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm. This indicator would likely reach SG 80 but not SG100 because there is no evidence to support the conclusion.

The UGC is a highly sensitive and vulnerable area with a high level of endemism and a number of ETP species, and has been designated as a Biosphere Reserve. An important focus of conservation efforts within the reserve have been the Vaquita and Totoaba due to their (endangered) status. There is abundant data on other fisheries such as Corvina golfina, in part due to the known impact on those ETP species and in the IUU catch and trade of totoaba.

Considering that there is limited biological and fisheries information for the UoAs and for the ecosystem in general (even if there is a Management Program for the reserve), the FIP team decided to carry out a SICA analysis for this indicator to complement the limited data available on the UoAs impacts on the AGC ecosystem.

Based on the SICA analyses conducted with stakeholders during the site visit, the score assigned to this PI was based on the UoA-focused analysis conducted by Group 2, rather than on more precautionary results provided by Group 1 that examined the cumulative impacts from all the overlapping fisheries on the AGC ecosystem (**please see RBF-SICA results in the Appendices**).

The most likely outcome from SICA (Group 2 results), given the generally low impact of hook and line fisheries (including the UoAs) on the ecosystem, considers that on the spatial scale the fishing activity

for the UoAs is small, possibly between 1-15% (score of 2). The temporal score assigned was of (3), with a relatively low temporal impact (of fishing activity of 1-100 days per year). The intensity of fishing effort from the UoAs was considered negligible (score of 1). The group selected Trophic size/ structure as the most relevant subcomponent impacted by the fisheries. Given that the hook and line gear deployed in known areas and depths is highly selective (for species and sizes), impact over the long term on this subcomponent may be more significant. However, at this time changes that affect the internal dynamics are unlikely to be detectable against natural variation, and the group assigned a consequence score of 100.

Both of the SICA analyses conducted during the site visit (by Groups 1 and 2) suggested that if cumulative impacts from all overlapping fisheries in the area were considered, the scale of intensity would be major (score of 4-5) and would show detectable impacts occurring often at a broad spatial scale.

References

CONANP (2007); SICA analyses conducted by stakeholders during the site visit (October, 2023).

Overall Performance Indicator (PI) Rationale

Given the small scale of the fishery and the gear in use, it is highly unlikely that the UoAs would disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm. This indicator would likely reach the 80 level if the default assessment tree were used.

RBF- SICA results concurred with this assessment, showing that the impacts from the UoA would be negligible or minor at the spatial, temporal, and intensity scales and that changes in species composition (the most vulnerable subcomponent selected) may not be detectable against natural variation at this time. SICA discussions held by stakeholders acknowledged that ecosystem subcomponents might be impacted if a comprehensive assessment of all overlapping fisheries in the UGC were considered.

Additional information from the AGC Biosphere Reserve and comprehensive analyses of vulnerable species might complement the SICA results and would contribute to better inform the score for this indicator.

Draft scoring range	≥80 (RBF)
Information gap indicator	Information (likely) sufficient to score PI
Data-deficient? (Risk-Based Framework needed)	RBF is not absolutely necessary but was useful to complement default assessment tree results, and both analyses concurred in the outcomes.

PI 2.5.2 – Ecosystem management strategy

PI 2.5.2	There are measures in place to ensure the UoA does not pose a risk of serious or irreversible harm to ecosystem structure and function		
Scoring Issue	SG 60	SG 80	SG 100
Management strategy in place			
a	<p>Guide post</p> <p>There are measures in place, if necessary which take into account the potential impacts of the UoA on key elements of the ecosystem.</p>	<p>There is a partial strategy in place, if necessary, which takes into account available information and is expected to restrain impacts of the UoA on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance.</p>	<p>There is a strategy that consists of a plan, in place which contains measures to address all main impacts of the UoA on the ecosystem, and at least some of these measures are in place.</p>
Met?	Yes	Yes	No
Management strategy evaluation			
b	<p>Guide post</p> <p>The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar UoAs/ ecosystems).</p>	<p>There is some objective basis for confidence that the measures/ partial strategy will work, based on some information directly about the UoA and/or the ecosystem involved.</p>	<p>Testing supports high confidence that the partial strategy/ strategy will work, based on information directly about the UoA and/or ecosystem involved.</p>
Met?	Yes	Yes	No
Management strategy implementation			
c	<p>Guide post</p> <p>There is some evidence that the measures/partial strategy is being implemented successfully.</p>	<p>There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a).</p>	
Met?	Yes	No	
Rationale			

It is not expected that the UoAs could have impacts on the ecosystem (as detailed in PI 2.5.1), therefore a plan to manage impacts is not considered necessary. It is important to recall, however, that a significant portion of the UoA occurs within the Upper Gulf of California Biosphere Reserve, and that the protected area has a management program aimed at protecting endemic ETP species (particularly Vaquita and Totoaba), essential habitats, and ecosystems, at the same time that the sustainable use of marine resources can occur (CONANP 2007).

Since the declaration of the Reserve in 1993, it has been designated by UNESCO as a site of natural heritage, and a number of decrees and legislation have been issued for the protection of these and other (mammal, bird, fish) endemic ETP species.

Although specific management measures for this fishery are not included in the program, in general productive activities are regulated to make them compatible with the main objectives of the Reserve, which are the conservation and protection of natural resources and biodiversity. The fishery, for this PI, meets the requirements of the Standard at the SG80 level for all **Sis- a-b-c**.

The 100 level cannot be met because a portion of the fishery takes place out of the scope of the Management Program of the Reserve (**S1a**); because no testing has been conducted to determine that the UoA has a minimal impact on the ecosystem (**S1b**); and because there is no direct evidence linking management actions to low impacts from the UoA (**S1c**).

Please see PI 2.4.2 (Habitat Management) for further justification that applies both to habitats and ecosystems.

References

CONANP (2007).

Overall Performance Indicator (PI) Rationale

It is not expected that the UoA would have significant impacts on the ecosystem as detailed in PI 2.5.1, therefore a management strategy to address impacts from the UoAs is not necessary. The fishery meets the 80 level.

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

PI 2.5.3 – Ecosystem information

PI 2.5.3		There is adequate knowledge of the impacts of the UoA on the ecosystem		
Scoring Issue		SG 60	SG 80	SG 100
a	Information quality			
	Guide post	Information is adequate to identify the key elements of the ecosystem.	Information is adequate to broadly understand the key elements of the ecosystem.	
	Met?	Yes	Yes	
b	Investigation of UoA impacts			
	Guide post	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, but have not been investigated in detail.	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, and some have been investigated in detail .	Main interactions between the UoA and these ecosystem elements can be inferred from existing information, and have been investigated in detail .
	Met?	Yes	Yes	No
c	Understanding of component functions			
	Guide post		The main functions of the components (i.e., P1 target species, primary, secondary and ETP species and Habitats) in the ecosystem are known .	The impacts of the UoA on P1 target species, primary, secondary and ETP species and Habitats are identified and the main functions of these components in the ecosystem are understood .
	Met?		Yes	No
d	Information relevance			
	Guide post		Adequate information is available on the impacts of the UoA on these components to allow some of the main	Adequate information is available on the impacts of the UoA on the components and elements to allow the main

		consequences for the ecosystem to be inferred.	consequences for the ecosystem to be inferred.
	Met?	Yes	No
e	Monitoring		
	Guide post	Adequate data continue to be collected to detect any increase in risk level.	Information is adequate to support the development of strategies to manage ecosystem impacts.
	Met?	Yes	No
Rationale			

S1a - Considering the small scale and intensity of the fishery, plus the type of low impact gear in use, it is considered highly unlikely that the UoAs could disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm. However, the biosphere reserve has a comprehensive ecosystem health monitoring program (even if not regular or periodic), so there is adequate information to broadly understand the key elements of the ecosystem and the possible impacts. SI 60 and SI 80 are met.

S1b- While UoA-related impacts have not been investigated in detail, they can be inferred from other hook and line fisheries in similar ecosystems such as the FIP fishery Mexico National Marshes finfish - hook & line/gillnet, which has detailed information. Thus S1b can also meet the requirements at SG60 and SG80.

The fishery has started to collect data both to understand the structure, and function of the main components of the ecosystem (target, primary, secondary, ETP species) (**S1c**) and to detect any increase in risk level to these elements (**S1d**). Also, as noted above, the biosphere reserve has an ecosystem health monitoring program in place, which may also contribute to understanding the structure and function of ecosystem elements and the possible impacts of fisheries and their consequences on these components. It is important to note that monitoring of this fishery is incipient (**S1d**) and has not generated enough information to detect changes in the risk level, but overall, the UoA may meet the requirements for **S1c**, **S1d**, and **S1e** at SG 80.

References

CONANP (2007)

Overall Performance Indicator (PI) Rationale

Although it is very likely that the UoAs do not cause severe damage to the ecosystem (see 2.5.1), monitoring of this fishery is incipient as to generate enough information to quantify the magnitude of the impact. However, the Biosphere Reserve monitors overall ecosystem health, so the BR management program may cover the requirements for tracking serious impacts from fisheries on ecosystem elements and the UoAs may thus meet the SG80 requirements for this PI.

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

12 Principle 3

12.1 Principle 3 background

This fishery takes place in San Felipe and Puerto Peñasco, in the state of Baja California and Sonora, respectively. As such, the fishing activities occur entirely within the Mexican EEZ and the UoAs fall within the jurisdiction of the Pacific Management Division, the largest division of the Federal Government Authority.

In Mexico, three agencies are in charge of the management of fisheries. The main Government office is the Secretaría de Agricultura y Desarrollo Rural (SADER); under this agency, CONAPESCA is a decentralized commission directly in charge of fisheries management and decision making. Dependent also from SADER is the INAPESCA, a decentralized office in charge of fisheries scientific research that provides technical support for CONAPESCA's management decisions. The third key entity is the Ministry of the Environment and Natural Resources (SEMARNAT), which is the government body in charge of protecting and conserving ecosystems and natural resources. This agency is responsible for the management of protected areas in which fishing activities may take place. In such cases, SEMARNAT and SADER must coordinate their actions such that the objectives and duties of both offices are consistent with their mandates under their respective governing laws.

