

# **Mexico Baja California**

## **Red Rock Lobster Fishery**

### **2nd Surveillance Audit Report**

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*F-SCS-0100*

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## Glossary

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BCS	<i>Baja California Sur</i>
Bmin	Minimum Biomass
BMSY	biomass at maximum sustainable yield
CAB	Certification Assessment Body
CAP	Client Action Plan
CONANP	<i>Comisión Nacional de Áreas Naturales Protegidas</i> (National Commission of Natural Protected Areas)
CONAPESCA	<i>Comisión Nacional de Pesca y Acuacultura</i> (National Commission of Fish and Agriculture)
CR	Certification Requirements
DOF	Diario Oficial (Official Gazette)
FAM	Fisheries Assessment Methodology v2.1
FCR	Fisheries Certification Requirements (V2.0)
FEDECOOP	<i>Federación Regional de Sociedades Cooperativas de la Industria Pesquera Baja California, F.C.L</i>
HCR	Harvest Control rule
INAPESCA	<i>Instituto Nacional de la Pesca</i> (National Fisheries Institute)
LGEEPA	<i>Ley General del Equilibrio Ecológico y la Protección al Ambiente</i>
LGPAS	<i>Ley General de Pesca y Acuacultura Sustentables</i> (General Law for Sustainable Fishing and Aquaculture)
LRP	Limit Reference Point
MSC	Marine Stewardship Council
MSY	Maximum Sustainable Yield
MT	Metric Ton
NGO	Non-Governmental Organization
NOM	<i>Norma Oficial Mexicana</i>
PI	Performance Indicator
POA	Annual Operative Program
PROFEPA	<i>Procuraduría Federal de Protección al Ambiente</i>
RBF	Risk Based Framework
SAGARPA	<i>Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación</i> (Secretariat of Agriculture, Livestock, Fisheries and Food)
SCS	SCS Global Services
SIAP	Agriculture and Fishery Information Service
TAC	Total Allowable Catch
TL	Total length
UoA	Unit of Assessment
UoC	Unit of Certification

## 1 General Information

<b>Fishery name</b>	Mexico Baja California Red Rock Lobster Fishery		
<b>Unit(s) of assessment</b>	<p>Red rock lobster (<i>Panulirus interruptus</i>) caught by wire traps by the 9 Cooperatives in the <i>Federación Regional de Sociedades Cooperativas "Baja California"</i></p> <p>The red rock lobster caught by the UoA is part of a metapopulation that ranges from Southern California, USA, south to the Baja California Peninsula tip in Mexico. The stock harvested by the UoA is a self-sustaining unit from the metapopulation which can be managed independently.</p>		
<b>Date certified</b>	30 Dec 2016	<b>Date of expiry</b>	30 Dec 2021
<b>Surveillance level and type</b>	Level 6/normal- onsite		
<b>Date of surveillance audit</b>	November 26-27, 2018		
<b>Justification</b>	NA- within 1 month of the certificate anniversary date		
<b>Surveillance stage (tick one)</b>	1st Surveillance		
	2nd Surveillance	x	
	3rd Surveillance		
	4th Surveillance		
	Other (expedited etc)		
<b>Surveillance team</b>	<p>Lead assessor: Dr. Carlos Alvarez Flores</p> <p>Assessor(s): Mrs. Jennifer Humberstone</p>		
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## 2 Executive Summary & Conclusion

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This report summarizes the findings from the 2018 second surveillance audit of the Mexico Baja California Red Rock Lobster Fishery. This fishery has previously undergone full MSC assessment and two re-assessments. The full assessment was completed in April 2004 by Dr. Bruce Phillips, Dr. Daniel Lluch Belda and Dr. Arturo Muhlia using the Fisheries Certification Methodology version 3. The re-assessment was completed in June 2011 by Dr. Oscar Sosa-Nishizaki, Dr. Daniel Lluch Belda and Dr. Sabine Daume, using MSC FAM V2.1. The second re-assessment was completed in 2016, conducted by Dr. Carlos Alvarez Flores and Ms. Sandra Andraka using the MSC CRV1.3. This first and second annual surveillances were conducted by Dr. Carlos Alvarez Flores and Mrs. Jennifer Humberstone.

The 2018 second annual surveillance audit focused on any changes since the 1<sup>st</sup> surveillance audit and monitoring of continued compliance with the MSC Principles and Criteria. The fishery received seven conditions in the 2016 re-assessment (1.1.2b, 1.2.2a, 1.2.2b, 2.1.3d, 2.2.3, 3.2.4a, 3.2.4b). Conditions on Principle 1 pertain to the definition of explicit reference points and a harvest control rule, Principle 2 conditions pertain to information on bait and shark bycatch, and Principle 3 conditions pertain to a research plan and sharing and implementation of results. Condition 3-1 on PI 3.2.4a was closed at the first annual surveillance.

In this year's second annual surveillance report, the assessment team evaluated expected outcomes of open conditions against the second annual surveillance milestones and remedial actions for those milestones that were found to be behind target during the first surveillance audit. Remedial actions were found to be fulfilled for all conditions that were placed behind target in Year 1, but two of three P1 related conditions were found to be behind target relative to the Year 2 milestone. Conditions 2-1 and 3-2 on were closed on time (See Results Section and revised rationales in Appendix 1).

Prior to, during, and following the onsite visit the assessment team received documentation from the fishery client group (FEDECOOP) and government (INAPESCA) regarding updates to the fishery and progress on conditions. The onsite meetings were well attended with representatives of the fishery cooperatives, INAPESCA, and CONANP. An additional 100+ stakeholders were notified of the surveillance audit, but no additional fishery stakeholders submitted comment or expressed interest in attending the onsite meeting.

Based on the evidence reviewed in the course of the surveillance audit, it is SCS's view that the Mexico Baja California Red Rock Lobster Fishery continues to meet the standards of the MSC and complies with the 'Requirements for Continued Certification.' SCS recommends the continued use of the MSC certificate through to the end of this certificate cycle, pending continued positive findings at each annual surveillance audit.

However, there are several areas where remedial actions have been deemed necessary, due to a lack of requisite progress against the Year 2 milestones on conditions 1-1 and 1-2. Based on the progress and trajectory of actions taken by the client over the previous year, the assessment team deemed it appropriate to revise milestones to account for a revised plan of action, while maintaining overall

condition timelines. These changes, and revised client actions as planned, are indicated in the results tables. In addition, a recommendation was added in relation to PI 1.2.4, on the basis of potential issues identified in the exploration of assessment methods presented to the assessment team at this annual audit and anticipating a re-evaluation of this PI with finalized proposed reference points and HCR.

In addition, SCS recommends that the client seek to provide more documentation 2-4 weeks prior to the onsite meeting, in order to allow for additional time for document clarification and additional requests that may support more positive assessment outcomes.

**Table 1. Summary of Assessment Conditions**

Condition number	Performance indicator (PI)	Status	PI original score	PI revised score
1-1	1.1.2(b)	Behind Target	75	NA
1-2	1.2.2 (a)	Behind Target	65	NA
1-3	1.2.2(b)	On Target	65	NA
2-1	2.1.3 (d)	Closed Year 2	75	80
2-2	2.2.3	On Target	70	NA
3-1	3.2.4 (a)	Closed Year 1	60	80
3-2	3.2.4 (b)	Closed Year 2	60	80

### 3 Background

The assessed fishery for the red rock lobster (*Panulirus interruptus*) occurs from Cedros Island in Baja California through Punta Abreojos in Baja California Sur (Table 2, Figure 1). Members of the nine fishing cooperatives in the UoC are distributed in at least ten villages in the fishing area and produce approximately 80% of the catch of this species in the region. Fishing methods include 5-7 m long fiberglass boats equipped with 60-115 Hp outboard motors. The crews (2-3 fishermen) participate in setting out wire traps, which are fitted with biodegradable staples and escape gaps to allow sub-legal lobster to escape and to avoid ghost fishing. The boats are also equipped with hydraulic or mechanic winches. Once caught, lobsters are kept alive for a few days in special floating wooden containers called *recibas*. Live lobsters are transported by boat to landing spots and then transported by land to reception centers distributed along the coast. One cooperative may have several landing points but only one reception center and fishers from one cooperative will not deliver catch at landing points from other cooperatives. Most of the catch is sold alive; however, some are steam-cooked whole, packed in boxes and frozen or processed as frozen lobster tails. The main market for Baja California red rock lobster is Asia. The lobsters are taken under bond to San Diego and Los Angeles, and then shipped mainly to China and Vietnam and in smaller volumes to Taiwan and Hong Kong.

The scope and nature of the fishery remains unchanged since the most recent re-assessment.