Another key component of the legal and customary framework is the “*Normas Oficiales Mexicanas*” (NOMs or Official Mexican Norms) – which define the specific management measures such as fishing gear requirements, closed areas, or fishing seasons. These NOMs can be modified following the process outlined in Section 7.3.2 below. Decisions are made by committees composed of stakeholders including fishers, cooperatives, the fishing industry, NGOs, universities, research institutes, government agencies, and other interest groups. These stakeholders are organized through the *Comité Consultivo Nacional de Normalización de Pesca Responsable* (National Consulting Committee for Responsible Fisheries).

The next level of fisheries management consists of the regional governments. In this case, the relevant regional governments are the Baja California Norte and the Sonora State Governments. The state governments set out, by decree, the laws and conditions in which fisheries must operate. A key document pertaining to this assessment is the “*Ley de Pesca y Acuicultura Sustentables para el Estado Baja California*” and “*Ley de Pesca y Acuicultura Sustentables para el Estado Sonora*” (Sustainable Fisheries and Aquaculture Law for the State of Baja California and for the State of Sonora) (2021). These pieces of legislation are nested within the broader “*Ley General de Pesca y Acuicultura Sustentables*” (LGPAS or General Law for Sustainable Fisheries and Aquaculture) of July 2007 (most recently updated in April 2018). The LGPAS sets out the general requirements and regulations for fisheries in the Mexican territory, as well as the general roles and responsibilities of fisheries management in Mexico.

13 Principle 3 Performance Indicator scores and rationale

PI 3.1.1 – Legal and/or customary framework

PI 3.1.1	<p>The management system exists within an appropriate legal and/or customary framework which ensures that it:</p> <ul style="list-style-type: none"> • Is capable of delivering sustainability in the UoA(s); • Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and • Incorporates an appropriate dispute resolution framework 			
Scoring Issue	SG 60	SG 80	SG 100	
a	Compatibility of laws or standards with effective management			
	Guide post	There is an effective national legal system and a framework for cooperation with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2	There is an effective national legal system and organised and effective cooperation with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2.	There is an effective national legal system and binding procedures governing cooperation with other parties which delivers management outcomes consistent with MSC Principles 1 and 2.
	Met?	Yes	Yes	Yes
b	Resolution of disputes			
	Guide post	The management system incorporates or is subject by law to a mechanism for the resolution of legal disputes arising within the system.	The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes which is considered to be effective in dealing with most issues and that is appropriate to the context of the UoA.	The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes that is appropriate to the context of the fishery and has been tested and proven to be effective .

Met?	Yes	Yes	No	
Respect for rights				
c	Guide post	The management system has a mechanism to generally respect the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to observe the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to formally commit to the legal rights created explicitly or established by custom of people dependent on fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.
Met?	Yes	Yes	Yes	
Rationale				

Sla- At the national level, the specific instrument for Mexican fisheries legislation is the LGPAS, providing guidelines for fisheries regulation. Linked to the LGPAS are NOMs and the CNP that define management measures. Article 1 of the LGPAS notes that one objective is to establish and define the principles to manage, promote, and regulate fisheries and aquaculture to ensure the sustainable use of the resources, taking into consideration social, technological, productive, biological, and environmental considerations. The article also establishes “the basis for the exercise of those attributions of the federation, states, and municipalities under the overarching principles of concurrence and with the participation of fishers [...] with the purpose of promoting the integral and sustainable development of fisheries and aquaculture”. Article 1.IX of LGPAS specifically addresses the need to consider ecosystem elements (e.g., ecosystem protection as defined in the Ley General del Equilibrio Ecológico y la Protección al Ambiente). The law establishes “the basis for the planning, conservation, protection, repopulation and sustainable use of fisheries and aquaculture resources, as well as the protection and rehabilitation of those ecosystems in which these resources occur”.

The Federal Law on Metrology and Standardization (*Ley Federal sobre Metrología y Normalización*; LFMN) (DOF 2009) established the integration of NOMs which are legally binding technical regulations that control a range of production sectors such as manufacturing and fisheries. Article 40 of the Federal Law on Metrology and Standardization establishes that a NOM “Regulates procedures to assure the preservation of natural resources [...] and if necessary seeks preferential access rights, utilization and benefit of fisheries resources to indigenous communities and people [...] in the places they occupy and inhabit.”

The CNP is an instrument that is informative for fishers but binding for the Mexican authorities. This instrument includes diagnoses and assessments of the status of the fisheries in Mexico, other fisheries and conservation indicators, and management recommendations by INAPESCA.

The intersection of the law, the NOMs and the CNP, along with the addition of tools specified in the law such as management plans, demonstrates an effective national legal system that cooperates with other parties to deliver management outcomes consistent with MSC Principles 1 and 2. This evidence supports SIa meeting the standard at SG100.

At the national level, the *Ley Federal de Procedimiento Administrativo* (Federal Law of Administrative Procedure) outlines administrative actions that the federal government can take to levy sanctions on individuals for non-compliance with federal laws. Specific to fisheries, the LGPAS outlines appeal mechanisms assuring due process to any legal proceeding under its Article 149, which stipulates that a fishery resource user can contest a final resolution that was reached according to administrative procedures defined in the application of the Law. The final resolutions issued in the administrative proceedings may be challenged by the affected parties by means of an appeal for review within fifteen days following the date of notification. Details about how to proceed in the development of a dispute under this Article of the LGPAS are regulated and defined in the Federal Law for Administrative Procedures.

Section V of the General Law for the Ecological Equilibrium and Environmental Protection describes specifications for environmental impact assessments that are put in place when fishing activities threaten the preservation of one or more aquatic species. Chapters IV, V and VI outline the corresponding legal procedures to be taken in the event an infraction is found to have occurred (DOF 1988).

SIb- there is evidence that a transparent mechanism for the resolution of legal disputes exists in the specifications of the LGPAS, articles 127-130, which specify the process through which field fisheries officers must submit cases to the Public Ministry, an independent body responsible for investigating infractions. The legal framework is effective in dealing with most fisheries issues, since the LGPAS's Chapters 1-3 (articles 6-16) explain the distribution of governmental responsibilities at the federal, state and municipal levels for dealing with fishery issues.

Considering this framework, the management system is subject by law to transparent mechanisms for the resolution of legal disputes and is appropriate to the context of the fishery and effective in dealing with most issues thereby meeting SG80. However, there is no evidence that the system has been tested, or that its effectiveness has been evaluated. Therefore SG100 is not met for SI b.

SIc- The LGPAS sets the basis for the development of fisheries in Mexico under the principle of sustainability and accounts for other biological, environmental, and socio-economic factors associated with fishing. For example, article 72 of the LGPAS allows subsistence fishers and those whereby fishing is a form of livelihood preservation to do so without permits. Article 72 prohibits the selling of products fished for these reasons. The rights for indigenous peoples to fish for subsistence and to fish as a form of cultural expression are given a priority and special considerations as stipulated in the Federal Law on

Metrology and Standardization, which establishes that a NOM “regulates procedures to assure the preservation of natural resources [...] and if necessary to seek preferential rights to access, utilization and benefit of fisheries resources to indigenous communities and people [...] in those places that they occupy and inhabit”.

Based on the above, we conclude that the management system has mechanisms committed to the legal rights created explicitly for people dependent on fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2 and meets the standard for SI c at SG100.

Thus, the UoAs meet the requirements at SG100 for SIa and SIc, and at SG 80 for SIb. This PI may reach an overall score of ≥ 80 .

References
 LGEPAS (2024).
 Ley Federal sobre Metrologia y Normalizacion (2009)

Overall Performance Indicator (PI) Rationale
 The Mexican legal framework includes an appropriate and effective management system which ensures that it is capable of delivering sustainable fisheries and observes the legal rights related explicitly or established by custom of people dependent on fishing for food or livelihood and incorporates an appropriate dispute resolution framework. The fishery may meet the requirements at level SG80 or more.

Draft scoring range	≥ 80
Information gap indicator	Information sufficient to score PI

PI 3.1.2 Consultation, roles and responsibilities

PI 3.1.2	The management system has effective consultation processes that are open to interested and affected parties		
	The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties		
Scoring Issue	SG 60	SG 80	SG 100
a	Roles and responsibilities		

	Guide post	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are generally understood .	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for key areas of responsibility and interaction.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for all areas of responsibility and interaction.
	Met?	Yes	Yes	Yes
Consultation processes				
b	Guide post	The management system includes consultation processes that obtain relevant information from the main affected parties, including local knowledge, to inform the management system.	The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information obtained.	The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information and explains how it is used or not used .
	Met?	Yes	Yes	No
Participation				
c	Guide post		The consultation process provides opportunity for all interested and affected parties to be involved.	The consultation process provides opportunity and encouragement for all interested and affected parties to be involved, and facilitates their effective engagement.
	Met?		Yes	No
Rationale				

S1a- The Mexican governance framework relevant to fisheries contains well-defined roles and responsibilities for all of its components described in the Principle 3 background section of this report and, more specifically, found in the LGPAS' Second Title of the Responsibilities and Concurrence on Matters of Fishing and Aquaculture, which establishes coordination frameworks among federal agencies. Among these, SAGARPA is charged with managing fisheries and aquaculture legislation (DOF 2018a).

CONAPESCA is an administrative entity of SAGARPA responsible for management, coordination, and policy development related to the sustainable use and exploitation of fisheries and aquatic resources, and whose responsibilities include enforcement, issuing quotas, and permits. Additionally, SAGARPA's *Consejo Consultivo para la Normalización Agroalimentaria* (Normalization of Agricultural Food Production Advisory Committee) proposes, compiles, reviews, approves, modifies, publishes, and promotes Mexican official norms related to agriculture, aquaculture, and fisheries food production activities, with the Sub-committee for Responsible Fishing being in charge of fisheries and aquaculture.

INAPESCA is responsible for providing scientific advice to relevant government institutions as well as the fisheries themselves. SEMARNAT is the federal agency responsible for protecting, restoring, and conserving ecosystems, natural resources, and environmental goods and services. The role of SEMARNAT and SEMAR is to provide support in activities of surveillance, enforcement and in the application of the general fisheries legal system. This role is continuously evolving as evidenced by a recent agreement to reallocate much of this responsibility from SEMARNAT to SEMAR.