**Table 2. Unit of Assessment (UoA) and Unit of Certification (UoC).**

Units of Assessment: Defined as the species, location and gear assessed	
<b>UoA: Species</b>	Red rock lobster ( <i>Panulirus interruptus</i> )
<b>UoA: Geographical Area (Local Population Unit within larger metapopulation)</b>	From Cedros Island in Baja California through Punta Abreojos, Baja California Sur
<b>UoA: Gear Type</b>	Wire Traps
<b>Further information: Stock (overall biological metapopulation)</b>	The metapopulation ranges from Southern California, USA, south to the Baja California Peninsula tip in Mexico. The stock harvested by the UoA is a self-sustaining unit from the metapopulation which can be managed independently.
<b>Further information: Management System</b>	CONAPESCA-The National Commission on Aquaculture and Fisheries in Mexico ( <i>Comisión Nacional de Acuacultura y Pesca</i> )
<b>Client Group</b>	<i>Federación Regional de Sociedades Cooperativas "Baja California"</i> (FEDECOOP)
<b>Fishers in the UoC for the assessed Geographical Area.</b>	9 Cooperatives in the <i>Federación Regional de Sociedades Cooperativas "Baja California"</i>
<b>Other Eligible Fishers that may join the certificate for the chosen stock</b>	There are no other eligible fishers



**Figure 1. Concession areas for the nine FEDECOOP cooperatives under assessment. From McCay, 2014.**

Three government agencies are primarily responsible for the management of the Mexican red rock lobster fishery. CONAPESCA is the administering entity of SAGARPA (*Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación*), a unit of the Federal Executive Branch of the Government of Mexico, and the agency responsible for administering the fisheries and aquaculture legislation in Mexico. INAPESCA is the research arm of the fisheries management authority, CONAPESCA (*Comisión Nacional de Acuacultura y Pesca*), and provides data used to make management decisions. CONAPESCA is responsible for creation and implementation of regulations related to permitting, harvest controls and closures. PROFEPA (*Procuraduría Federal de Protección al Ambiente*), the federal agency responsible for environmental protection, is the enforcement agency operating under the legal framework of the General Law for Sustainable Fishing and Aquaculture (LGPAS) and the General Act of Ecological Balance and Environmental Protection (LGEEPA-1996).

**Table 3. TAC and Catch Data**

TAC	Year	NA*	Amount	NA*
UoA share of TAC	Year	NA*	Amount	NA*
UoC share of TAC	Year	NA*	Amount	NA*
Total green weight catch by UoC	Year (most recent)	2017/2018	Amount	1,332,577 kg
	Year (second most recent)	2016/2017	Amount	843,833 kg

\*The fishery is not managed with a TAC system.



## 3.1 Updates on Scientific base of information

### 3.1.1 General Research System

The INAPESCA has not made major changes to their research program, however, Armando Vega-Velazquez was replaced by Dr. Juan Gabriel Diaz-Urbe as Director of the Regional Center in La Paz.

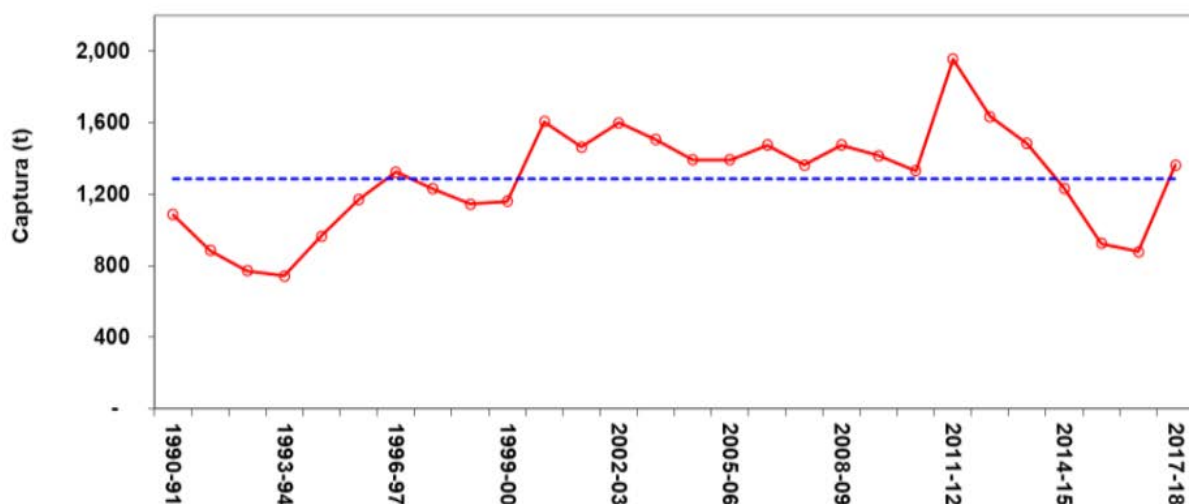
The INAPESCA Regional Center in La Paz provided a modified regular Annual Operative Program (POA; INAPESCA 2016) that now has a structure and content that better fits the requirements in CR CB4.10.3 “a written document that includes a specific research plan for the fishery under assessment, relevant to the scale and intensity and the issues requiring research”. At the second annual audit, the team received more information regarding the Pacific-wide lobster research program, which covers the four main species of lobster: Langosta roja (*Panulirus interruptus*); Langosta azul (*Panulirus inflatus*); Langosta verde (*Panulirus gracilis*); Langosta de Revillagigedo (*Panulirus penicillatus*). Work from this group overall informs and guides updates to management regulations and management plans. For further detail on scoring related to the research program, see the Results Section.