The agencies involved in management processes have explicitly defined and well understood functions, roles, and responsibilities for all areas of responsibility and interaction. Thus Sla meets the requirements for SG100.

S1b - At the national level, formal consultation processes, defined in Article 44 of LFMN, inform the NOM. These processes include *Comités Consultivos Nacionales de Normalización* (National Consulting Normalization Committees, CCNN). For fisheries, the CCNN is known as the *Comité Consultivo Nacional de Normalización de Pesca Responsable* (CCNN for Responsible Fishing) and includes representatives of government, industry, and academia. Other national normalization organizations may also submit drafts to CCNNs for consideration and integration into NOMs. A consultation process exists for stakeholders, including on-going processes at the municipal, regional, and national levels and *ad hoc* consultation for specific measures.

Other examples of consultation processes, above the fishery-specific level, outlined in the LGPAS, take place through the National Council for Fisheries and Aquaculture "*Consejo Nacional de Pesca y Acuicultura*" (CNPA) and the State Councils for Fisheries and Aquaculture "*Consejos Estatales de Pesca y Acuicultura*" (CEPA). The CNPA, an inter-sectorial forum chaired by SAGARPA, supports, coordinates, consults, and assists in the fisheries management decision-making process. The CNPA includes representatives from Federal regulatory organizations, the social sector, and the fisheries and aquaculture sectors. Additionally, national and state Councils are responsible for defining management objectives written into Fisheries Management Plans.

This evidence indicates that the national management system includes consultation processes that regularly seek, accept, and consider relevant information, including local knowledge, and therefore S1b meets the requirements at SG80. The team did not receive clear evidence of how the information is used or not and therefore the fishery does not meet the requirement for SG100.

S1c -The CNPA and CEPA function as inter-institutional forums that include members from different government agencies, industry groups, and academia. The participants propose and inform INAPESCA

regarding objectives to be included in fishery specific management plans (DOF 2012c). During the development of a management plan, INAPESCA holds a series of Public Consultation Meetings to provide a space for the public’s participation in the planning process. This consultation measure facilitates the participation of stakeholders in the responsible fishery management process.

The Sub-committee for Responsible Fishing of CONAPESCA allows stakeholders to propose, compile, review, approve, and publish Mexican official norms related to fisheries. Stakeholders include members from the government, industry, academia, non-governmental organizations, and other citizen groups (DOF 2012b). Furthermore, the Mexican government’s public consultation processes, as they relate to fisheries management, encourage and facilitate active stakeholder engagement through regular meetings of the committees involved in drafting NOMs, the CNP, and management plans before these documents are published in their final version.

Therefore, the consultation process provides opportunity for all interested and affected parties to be involved. The team did not receive information indicating how the system encourages and facilitates their effective engagement, thus SIc meets the requirements for SG80 but not SG100.

References
LGPAS (2024)

Overall Performance Indicator (PI) Rationale
In Mexico the fisheries management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organizations and individuals who are involved in the management process are clear and understood by all relevant parties. There is ample evidence of the opening of consultation periods on a wide variety of issues in various fisheries. The fishery may meet the requirements at the level of SG80 or above.

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

PI 3.1.3 – Long term objectives

PI 3.1.3		The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Fisheries Standard, and incorporates the precautionary approach		
Scoring Issue	SG 60	SG 80	SG 100	
a	Objectives			
	Guide post	Long-term objectives to guide decision-making, consistent with the MSC Fisheries Standard and the precautionary approach, are implicit within management policy.	Clear long-term objectives that guide decision-making, consistent with MSC Fisheries Standard and the precautionary approach are explicit within management policy.	Clear long-term objectives that guide decision-making, consistent with MSC Fisheries Standard and the precautionary approach, are explicit within and required by management policy.
	Met?	Yes	Yes	No
Rationale				

Sla- The LGPAS states 15 long-term objectives that guide decision-making processes and are consistent with MSC Principles and the precautionary approach. LGPAS defines one of its prime objectives as establishing the basis for the planning, conservation, protection, repopulation, and sustainable use of fisheries and aquaculture resources, as well as for the protection and rehabilitation of ecosystems.

The LGPAS also states that to conserve and protect fishery resources and ecosystems, CONAPESCA must adopt the precautionary approach. Additionally, Mexico is a signatory of the FAO Code of Conduct for Responsible Fisheries and compliance with its principles is embedded in the country’s Sector Plan.

References

LG PAS (2024)

Overall Performance Indicator (PI) Rationale

The legal framework for the management of fisheries in Mexico has clear long-term objectives that guide the decision-making process, are consistent with the MSC Fisheries Standard and incorporate the precautionary approach. Therefore the fishery may meet the requirements at the SG80 level or greater.

Draft scoring range

≥80

Information gap indicator

Information sufficient to score PI

PI 3.2.1 – Fishery-specific objectives

PI 3.2.1		The fishery-specific management system has clear, specific objectives designed to achieve the outcomes expressed by MSC’s Principles 1 and 2		
Scoring Issue		SG 60	SG 80	SG 100
a	Objectives			
	Guide post	Objectives , which are broadly consistent with achieving the outcomes expressed by MSC’s Principles 1 and 2, are implicit within the fishery-specific management system.	Short and long-term objectives , which are consistent with achieving the outcomes expressed by MSC’s Principles 1 and 2, are explicit within the fishery-specific management system.	Well defined and measurable short and long-term objectives , which are demonstrably consistent with achieving the outcomes expressed by MSC’s Principles 1 and 2, are explicit within the fishery-specific management system.
	Met?	No	No	No
Rationale				

The fishery specified in the UoAs is a new fishery, so there is no management system that is specific for the UoAs, and they are only regulated under the general requirements of the Fisheries Law that apply to every fishery in the country.

References

NA

Overall Performance Indicator (PI) Rationale

The fishery specified in the UoAs does not have a specific management plan or system, therefore there are no fishery-specific objectives. The fishery is not likely to reach SG60.

Draft scoring range	< 60
Information gap indicator	Information sufficient to score PI

PI 3.2.2 – Decision-making processes

PI 3.2.2	The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery		
Scoring Issue	SG 60	SG 80	SG 100
Decision-making processes			
a	Guide post	There are some decision-making processes in place that result in measures and strategies to achieve the fishery-specific objectives.	There are established decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.
	Met?	No	No
Responsiveness of decision-making processes			
b	Guide post	Decision-making processes respond to serious issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take some account of the wider implications of decisions.	Decision-making processes respond to serious and other important issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.
	Met?	No	No
Use of precautionary approach			
c	Guide post	Decision-making processes use the precautionary approach and are based on best available information.	
	Met?	No	
Accountability and transparency of management system and decision-making process			
d	Guide post	Some information on the fishery's performance and	Information on the fishery's performance and Formal reporting to all interested stakeholders

	management action is generally available on request to stakeholders.	management action is available on request , and explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.	provides comprehensive information on the fishery's performance and management actions and describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.
Met?	No	No	No
Approach to disputes			
e	Guide post	Although the management authority or fishery may be subject to continuing court challenges, it is not indicating a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability for the fishery.	The management system or fishery is attempting to comply in a timely fashion with judicial decisions arising from any legal challenges.
		The management system or fishery acts proactively to avoid legal disputes or rapidly implements judicial decisions arising from legal challenges.	
Met?	No	No	No
Rationale			

Overall PI Rationale (all scoring issues)

There is no specific fishery management system or management measures for the UoAs (see 3.2.1), therefore **this indicator does not reach SG60**. In general, decision-making for each fishery is carried out by INAPESCA, whose objective is to direct, coordinate and guide scientific and technological research in fisheries, as well as the preparation of management plans for fisheries or aquaculture activities (for each resource), with the participation of diverse groups of stakeholders.

The institutions in charge of overall fisheries management (INAPESCA, CONAPESCA and SAGARPA) have not developed a fishery-specific management system with objectives or measures/ strategies to achieve them. The approach to disputes in the fishery could be similar to that of the Gulf Corvina Fishery.

Considering that the UoAs consist of new fisheries, there are no fishery-specific procedures or regulations and there are no specific ways to participate in a decision making process processes other than those specified in the General Fisheries Law for all the fisheries in the country. It is therefore yet

unclear how decisions can be made and whether fishers and other stakeholders can participate in the decision-making process. At this stage, it is unlikely that the fishery would meet the requirements at the SG60 level for any **SI (a – e)**.

References	
NA	
Draft scoring range	<60
Information gap indicator	Information sufficient to score PI

PI 3.2.3 – Compliance and enforcement

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the management measures in the fishery are enforced and complied with		
Scoring Issue		SG 60	SG 80	SG 100
a	MCS implementation			
	Guide post	Monitoring, control and surveillance mechanisms exist, and are implemented in the fishery and there is a reasonable expectation that they are effective.	A monitoring, control and surveillance system has been implemented in the fishery and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.	A comprehensive monitoring, control and surveillance system has been implemented in the fishery and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.
	Met?	Yes	No	No
b	Sanctions			
	Guide post	Sanctions to deal with non-compliance exist and there is some evidence that they are applied.	Sanctions to deal with non-compliance exist, are consistently applied and thought to provide effective deterrence.	Sanctions to deal with non-compliance exist, are consistently applied and demonstrably provide effective deterrence.
	Met?	Yes	No	No

Compliance				
c	Guide post	Fishers are generally thought to comply with the management system for the fishery under assessment, including, when required, providing information of importance to the effective management of the fishery.	Some evidence exists to demonstrate fishers comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery.	There is a high degree of confidence that fishers comply with the management system under assessment, including, providing information of importance to the effective management of the fishery.
	Met?	Yes	No	No
Systematic non-compliance				
d	Guide post	There is no evidence of systematic non-compliance.		
	Met?	Yes		
Rationale				

Sla - Monitoring, control, and surveillance (MCS) mechanisms are implemented in the fishery with a reasonable expectation of effectiveness. The current MCS system includes monitoring fishing effort and catches, regulatory controls on resource exploitation, and surveillance to ensure compliance. These include fishing logbooks and trip tickets (*“avisos de arribo”*) that have to be completed by fishers once they are back on land and a vessel monitoring system (VMS) that is active while vessels are outside of the harbor.

These systems constantly collect information about fishing zones and send alerts in case vessels are working in non-authorized areas or during the closed season. Also, as part of the enforcement strategy, CONAPESCA randomly conducts dockside vessel inspections (CONAPESCA, 2015).

Slb - When illegal actions are detected, federal enforcement agents issue fishing violations that fishers can dispute if evidence is presented. However, it is unclear how many of these events have ended in sanctions or how the number of infractions has varied over time. According to enforcement action data, the number of violations (particularly of vessels fishing in prohibited areas) has decreased in the last few years (CONAPESCA 2016), but it is unclear how many of these sanctions are related to each fishery.

Sic- Fishers are generally thought to comply with the management system for the fishery under assessment, including, when required, providing information of importance to the effective management of the fishery.

Sid- There is no evidence of systematic non-compliance in the fishery.

The fishery likely meets the requirements at the SG60 level for all SIs.

References

CONAPESCA (2015)

Draft scoring range	60-79
Information gap indicator	Information sufficient to score PI

PI 3.2.4 – Monitoring and management performance evaluation

PI 3.2.4	There is a system of monitoring and evaluating the performance of the fishery-specific management system against its objectives			
	There is effective and timely review of the fishery-specific management system			
Scoring Issue	SG 60	SG 80	SG 100	
	Evaluation coverage			
a	Guide post	There are mechanisms in place to evaluate some parts of the fishery-specific management system.	There are mechanisms in place to evaluate key parts of the fishery-specific management system.	There are mechanisms in place to evaluate all parts of the fishery-specific management system.
	Met?	No	No	No
	Internal and/or external review			
b	Guide post	The fishery-specific management system is subject to regular internal	The fishery-specific management system is	The fishery-specific management system is

	subject to occasional internal review.	and occasional external review.	subject to regular internal and external review.
Met?	No	No	No
Rationale			

SIa -The fishery does not have a specific management system (or a management plan or harvest strategy) to be evaluated so this SI does not reach SG60.

SIb -There is no fishery specific management system to be reviewed internally and/or externally so SG 60 is not met.

References
DOF, 2021
Interviews from site visit (Oct., 2023)

Overall Performance Indicator (PI) Rationale
There is not a fishery-specific management system to be evaluated or reviewed, therefore this indicator does not reach the SG60 requirements.

Draft scoring range	<60
Information gap indicator	Information sufficient to score PI

14 Appendices

14.1 Small-scale fisheries

Table 11 – Small-scale fisheries

Unit of Assessment (UoA)	Percentage of vessels with length <15m	Percentage of fishing activity completed within 12 nautical miles of shore
1, 2, 3	100%	40%

14.2 Evaluation processes and techniques

14.2.1 Site visits

A site visit to validate the draft pre-assessment findings with fishery stakeholders was held in San Felipe, BC from October 19-21, 2023. An additional (virtual) meeting with INAPESCA took place on November 10, 2023. Prior to the site visit, stakeholders were informed that meetings would take place, and were provided with the meeting agenda and objectives for the visit. MRAG Americas drafted an invitation letter and agenda for the Client (Pronatura), describing the site visit as follows (excerpts translated to English). The list of participants and final agenda are also provided below.

14.2.2 Draft Invitation².

**Fishery Improvement Project (FIP) for the Finfish Fishery in the Upper Gulf and Pronatura Noroeste
Invitation to Stakeholders to the 3rd Workshop for the MSC Pre-Assessment of the Artisanal Finfish
Fishery in the Upper Gulf of California
San Felipe, Baja California**

19-21 October/ 10 November 2023

Pronatura Noroeste is pleased to invite you to participate in the consultations with stakeholders in the pre-evaluation of the artisanal scale fishery in the upper Gulf of California. The analysis is being carried out to assess the fishery's compliance with the Marine Stewardship Council (MSC) Standard for well-managed and sustainable fisheries. The project seeks to identify the strengths of the fishery management system, as well as information gaps, in order to design an adequate and consistent Fishery Development or Improvement Program (FIP). The medium-term objective of the FIP is to gradually modify fishing and resource management methods to make them more sustainable from an early stage of development.

With the information provided in previous meetings, a draft with the preliminary results of the project has been achieved. The purpose of these meetings will be to gather more information to evaluate some indicators with alternative methods (such as the Risk Assessment Framework) and thus refine the results of the pre-assessment. This will allow an adequate design of an Action Plan, which strengthens the fishery and allows its evolution to be more sustainable and in line with the MSC standard.

As part of the pre-assessment, Pronatura Noroeste and Dr. Mónica Valle Esquivel, consultant of MRAG Americas, will hold consultation meetings in San Felipe, BC on October 19 and 20 and will participate in the fishing operations on October 21, 2023. The team will use participatory methods, with the interest of obtaining information and opinions from diverse groups with experience and knowledge of the fishery, including fishers, representatives of cooperatives, government offices, academics and civil society associations.

To achieve these objectives, the following participants have been summoned: Sepesca, INAPESCA, Conapesca, Conanp, Sargasso, CICESE, UABC, IIO, Ocean Aquarium, MAREM, CESAIBC, CEDO, El Sargasso and Pesca ABC. Because each group may have different knowledge of the fishery, the pre-assessment team has divided the agenda into two days of meetings and a day to observe fishing activities at sea. Each person or group can participate in the whole topic or in specific topics, depending on their interest. Participants are also encouraged to bring data, documents, maps or any other information that can enrich the discussion.

The final agenda and the list of stakeholders are provided below. Each day, participants filled out a sign-in sheet to record attendance.

² Translated to English from the original version in Spanish.

14.2.3 Final Site Visit Agenda and Participants³

Finfish Fishery Improvement Project (FIP) in the Upper Gulf of California

MSC Pre-Assessment Workshop of the Hook and Line Finfish Fishery
in the Upper Gulf of California

Date and time: October 19, 2023, 10:00 - 16:00 PST and October 20, 2023, 09:00 - 16:00 PST.

Place: Campo #1, Av. Mar de Cortés Sur 888, Centro, 21850. San Felipe, Baja California.

Objective: To validate the pre-assessment of the fishery to allow the proper design of the project work plan.

Coordination: FIP Working Group and MRAG Americas

Participants: Users, SEPESCA, CONANP, IIO-UABC, MAREM, El Sargazo, CEDO, Pesca ABC, Pronatura Noroeste and others interested in fishery.

Organization	Names
Moderators	
PRONATURA NORESTE	Dra. Laura Ibarra Garcia Biol. Maria Aquino
MRAG Americas (Consultant)	Dr. Monica Valle-Esquivel
Cooperatives	
S.C.P.P. Ribereña Torres S.C.L. de R.L.	Dr. Oscar Sosa
S.C.P.P. Ribereña Alto Golfo de Baja California S.C.L. de R.L.	M C. Aaron Ibarra
S.C.P.P. Ribereña Ruben's S.C.L. de R.L.	Teresa Talavera
Government Offices	
SEPESCA	José Julian Castro Gonzalez
INAPESCA	Concepción Enciso Enciso
CONAPESCA	M.C. Rosa Elena Silva García
CONANP	Domingo de Jesus Zatarain
CESAIBC	Alfonso Fajer
Universities/Research Institutes	
CICESE	Dr. Oscar Sosa
UABC	Aaron Ibarra
IIO	Teresa Talavera
Fishing Industry/ Businesses	

³ Translated to English from the original version in Spanish.

SARGAZO	Julio Cesar Mercado
Civil Society Organizations (CSOs)	
ABC Pesca	Enrique Sanjurjo
CEDO	Rene Loiza
MAREM	Maria Prodigios Piñon Castro

AGENDA DAY 1
Thursday, October 19, 2023

Hour	Activity	Facilitator
09:45 – 10:00	Registration of attendees	ABC Fishing
10:00 – 10:15	Welcome and introduction of the workshop	Pronatura Noroeste
10:15 – 10:30	Presentation Round	FIP Working Group and other guests
10:30 - 10:35	Objectives of the visit a. Clarify issues about the pre-assessment. b. Receive direct information from stakeholders. c. Conduct risk analyses to assess some indicators of the status of target fish stocks, bycatch and ecosystems.	MRAG
10:35 - 11:30	Brief introduction/review of the MSC standard and fisheries assessment methodology (default tree and risk analysis overview, RBF)	MRAG
11:30 - 11:45	Break	FIP Working Group
11:45 – 12:45	Presentation of the draft pre-assessment; Methods of information collection, interviews, data, analysis, literature review, and preliminary results	Pronatura Noroeste
12:45 – 13:30	Identification of Information Gaps 1 Emphasize limited information on status indicators (to which the RBF will apply).	MRAG
13:30 - 14:00	Introduction to the Alternative Risk Assessment Method (RBF Method) I: Objectives, Overview, Consequence Analysis (CA), Productivity and Susceptibility Analysis (PSA).	MRAG

14:00 14:15	Break	FIP Working Group
14:15 - 14:45	Introduction to the Alternative Risk Assessment Method (RBF Method) II: Spatial Level Consequence Analysis (CSA) and Scale and Intensity Consequence Analysis (SICA)	MRAG
14:45 - 15:45	Principle 3 - Review indicators and request additional information related to the management of the fishery and the Biosphere Reserve. 2 Handling System 3 Regulations 4 Management Plans 5 Monitoring, control and surveillance	FIP Working Group
15:45 - 16:00	Close of the day 6 Conclusions and programme for the following day 7 Acknowledgments and closing of the day	FIP Working Group
16:00 - 17:00	Dinner	FIP Working Group

AGENDA DAY 2
Friday, October 20, 2023

Hour	Activity	Facilitator
08:45 - 09:00	Registration of attendees	ABC Fishing
09:00- 09:20	Welcome & Day 1 Review	MRAG
09:20- 09:30	DAY 2 Objectives: a. Review information and sources for RBF analysis b. Conduct risk assessment (RBF) for Principles 1 and 2 status indicators.	MRAG
09:30- 09:45	Review of Risk Assessment Methods (RBF) and application to Pre-assessment	MRAG