### 3.1.2 Stock Status and Management

#### Catch

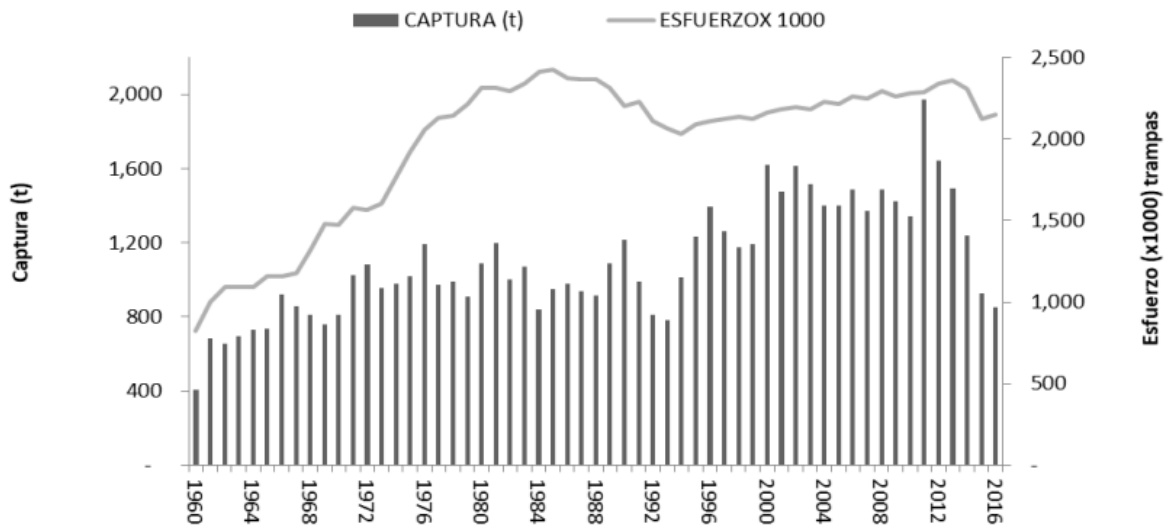
Species composition in the catch continues showing a strong predominance of red rock lobster. In the period of 2004 to 2017 it was estimated that only 11 t of blue lobster were obtained representing 0.75% of the total catch in the UoA region. No catch of green lobster has been recorded in the area.

The catch of the red rock lobster in the west coast of Baja California declined from 2011 until 2017 to a low 843.8 tons, with catches in seasons 2014/15 to 2016/17 lower than the historical average, and then recover to 1,332.5 tons, located above the average (Figure 2).



**Figure 2. Trend and variability in the production of red lobster in the central region off the west coast of the Baja California Peninsula. The red line represents the average (1,285 mt) from 1990/91 to 2017/18. Reproduced from Vega-Velazquez et al. (2018).**

Observing the trend in effort compared to historical catch (Figure 3), it is noteworthy that effort more than doubled from the mid 60s to the early 90s during the period of low catch. During that period, while effort continued increasing until the mid 80s, the catch remained relatively stable at an approximate average of 900 t, suggesting abundance steadily declined. From the mid 80s to the mid 90s effort declined about 20%. Effort from the mid 90s to about 2013 increased approximately 15% while the catch increased and remained high at an approximate average of 1,400 t, with a historical high close to 2,000 t. Overall, while catch in the second half of the time series was on average more than 50% larger than in the first half, effort was never higher in the second half, indicating that abundance increased notably. In season 2017/18 effort was close to the previous season while the catch increased by nearly 58% (Table 4).