09:45 – 10:45	Principle 1- Target species (Orangemouth corvina, Shortfin corvina and Northern Milkfish) a. Review of indicators and request for additional information where there are gaps: status of silverfish, Orangemouth corvina and northern milkfish populations, reference points, management strategies, regulations, catch control rules, stock assessment.	MRAG
10:45 – 11:15	b. Principle 1- RBF (CA and PSA): status indicators for target species (PI 1.1.1) Request/review of sources of information for the Consequence Analysis (CA) and Productivity-Susceptibility Analysis (PSA) for the target species: croaker plateada, Orangemouth corvina and northern milkfish.	MRAG
11:15 – 12:15	c. Perform Consequence Analysis (CA)	MRAG
12:15 – 12:30	Break	FIP Working Group
12:30 – 13:30	Principle 2 - RBF Review of indicators and request additional information where there are gaps: impacts of the fishery on other species (associated or discarded, threatened or endangered), habitats and ecosystems. a. Status Indicators: Primary (PI 2.1.1), Secondary (PI 2.2.1) and Threatened, Protected or Endangered (ETP) (PI 2.3.1) Species (PES Analysis) i. Analyze species composition and catch ratio (semi-quantitative or quantitative information if available) ii. Based on this information, review the selection of Primary, Secondary and ETP (threatened, protected or endangered) species iii. Review sources of information to perform Productivity-Susceptibility Analysis for selected species (PI Indicators 2.1.1- if primary species are found; IP 2.2.1 secondary species; PI 2.3.1 ETP species).	MRAG
13:30 – 14:00	Habitats - Spatial Consequence Analysis - CFS (PI 2.4.1).	MRAG

14:00 – 15:30	Ecosystems - Scale and Intensity Consequence Analysis – SICA (PI 2.5.1)	FIP Working Group
15:30 – 16:00	Close of the day 8 Conclusions and Acknowledgements	FIP Working Group
16:00 – 17:00	Dinner	FIP Working Group

AGENDA DAY 3
Saturday, October 21, 2023
7am-11am

Objectives DAY 3: Observe the fishing operation to clarify doubts about the fishery, learn about fishing methods and gear and interview fishermen.

- 1) Arrival at the jetty/fishing boats
- 2) Going out to sea to observe the fishing operations.
- 3) Return to the port.
- 4) Observe landing of catches.
- 5) Observe the recording of capture data (filling in of arrival notices).
- 6) Observe the separation, processing, packaging, and transportation of the product.
- 7) Interviews with fishermen about these processes, with a focus on traceability issues.
- 8) Acknowledgments and farewell
- 9) Return of the San Felipe team to Ensenada.

AGENDA DAY 4
Friday, November 10 , 2023
10am-11am

Remote- Zoom Video Conference

Participants- Concepción Enciso (INAPESCA), María Aquino (Pronatura), Mónica Valle (MRAG Americas Consultant)

Objectives DAY 4: To review the agenda, objectives and results of the visit to San Felipe in October and to emphasize topics of interest to be discussed with INAPESCA researchers.

Main Topics of Interest:

- 1) **Principle 1- Target species** (Shortfin corvina, Orangemouth corvina, Bigeye croaker)
 - a. Review existing information , indicators and request additional information where there are gaps:
 - b. Alternative to Stock Assessment and Quantitative Data - RBF - Summary of consequence and PSA analyses carried out during the visit.

- 2) **Principle 2**
 - a. Review of indicators and request additional information where there are gaps: impacts of the fishery on other species (associated or discarded, threatened or endangered), habitats and ecosystems.
Emphasize the need to know the **composition of the catches (data or experience) to evaluate the P2 (default tree AND RBF).
 - b. **Status Indicators: Primary (PI 2.1.1), Secondary (PI 2.2.1) and Threatened, Protected or Endangered (ETP) (PI 2.3.1) Species (PES Analysis)**
 - i. Analyze species composition and catch ratio (semi-quantitative or quantitative information if available)
 - ii. Based on this information, review the selection of Primary, Secondary and ETP (threatened, protected or endangered) species
 - iii. Review sources of information to perform Productivity-Susceptibility Analysis for selected species (PI Indicators 2.1.1- if primary species are found; PI 2.2.1 secondary species; PI 2.3.1 ETP species).
 - c. **Habitats- Spatial Level Consequence Analysis- CSA (PI 2.4.1)-** It is NOT necessary for fishing with lines and hooks, explain only generalities.
 - Fishing maps of the region? Habitat maps?
 - Does INAPESCA carry out research on the essential habitat for some species of economic importance in the AGC? CONANP?
 - d. **Ecosystems - Scale and Intensity Consequence Analysis – SICA (PI 2.5.1)**
 - INAPESCA does some fisheries analysis at the ecosystem level (e.g., Ecopath, Ecosim, other analyses of food chains or functional groups?)

- 3) **Principle 3**
 - a. Structure of INAPESCA, public consultation process, meetings with fishermen and users of the resource, presentation of results with the information collected
 - b. Functions of INAPESCA in the region
 - c. Collaboration with other institutions in fisheries research and management of AGC fisheries
 - d. Review of indicators and request additional information related to the management of the fishery and the Biosphere Reserve (CONAPESCA, INAPESCA, CONANP):
 - Handling System

- Regulations
 - Management Plans
 - Monitoring, control and surveillance
- 4) Other issues of importance to INAPESCA in the AGC?
 - 5) Next steps of the FIP
 - 6) Conclusions
 - 7) Acknowledgments and closing of the meeting
-

14.2.4. Site Visit Summary, Comments and Agreements

October 19, 2023, first day of the workshop

On the first day of the workshop, in follow-up to the agenda, there was a round of presentation where we had the opportunity to meet the participants. During the discussions moderated by Mónica Valle, the following agreements and comments were reached:

- Juan Carlos Vivanco, on behalf of the Oceanic Aquarium, expressed his interest in buying low-sized fish for fattening with mariculture from the fishermen of the FIP, also pointed out the legal complications he has faced, so the FIP team agreed to look for alternatives and the appropriate way for this purchase and sale to be carried out in the best way, since it can be a good promotion for fishermen.
- Fisherman Francisco Torres from Puerto Peñasco and fisherman José Luis Meza from San Felipe presented their experiences in the Escama fishery to the work team. They mentioned the differences in the distribution of yellowfin and silvery croaker, in their knowledge and experience they consider that the populations remain healthy and stable, although they consider that there has been a decrease in the population of silvery croaker for 10 years. In addition, they raised concerns about gillnets getting caught in the barrier of the vaquita refuge's zero-tolerance zone as they have noticed significant ghost fishing. They concluded their participation by stating that "line and hook fishing is the healthiest thing that can happen to the sea", emphasizing that the art of fishing has almost zero environmental impact. Although it is not something that happens often, fisherman José Luis told of his experience that at some point incidentally a couple of turtles became entangled in the fishing line, which caused them to become entangled in the fishing line.
- Fisherman Torres from Puerto Peñasco and fisherman José Luis Meza from San Felipe explained that the incidental species in both regions are the following: eels, octopus and crabs, these species are not sold, they are used for personal consumption or are released alive. Among the species that can be caught incidentally with greater volume are: dogfish shark, tooth shark, ribbon fish, marlin, rabbit and in the region of Puerto Peñasco the most abundant incidentally are cochito, cabrilla sardinera and botete. Among their life experiences, they recall that there was a time when the government stopped the granting of net fishing permits and during that season they noticed an improvement in the turtle population.
- Rene Loaiza, on behalf of CEDO, mentioned that they have information on some commercial fisheries and the record of their bycatch for the years 2012-2015, approximately. You agree to provide these records to the FIP team.

October 20, 2023, second day of the workshop

- At the beginning of the day, people who were new to the workshop joined, among them María Prodigios Piñón in presentation of Marem, she mentions that Marem's trajectory is based on the monitoring of the Olive Ridley Grecker fishery, however, there is interest in participating in the FIP as support for the biological monitoring of the FIP fisheries. Pronatura Noroeste agreed to review the log that Marem has used, adapt it to the needs of the FIP with the support of CEDO and Pesca ABC.
- 3 working groups of various organizations and institutions were created where the RBF method of the MSC standard was discussed for the Finfish fishery of the Upper Gulf.
- The groups performed Consequence analyses (CA) for the Orangemouth corvina (UoA1) and Shortfin corvina (UoA2) fisheries, as a means to score PI1.1.1. Each group presented their results and a plenary session was held to reach consensus on CA scores. The entire group produced a final CA scoring table for each species of corvinas (UoA1 and UoA2).
- Among the dynamics of presenting results, Julio Mercado, representing El Sargaso, commented on his concern to seek greater markets and benefits for fishermen.
- SICA analysis followed similar dynamics, with 3 groups being formed to produce SICA scores for PI 2.5.1 (Ecosystem outcome) for the finfish fisheries of the UGC (including the three UoAs). MAREM provided pre-existing maps of the UOA area and a representative from each group presented their results, noting the areas discussed on the maps. Each group also explained their SICA results and after a plenary discussion, consensus was reached to complete a final SICA scoring template.

14.3 Risk-Based Framework outputs

14.3.1 Consequence Analysis (CA)

The CAB should complete the Consequence Analysis (CA) table below for each data-deficient species under PI 1.1.1, including rationales for scoring each of the CA attributes.

Reference(s): FCP v2.3 Annex PF Section PF3

Stakeholders participating in the site visit were randomly divided into three work groups to carry out the CA for Orangemouth corvina and Shortfin corvina. Each group presented their results and then a plenary discussion allowed to reach consensus on the final CA scores. Below, we show results from the three groups (in Spanish) and the final CA scoring table. All groups selected **Age/Size/Sex** structure as the most vulnerable subcomponent for both species. Group 2 also scored all the subcomponents in order of vulnerability and provided potential scores for all of them.

Figure 10. Group 1 CA for yellow and Shortfin corvinas in the UGC.

Grupo 1

1. ANALISIS DE CONSECUENCIAS (CA)

Tabla PF2. Plantilla para el Análisis de Consecuencias (CA).

Aleta amarilla y Plateada

Principio 1: Estado de la población objetivo	Elemento a evaluar	Subcomponentes de Consecuencias	Puntuación de la Consecuencia
		Tamaño de la población	
		Capacidad reproductiva	
	→	Estructura de edad/tamaño/sexo	100
		Rango geográfico	
Justificación para el subcomponente más vulnerable	Puesto que el arte de pesca es selectivo en tallas mayores el esfuerzo actual es muy bajo (pocos pescadores en el FIP, poca demanda de producto ike Jimé) mercado limitado bajo el panorama actual, sin embargo puede cambiar al detonarse mercados		
Justificación para la puntuación de la consecuencia	↪ Cambio insignificante en edad/talla/sexo Unlikely to be detectable against background. ? Difícil asegurar lo siguiente puesto que no hay información con línea base ? No debería ser 100? Talla mínima cuota tamaño anzuelo		

Figure 11. Group 2 CA for Orangemouth and Shortfin corvinas in the UGC.

Grupo ②

1. ANALISIS DE CONSECUENCIAS (CA)

Tabla PF2. Plantilla para el Análisis de Consecuencias (CA).

Corvina Alela Amarilla
Corvina Platocada

Principio 1: Estado de la población objetivo	Elemento a evaluar	Subcomponentes de Consecuencias	Puntuación de la Consecuencia
		Tamaño de la población 2	80
		Capacidad reproductiva 4	80
		Estructura de edad/tamaño/sexo 4	80
		Rango geográfico 3	100
Justificación para el subcomponente más vulnerable	Porque al ser una pesca tan selectiva creemos que tendrá mayor en la edad y tamaño, la pesca de la especie se solicita, solamente con anzuelo y de 700 a 990g y de 1 km		
Justificación para la puntuación de la consecuencia	Por falta de información		

Figure 12. Group 3 CA for Orangemouth and Shortfin corvinas in the UGC.

Grupo ③

1. ANALISIS DE CONSECUENCIAS (CA)

Tabla PF2. Plantilla para el Análisis de Consecuencias (CA).

Principio 1: Estado de la población objetivo	Elemento a evaluar	Subcomponentes de Consecuencias	Puntuación de la Consecuencia
		Tamaño de la población	
		Capacidad reproductiva	
		* Estructura de edad/tamaño/sexo	80
		Rango geográfico	
Justificación para el subcomponente más vulnerable	Consideramos que con esta arte de pesca es prácticamente la única afectación que se puede detectar dado que el pescador tiene la oportunidad de escoger las tallas además de que el arte de pesca es altamente selectivo		
Justificación para la puntuación de la consecuencia	Le ponemos esa calificación porque, aunque los cambios son apenas detectables y hace falta monitorear e información, le damos el valor de 80 suma prudencia		

Table 12. Overall CA scores for UoA1: Orangemouth corvina (*Cynoscion xanthulus*) and UoA2: Shortfin corvina (*Cynoscion parvipinnis*)

Principle 1: Stock status outcome	Scoring element	Consequence subcomponents	Consequence score
	Orangemouth corvina (<i>Cynoscion xanthulus</i>)	Population size	
		Reproductive capacity	
	AND	Age/size/sex structure	80
		Geographic range	
	Shortfin corvina (<i>Cynoscion parvipinnis</i>)		
Justification for most vulnerable subcomponent	<p>Age/size/sex structure</p> <p>One group determined that the consequence score would be 60, one group scored it at 80 and a third one at 100. The consensus was to use the most precautionary score of 80. The key elements of the groups' justifications were:</p> <p>The hook and line fishery is very selective for larger sizes, where fishes between 700g and 1 kg are targeted. While fishing effort is currently very low (few fishers in the FIP, low demand for product and limited markets), one group considered that changes in size structure would not likely be detectable yet (thus scoring at 100). However, this situation would change if market demand increased, and the groups concurred that targeting large sizes could potentially have a greater impact on the age and size structure, thus a score of 80 was given to this subcomponent.</p>		
Justification for consequence score	<p>Even though changes in age/ size/ sex structure may not be detectable yet, there is no baseline information to determine if changes have occurred. The lack of information and the probability that this subcomponent would be at greatest risk of change, resulted in a score of 80. The group recommended that this information be collected to define a baseline at this early stage of the fishery.</p>		

14.3.2 Productivity Susceptibility Analysis (PSA)

The CAB shall include in the report an MSC Productivity Susceptibility Analysis (PSA) worksheet for each Performance Indicator where the PSA is used and one PSA rationale table for each data-deficient species identified, subject to FCP v3.0 MSC Fisheries Standard Toolbox Section A4. If species are grouped together, the CAB shall list all species and group them indicating which are most at-risk.

Reference(s): FCP v2.3 Annex PF Section PF4

Applicable to the pre-assessment for PI 1.1.1 and PI 2.1.1.

Productivity attributes and scores were assessed based on literature sources. The general life-history and fishery characteristics of P1 and P2 species were discussed with stakeholders on plenary sessions during the site visit. Susceptibility attributes were also discussed and scores were assigned to each species by stakeholders.

Table 13. PSA productivity and susceptibility attributes and scores for UoA1: Orangemouth Corvina. Sources: Fishbase⁴, Gherard et al (2013).

Performance Indicator	1.1.1 (UoA1)	
Productivity		
Scoring element (species)	Orangemouth corvina (<i>Cynoscion xanthulus</i>)	
Attribute	Justification	Score
Average age at maturity	NA (Gulf Corvina, <i>Cynoscion othonopterus</i> : 2.3 years for females and 2.0 years for males) High productivity, low risk: <5 years	1
Average maximum age	N/A (Gulf Corvina: 8 years) High productivity, low risk: < 10 years	1
Fecundity	N/A (Gulf Corvina: Batch fecundity ranges from 240,394 to 1,219,342 eggs with a mean of 684,293 eggs per spawn. Gulf corvina is a multiple batch spawner with asynchronous oocyte development and indeterminate annual fecundity). High productivity, low risk: >20,000 eggs per year.	1
Average maximum size Not scored for invertebrates	129 cm TL (Males/ Unsexed) Medium productivity, medium risk: 100-300 cm	2
Average size at maturity Not scored for invertebrates	N/A (In Gulf Corvina: 29.47 cm for females and 26.75 cm for males) High productivity, low risk: <40 cm	1
Reproductive strategy	Dioecious, with external fertilization; oviparous, non-guarders, external brooders High productivity, low risk: Broadcast spawner	1

⁴ Fishbase and cited sources (<https://fishbase.se/summary/Cynoscion-xanthulus.html>)

Trophic level	4.1 ±0.7 se; based on size and trophs of closest relatives Low productivity, high risk: >3.25	3
Density dependence Invertebrates only	Not an invertebrate	N/A
Susceptibility		
Fishery Only where the scoring element is scored cumulatively	<i>Insert list of fisheries impacting the given scoring element (FCP v2.3 Annex PF4.4.3a)</i> 1) Artisanal and commercial finfish fisheries with hook and line. 2) Artisanal and commercial finfish fisheries with nets (“chinchorro”) 3) Commercial shrimp fisheries with trawl nets (“machorrito”) 4) IUU sector	
Attribute	Justification	Score
Areal Overlap	<p>The overlap of the fishing effort from all fisheries with the species concentration of the stock may be of approximately 50%.</p> <p>Fishing for Corvinas (target species) takes place on aggregations, which occur approximately twice a month (“Mareas”). The first aggregation lasts for four days, and in a month, fishers fish for 8 days.</p> <p>Stakeholders reported that these fisheries operate throughout the Biosphere Reserve and nearby areas.</p> <p>The Cucupá indigenous group fishes Corvinas in the core area of the reserve, and there is also an “illegal sector” that fishes in all areas. These groups fish during fishing aggregations and between aggregations (“mareas”). Bycatch of Corvinas in the shrimp fishery also occurs between aggregations.</p> <p>The fishing season for orangemouth Corvina goes from November to February and the fishing season for silver Corvina extends from mid-February through April, and it closes on April 30.</p> <p>Orangemouth and silver Corvinas are not harvested together; there are seasonal differences and also a finer mesh (#3) is used for silver, while a coarser mesh (#5) is used for orangemouth.</p> <p>High susceptibility, high risk: >30% overlap</p>	3
Encounterability	Stakeholders indicated that there is a high encounterability because the gears used have been designed specifically to catch the target species and they are deployed in areas and depths where Corvinas are known to aggregate. Thus, there is a high overlap between the position of the species in the water column	3

	<p>relative to the fishing gears deployed (hooks and lines, a variety of fishing nets). Also, there is a high overlap between the position of the species within the habitat (water column, demersal or bottom) relative to the position of the gears used, given that gears are deployed in generally shallow areas and nets may often touch the substrate.</p> <p>Considering this testimony and that the Corvinas are target species, there is a (default) high overlap with the fishing gear (high encounterability) and thus a high susceptibility and high risk.</p>	
Selectivity of gear type	<p>Hook and line gear is more selective than nets, and individuals smaller than size at maturity are rarely caught. Fish generally released if they are smaller than the desired size. It is likely that individuals smaller than the size at maturity can escape the hooks designed for larger fish. A low susceptibility (low risk) is assessed for hook and line gear.</p>	1
Post capture mortality	<p>Fish are generally released if they are smaller than the desired (commercial) size. This suggests that there is a probability that, if captured, (small) Corvinas would be released and would survive. However, some small fish are retained for self-consumption.</p> <p>Thus, there is evidence of some released post-capture and survival, so a medium susceptibility (medium risk) is assessed for this attribute.</p>	2
<p>Catch (weight)</p> <p>Only where the scoring element is scored cumulatively</p>	<p><i>Insert weights or proportions of fisheries impacting the given scoring element</i></p> <ol style="list-style-type: none"> 1) Artisanal and commercial finfish fisheries with hook and line (~15%) 2) Artisanal and commercial finfish fisheries with nets (“<i>chinchorro</i>”) (~50%) 3) Commercial shrimp fisheries with trawl nets (“<i>machorrito</i>”) (~10%) 4) IUU sector (~25%) <p><i>*The fisheries impacting this scoring element(s) and approximate proportions are based on input from stakeholders during the site visit.</i></p>	2

Table 14. PSA productivity and susceptibility attributes and scores for UoA2: Shortfin corvina. Sources: Fishbase⁵, Animal Diversity⁶, Gherard et al (2013).