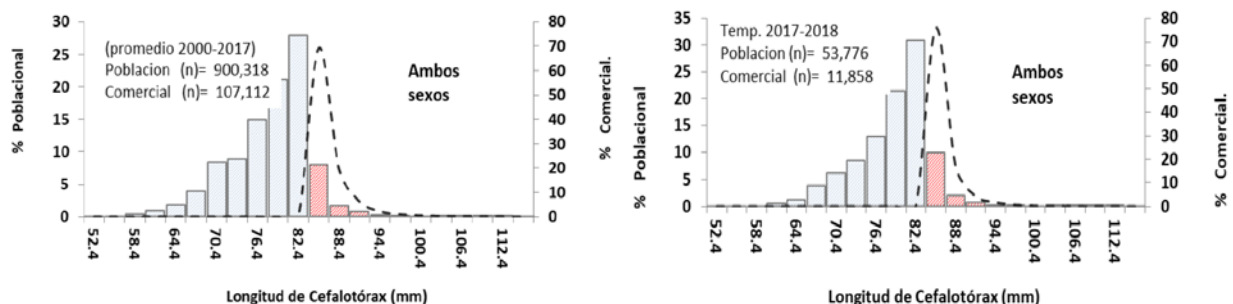
**Figure 3. Trends in catch and effort in the fishery of red lobster in the central region off the west coast of the Baja California Peninsula (area of the UoC). The X axis presents the first year of the season. Reproduced from Camacho-Bareño et al. (2017).**

**Table 4. Catch and effort in the fishery for red lobster in the central region of the Baja California Peninsula. Catch in mt, effort in traps lifted. Data provided by FEDECOOP.**

Cooperative	2015/2016		2016/2017		2017/2018	
	Total catch	Total effort	Total catch	Total effort	Total catch	Total effort
Pescadores Nacionales de Abulón	94.6	223,345	71.5	199,574	136,181	207,708
Buzos y Pescadores	109.8	135,595	71.0	166,346	119,536	197,488
La Purísima	205.0	334,812	164.5	382,108	249,888	346,574
Bahía Tortugas	83.4	181,093	90.5	206,515	175,316	196,054
Emancipación	66.8	242,138	70.7	242,617	103,962	245,813
California de San Ignacio	35.3	84,523	37.4	101,576	76,486	108,087
Leyes de Reforma	59.1	144,920	86.5	155,725	139,762	160,037
Progreso	92.4	267,953	112.1	285,480	156,126	344,397
Punta Abreojos	147.6	241,296	140.0	274,191	175,321	282,436
<b>TOTAL</b>	<b>893.9</b>	<b>1,828,675</b>	<b>843.8</b>	<b>2,014,132</b>	<b>1,332.5</b>	<b>2,088,594</b>

#### Stock Assessment

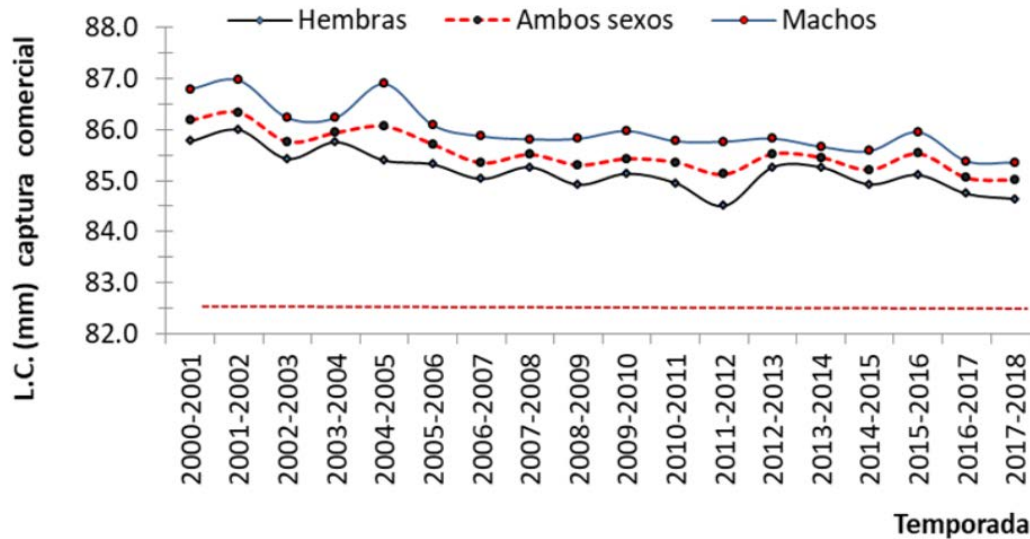
Results of the stock assessment indicate that the size distribution of males and females, both in the population and the commercial catch of the 2016/17 season remains very similar to the trend from 2000 to 2017 (see Figure 4 for the female distributions).