Performance Indicator	1.1.1 (UoA2)	
Productivity		
Scoring element (species)	Shortfin corvina (<i>Cynoscion parvipinnis</i>)	
Attribute	Justification	Score
Average age at maturity	Range: 2.0-3.1 years, Average: 2.5 years for females and males ⁷ High productivity, low risk: <5 years	1
Average maximum age	10.5-12 years Medium productivity, medium risk: 10-25 years	2
Fecundity	N/A (Gulf Corvina: Batch fecundity ranges from 240,394 to 1,219,342 eggs with a mean of 684,293 eggs per spawn. Gulf corvina is a multiple batch spawner with asynchronous oocyte development and indeterminate annual fecundity). High productivity, low risk: >20,000 eggs per year.	1
Average maximum size Not scored for invertebrates	Max. length: 69 cm TL (Male/ Unsexed) Common length: 40 cm TL (Male/ Unsexed) High productivity, low risk: <100cm	1
Average size at maturity Not scored for invertebrates	N/A (In Gulf Corvina: 29.47 cm for females and 26.75 cm for males) High productivity, low risk: <40 cm	1
Reproductive strategy	Dioecious, oviparous, with external fertilization, non-guarders, external brooders High productivity, low risk: Broadcast spawner	1
Trophic level	4.5 ±0.80 se; based on food items.	3

⁵ Fishbase and cited sources (<https://www.fishbase.se/summary/3581>)

⁶ https://animaldiversity.org/accounts/Cynoscion_parvipinnis/

⁷ Ibid.

	Low productivity, high risk: >3.25	
Density dependence Invertebrates only	Not an invertebrate	N/A
Susceptibility		
Fishery Only where the scoring element is scored cumulatively	<i>Insert list of fisheries impacting the given scoring element (FCP v2.3 Annex PF4.4.3a)</i> 1) Artisanal and commercial finfish fisheries with hook and line. 2) Artisanal and commercial finfish fisheries with nets (“chinchorro”) 3) Commercial shrimp fisheries with trawl nets (“machorrito”) 4) IUU sector	
Attribute	Justification	Score
Areal Overlap	<p>The overlap of the fishing effort from all fisheries with the species concentration of the stock may be of approximately 50%.</p> <p>Fishing for Corvinas (target species) takes place on aggregations, which occur approximately twice a month (“Mareas”). The first aggregation lasts for four days, and in a month, fishers fish for 8 days.</p> <p>Stakeholders reported that these fisheries operate throughout the Biosphere Reserve and nearby areas.</p> <p>The Cucapá indigenous group fishes Corvinas in the core area of the reserve, and there is also an “illegal sector” that fishes in all areas. These groups fish during fishing aggregations and between aggregations (“mareas”). Bycatch of Corvinas in the shrimp fishery also occurs between aggregations.</p> <p>The fishing season for orangemouth Corvina goes from November to February and the fishing season for silver Corvina extends from mid-February through April, and it closes on April 30.</p> <p>Orangemouth and silver Corvinas are not harvested together; there are seasonal differences and also a finer mesh (#3) is used for silver, while a coarser mesh (#)5 is used for orangemouth.</p> <p>High susceptibility, high risk: >30% overlap</p>	3
Encounterability	Stakeholders indicated that there is a high encounter ability because the gears used have been designed specifically to catch the target species and they are deployed in areas and depths	3

	<p>where Corvinas are known to aggregate. Thus, there is a high overlap between the position of the species in the water column relative to the fishing gears deployed (hooks and lines, a variety of fishing nets). Also, there is a high overlap between the position of the species within the habitat (water column, demersal or bottom) relative to the position of the gears used, given that gears are deployed in generally shallow areas and nets may often touch the substrate.</p> <p>Considering this testimony and that the Corvinas are target species, there is a (default) high overlap with the fishing gear (high encounterability) and thus a high susceptibility and high risk.</p>	
Selectivity of gear type	<p>Hook and line gear is more selective than nets, and individuals smaller than size at maturity are rarely caught. Fish generally released if they are smaller than the desired size. It is likely that individuals smaller than the size at maturity can escape the hooks designed for larger fish. A low susceptibility (low risk) is assessed for hook and line gear.</p>	1
Post capture mortality	<p>Fish are generally released if they are smaller than the desired (commercial) size. This suggests that there is a probability that, if captured, (small) Corvinas would be released and would survive. However, some small fish are retained for self-consumption.</p> <p>Thus, there is evidence of some released post-capture and survival, so a medium susceptibility (medium risk) is assessed for this attribute.</p>	2
<p>Catch (weight)</p> <p>Only where the scoring element is scored cumulatively</p>	<p><i>Insert weights or proportions of fisheries impacting the given scoring element</i></p> <ol style="list-style-type: none"> 1) Artisanal and commercial finfish fisheries with hook and line (~15%) 2) Artisanal and commercial finfish fisheries with nets (“chinchorro”) (~50%) 3) Commercial shrimp fisheries with trawl nets (“machorrillo”) (~10%) 4) IUU sector (~25%) <p><i>*The fisheries impacting this scoring element(s) and approximate proportions are based on input from stakeholders during the site visit.</i></p>	2

Table 15. PSA productivity and susceptibility attributes and scores for Secondary Species: Tiburón mamon gray smooth-hound shark (*Mustelus californicus*).. Sources: Fishbase⁸.

Performance Indicator	2.2.1	
Productivity		
Scoring element (species)	Main Secondary species: Gray Smoothhound shark, <i>Mustelus californicus</i>	
Attribute	Justification	Score
Average age at maturity	Range: 1.3-1.9 years for males, Average: 1.6 years for males Average: 2.1 years for females High productivity, low risk: <5 years	1
Average maximum age	9 years High productivity, low risk: < 10 years	1
Fecundity	Range Northern Gulf of California: 7-16, Average: 12.5 Live bearer, Low productivity, high risk	3
Average maximum size Not scored for invertebrates	Max. length: 116 cm TL (Male/ Unsexed) Max. length: 124 cm TL (Female) Average (males+females): 120 cm Medium productivity, medium risk: 100-300cm	2
Average size at maturity Not scored for invertebrates	78.1 cm, range 61-86.2 cm Medium productivity, medium risk: 40-200 cm	2
Reproductive strategy	Dioecious, viviparous with a yolk-sac placenta, internal live bearer Low productivity, high risk: Live bearer	3
Trophic level	3.5 ±0.2 se; based on diet studies. Low productivity, high risk: >3.25	3
Density dependence Invertebrates only	Not an invertebrate	N/A
Susceptibility		
Fishery Only where the scoring element is scored cumulatively	<i>Insert list of fisheries impacting the given scoring element (FCP v2.3 Annex PF4.4.3a)</i> NOT KNOWN (N/A), only the UoAs are assessed ⁹	

⁸ Fishbase and cited sources (<https://www.fishbase.se/summary/3581>)

⁹ Estimates based on limited information provided by stakeholders at the site visit.

Attribute	Justification	Score
Areal Overlap	<p>The overlap of the fishing effort from the UoA with the species concentration of the stock may be of approximately 25%.</p> <p>Medium susceptibility, medium risk: 10-30% overlap</p>	2
Encounterability	<p>Stakeholders indicated that there is a medium overlap with hooks and lines because smoothhound sharks are regularly caught as incidental species. There is limited data to assess the volume caught or to estimate the proportion relative to the target species.</p> <p>Medium susceptibility, medium risk</p>	2
Selectivity of gear type	<p>Hook and line gear is more selective than nets, but smoothhound sharks are regularly caught in unknown numbers. It is also not known if the sharks caught are smaller or greater than the size at maturity, but considering the desirable (and maximum) size of corvinas (particularly shortfin), it is likely that sharks smaller than half the size of maturity can escape or avoid gear.</p> <p>Medium susceptibility, medium risk</p>	2
Post capture mortality	<p>Based on stakeholder comments, incidental catches, including some small fish are retained for self-consumption.</p> <p>Thus, there is limited evidence indicating that smoothhound sharks are released alive, since most bycatch is retained for self-consumption. The default score for retained species (Principle 1 or 2) is high susceptibility and high risk.</p>	3
<p>Catch (weight) Only where the scoring element is scored cumulatively</p>	<p><i>Insert weights or proportions of fisheries impacting the given scoring element</i></p> <p>Since there is no information on the targeted or incidental catch of smoothhound sharks, the proportion caught by the fisheries in the UoA area is unknown. Thus, this scoring element is not scored cumulatively.</p>	NA

Table 16. Consequence analysis (CA) and Productivity-Susceptibility Analysis (PSA) for PI 1.1.1, UoA1 (Orangemouth corvina) and UoA2 (Shortfin corvina).

Scoring element	First of each scoring element	Family name	Scientific name	Common name	Species type	Fishery descriptor	Productivity Scores [1-3]							Susceptibility Scores [1-3]				Cumulative only				MSC score	Risk Category Name	MSC scoring guideline	Consequence Score (CA)	Final MSC score (pair scoring element)		
							Average age at maturity	Average max age	Fecundity	Average max size	Average size at maturity	Reproductive strategy	Trophic level	Density Dependence	Total Productivity (average)	Availability	Encounterability	Selectability	Post-capture mortality	Total (multiplicative)	PSA Score						Catch (tonne)	Weighting
1	First	Solariidae (Urums or Uro Lyrossa on xanthulus	Urangemouth corvina	Vertebrate	Hook & Line (UoA1)	1	1	1	2	1	1	3	1.43	3	3	3	3	1.43	2.12	2032	0.15	0.30	3.13	62	Med	60-79	80	71
1		Solariidae (Urums or Uro Lyrossa on xanthulus	Urangemouth corvina	Vertebrate	Nets	1	1	1	2	1	1	3	1.43	3	3	3	3	3.00	3.32	673	0.60	1.86	3.13					
1		Solariidae (Urums or Uro Lyrossa on xanthulus	Urangemouth corvina	Vertebrate	Shrimp nets	1	1	1	2	1	1	3	1.43	3	3	3	3	3.00	3.32	1356	0.10	0.33	3.13					
2	First	Solariidae (Urums or Uro Lyrossa on xanthulus	Urangemouth corvina	Vertebrate	IUU	1	1	1	2	1	1	3	1.43	3	3	3	3	3.00	3.32	3306	0.25	0.83	3.13					
Z		Solariidae (Urums or Uro Lyrossa on xanthulus	Shortfin corvina	Vertebrate	Hook & Line (UoA1)	1	1	1	1	1	1	3	1.29	3	3	3	3	1.43	1.82	2165	0.15	0.29	3.06	65	Med	60-79	80	73
Z		Solariidae (Urums or Uro Lyrossa on xanthulus	Shortfin corvina	Vertebrate	Nets	1	1	1	1	1	1	3	1.29	3	3	3	3	3.00	3.26	7216	0.50	1.63	3.06					
Z		Solariidae (Urums or Uro Lyrossa on xanthulus	Shortfin corvina	Vertebrate	Shrimp nets	1	1	1	1	1	1	3	1.29	3	3	3	3	3.00	3.26	1443	0.10	0.33	3.06					
Z		Solariidae (Urums or Uro Lyrossa on xanthulus	Shortfin corvina	Vertebrate	IUU	1	1	1	1	1	1	3	1.29	3	3	3	3	3.00	3.26	3608	0.25	0.82	3.06					
																				MSC score			75					
																				Status			ss with conditi					

14.3.3 Scale Intensity Consequence Analysis (SICA)

The CAB should complete the Scale Intensity Consequence Analysis (SICA) table below for PI 2.5.1, if used, including rationales for scoring each of the SICA attributes.

Reference(s): FCP v2.3 Annex PF Section PF8

Applicable to the pre-assessment for PI 2.5.1.

Stakeholders were divided into two workgroups at the end of the 2nd day of the site visit to carry out a SICA for PI 2.5.1 (Ecosystem outcome) for the finfish fisheries of the UGC (including the three UoAs). Each group was formed with diverse participants from different organizations. MAREM provided pre-existing maps of the UOA area and a representative from each group presented their results, noting the areas discussed on the maps. Each group also explained their SICA results. Unfortunately, a plenary discussion did not occur due to time constraints during the site visit, so a consensus was not reached to complete a final SICA scoring template. The preliminary (by group, in Spanish) and translated and amended SICA results are provided below.

Figure 13. Group 1- SICA scoring template for PI 2.5.1 Ecosystem outcome (original in Spanish).

Grupo 1

4. ANÁLISIS DE CONSECUENCIAS DE ESCALA E INTENSIDAD (SICA)

Table PF19: Plantilla SICA para la puntuación del indicador PI 2.5.1 Ecosistema

Indicador PI 2.5.1 Estado del Ecosistema	Escala espacial de la actividad	Escala temporal de la actividad	Intensidad de la actividad pesquera	Subcomponentes Relevantes	Puntuación de Consecuencia
Nombre de la pesquería y UoA	4 ó 5	5	3	* Composición de especies *	
				Composición del grupo funcional	
				Distribución de la comunidad	
				Tamaño/ Estructura Trófica	
Justificación de la escala espacial de la actividad pesquera	Considerando la cobertura de la pesca que ocurre en las especies de corvinas amarilla y plateada tanto de la pesca industrial (arrastre camarero), pesca ribereña (línea de camarero, chaueros, sierreros) y adicionalmente la pesca dirigida a las corvinas con red y con línea anzuelo puel				
Justificación de la escala temporal de la actividad pesquera	Industrial Oct - Mayo Ribereña Camaron Sep - Mayo Chaueros Sept - Junio Sierreros Sept - Junio Finalmente acumulativo ± 10 meses en los diferentes sistemas de pesca				
Justificación de la intensidad de la actividad pesquera	Moderado Obviamente detectable a nivel local y a nivel escala es variable mayo				
Justificación de la puntuación de consecuencia					

Table 17. Group 1- SICA scoring template for PI 2.5.1 Ecosystem outcome (translated to English and amended).

Performance Indicator PI 2.5.1 Ecosystem outcome	Spatial scale of fishing activity	Temporal scale of fishing activity	Intensity of fishing activity	Relevant subcomponents	Consequence Score
	4-5	5	3	Species composition	60
				Functional group composition	
				Distribution of the community	
				Trophic size/structure	
Justification for spatial scale of fishing activity	<p>All fisheries in the UGC impact coastal fish. Several fisheries take place in the UoA areas where corvinas and croakers are fished. These include the industrial (shrimp trawlers), coastal/artisanal (shrimp liners, croaker and mackerel fisheries), as well as the fisheries targeting corvinas and croakers with nets (chinchorros) and handlines.</p> <p>The scale selected is between 31-45% (4) and 46-60% (5).</p>				
Justification for temporal scale of fishing activity	<p>Fishing seasons:</p> <p>Industrial shrimp- October-March</p> <p>Coastal/ artisanal shrimp- September-March</p> <p>Croaker and mackerel- September-June</p> <p>The cumulative temporal scale for all fisheries operating in the area of the UoAs is approximately 10 months including the different fishing systems.</p> <p>Scale: 201-300 days per year (5).</p>				
Justification for intensity of fishing activity	<p>Moderate detectable intensity (3) at the local (UoAs level), but at a greater scale, the intensity is variable.</p>				
Justification for consequence score	<p>The group selected Species Composition as the most relevant subcomponent impacted by the fisheries. The group didn't assign a consequence score, but they discussed the changes in species composition that have resulted from intense fishing activities in the area, including the risk of loss of some endemic and endangered species (eg., Vaquita and Totoaba). This is an area of high endemism,</p>				

and the presence of ETP species has warranted the establishment of the Biosphere Reserve of the AGC. Based on this and on the scale and intensity of all fishing activities in the area, a score of 60 may be appropriate.

A score of 60 means that there are detectable changes in the community species composition without loss of function. Changes in species composition up to 10%. Time to recover from impact on the scale of several to 20 years.

Figure 14. Group 2- SICA scoring template for PI 2.5.1 Ecosystem outcome (original in Spanish).

Grupo 2

4. ANÁLISIS DE CONSECUENCIAS DE ESCALA E INTENSIDAD (SICA)

Table PF19: Plantilla SICA para la puntuación del indicador PI 2.5.1 Ecosistema

Indicador PI 2.5.1 Estado del Ecosistema	Escala espacial de la actividad	Escala temporal de la actividad	Intensidad de la actividad pesquera	Subcomponentes Relevantes	Puntuación de Consecuencia
Nombre nde la pesquería y UoA	= 2	= 3	Red = 1 Anchura = 1	Composición de especies Composición del grupo funcional Distribución de la comunidad Tamaño/ Estructura Trófica	= 100
Justificación de la escala espacial de la actividad pesquera	Se considera del 1-13 ha ya en contrastada el el área del AGC de N10 Distribuida en todo el espacio				
Justificación de la escala temporal de la actividad pesquera	Se entera en se pesca 10 días de cada mes, considerando en la temporada de 4 meses Semestral - trimestral				
Justificación de la intensidad de la actividad pesquera	Definido el esfuerzo con anzuelo es menor respecto a SF el esfuerzo se entera más a cambio, pero en AGC no más clara la presión de curuna Bolo esfuerzo pesquero				
Justificación de la puntuación de consecuencia					

Table 18. Group 2- SICA scoring template for PI 2.5.1 Ecosystem outcome (translated to English and amended).

Performance Indicator PI 2.5.1 Ecosystem outcome	Spatial scale of fishing activity	Temporal scale of fishing activity	Intensity of fishing activity	Relevant subcomponents	Consequence Score
	2	3	Nets: 4	Species composition	
				Hook and Line: 1	Functional group composition
			Hook and Line: 1	Distribution of the community	
				Trophic size/structure	100
Justification for spatial scale of fishing activity	The fishing activity for the UoAs (hook and line for corvinas and croakers) is considered of a scale of approx.15% of the total AGC area. However, fishing activity including other fisheries (nets, trawls) is distributed over the whole area.				
Justification for temporal scale of fishing activity	It is calculated that fishing activity occurs 10 days per month, and the fishing season lasts for 4 months. The scale is of approximately 40 days per year. Scale 3: 1-100 days per year.				
Justification for intensity of fishing activity	Defined as score 1 for fishing effort exerted with hook and line; it is greater for nets (score 4). In San Felipe effort is focused more on shrimp (score of 1 for the UoAs), but in the Gulf of Santa Clara, the corvina fishery is more apparent. The conclusion is that there is low fishing effort for the UoAs (hook and line), so the level of intensity is negligible.				
Justification for consequence score	The group selected Trophic size/ structure as the most relevant subcomponent impacted by the fisheries. Given that the hook and line gear deployed in known areas and depths is highly selective (for species and sizes), impact over the long term on this subcomponent may be important. However, at this time changes that affect the internal dynamics are unlikely to be detectable against natural variation, and the group assigned a consequence score of 100.				

General conclusion on SICA analyses

The two groups clearly had major differences in their perspectives, which resulted in significantly different scores for impacts on the Ecosystem. Group 1 had a more comprehensive view of the impact from all the fisheries operating in the UGC that overlap with the UoAs and thus considered cumulative impacts in their assessment. Their scores resulted in relatively high impacts on all the ecosystem subcomponents. The group selected species composition as the most vulnerable subcomponent and also gave it a low score, considering that there is a loss in species composition but no major changes in function at this time.

Group 2 focused more on the impacts on the Ecosystem from the hook and line fisheries (UoAs), which were considered, in general, as low impact to the Ecosystem. The group acknowledged that other fisheries (nets) produce greater impacts. The trophic size/structure was considered the most vulnerable subcomponent of the Ecosystem, but was assessed as having low impact at this time.

The time allocated to SICA analyses during the site visit was not sufficient for a plenary discussion and consensus on final SICA scores for PI 2.5.1. While both group's perspectives are valid, Group 1 was more precautionary and comprehensive in their approach, but Group 2 did focus on the impacts on the AGC by the UoAs and therefore the SICA scores from this group are used in the overall assessment of Ecosystem impacts. The FIP group is encouraged to continue this conversation to determine the scores that the entire group considers most feasible, incorporating information available from the Biosphere Reserve and also while ecosystem monitoring is implemented and direct information is collected from the UoAs.

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