**Figure 4. Size distribution in the population (bars) and the commercial catch (broken line) of female red lobsters in the central region of the Baja California Peninsula. Left, historic average; right, season 2017-18. Reproduced from Vega-Velazquez et al. (2018).**

Overall, the trend in average size has been stable since season 2006-07, and although males may be declining slightly, average size in the catch is well above the legal size (Figure 5).

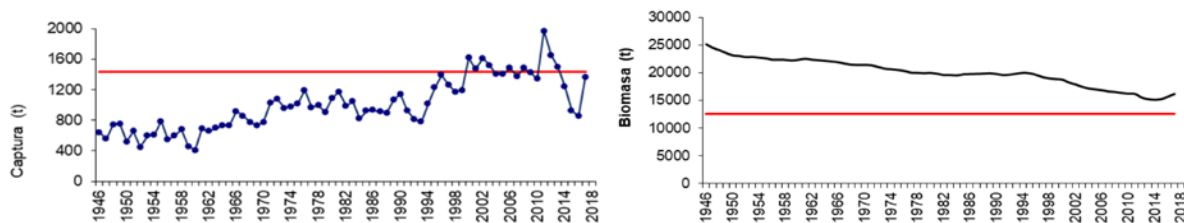
The biomass trend predicted with a logistic model is consistent with the previous observations (see above) derived from the trends in catch and effort (Figure 6). The biomass declined from 1960 to the early 90s as effort increased while the catch remained relatively stable during the 70s and 80s. After season length restrictions were implemented in the mid 90s biomass and catch increased. This approach to estimate population parameters adds probability distributions for some parameters such as  $B_0$ ,  $r$  and  $MSY$ . There appears to be considerable uncertainty around  $r$ .



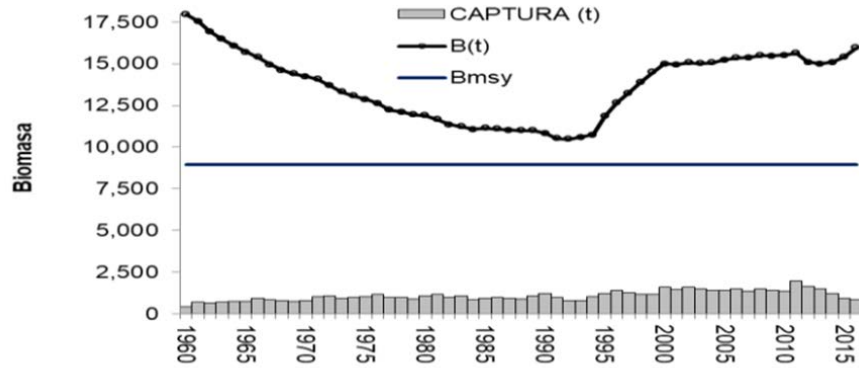
**Figure 5. Average size of red rock lobster in the commercial catch in the central region of BC. Males in blue line, Females in black and both sexes combined in broken line. Vega-Velazquez et al. (2018).**

In the development of new proposed reference points, INAPESCA explored alternative models to assess the red rock lobster stock, and these were summarized in a report presented to the assessment team. These results are summarized here and note where inconsistencies across model outcomes and relative to previous assessments merit further investigation. See also Recommendation 1-1 in the Results Section.

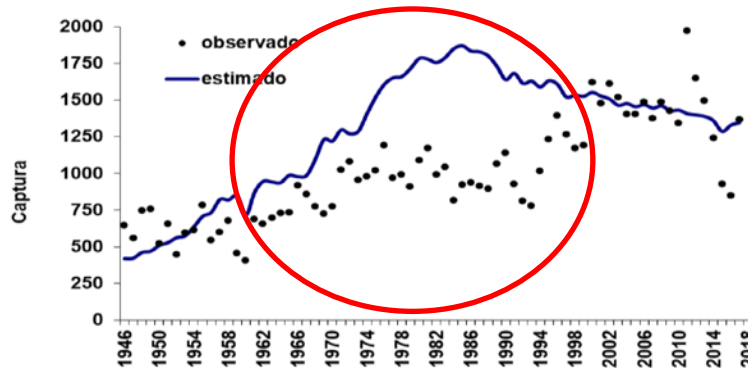
It is noteworthy that the predicted biomass in the latest report shows an almost constantly declining trend from the beginning of the series to the end (Figure 6, right), which contrasts with the decline until the mid 90s and further recovery estimated in the last year's assessment (Figure 7; Camacho-Bareno et al 2017). This difference should be further investigated, particularly with regards of the potential influence of a poor fit of the logistic model predicted catch to observed catch (Figure 8).



**Figure 6. Observed catch compared to estimate of MSY in red (left) and model predicted biomass (right) compared to Bmsy in red estimated with a logistic model (bars) in the fishery of the red lobster off the central region of the Baja California Peninsula. Reproduced from Vega-Velázquez et al. (2018).**



**Figure 7. Biomass trend as predicted with a logistic model (line and dots) and catch history (bars) in fishery of red lobster off the central region of the Baja California Peninsula. The blue line represents the biomass estimated to produce the MSY. Reproduced from Camacho-Bareño et al. (2017).**



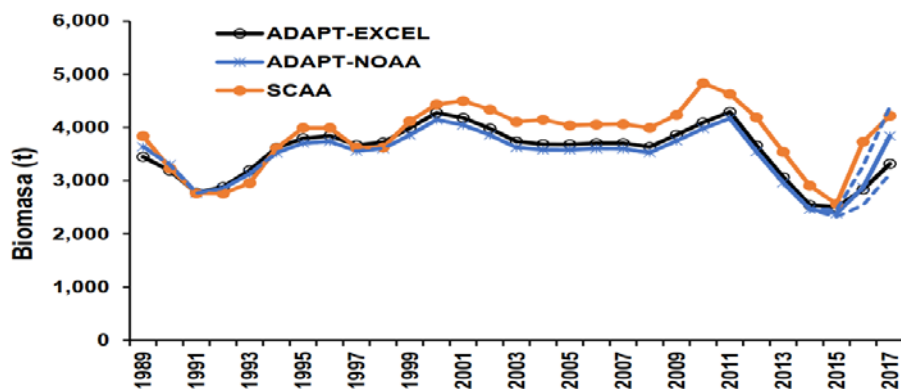
**Figure 8. Catch predicted with a logistic model (blue line) fit to a time series of catch records of red rock lobster in the Baja California Peninsula. Reproduced from Vega-Velázquez et al. (2018). Red oval by surveillance audit team highlights area of poor fit of the model to catch records.**

The stock assessment estimated management parameters using the logistic model are shown in Table 5. According to this approach, all MSY related indicators indicate that no overfishing is taking place and that the stock is not depleted.

**Table 5. Management parameters estimated with a logistic model in the red lobster fishery in the central region of the Baja California Peninsula. With data from Vega-Velázquez et al. (2018).**

Parameter	Current Value	Value at MSY	Current/MSY ratio
Biomass (t)	15,488	12,567	1.23
Catch (t)	1,176	1,433	0.82
Harvest Rate (U)	0.076	0.114	0.66
Fishing Mortality Rate (F)	0.076	0.114	0.66
Effort (f)	2,223	2,940	0.76

The population status was also estimated using models with different levels of complexity and structure. Results of analyses with different models appear to show differences in predicted biomass which either require clarification or would suggest considerable model-related uncertainty. Differences between aggregated models and models with structure are yet to be explained and resolved (Compare Figure 6 and Figure 9).



**Figure 9. Biomass of red lobster in the central region of the Baja California Peninsula estimated using different structured models. Reproduced from Vega-Velázquez et al. (2018).**

Overall results of the stock assessment are optimistic if the average fishing mortality rate and biomass from 2013 to 2017 are presented in a Kobe plot structure (Table 6). These indicators fluctuate around the MSY based reference points. However, all indicators based on the spawning potential ratio (SPR) suggest that the stock is under the reference value of 35%. The authors dismiss this issue considering that the catch is well above the size of reproductive maturity.

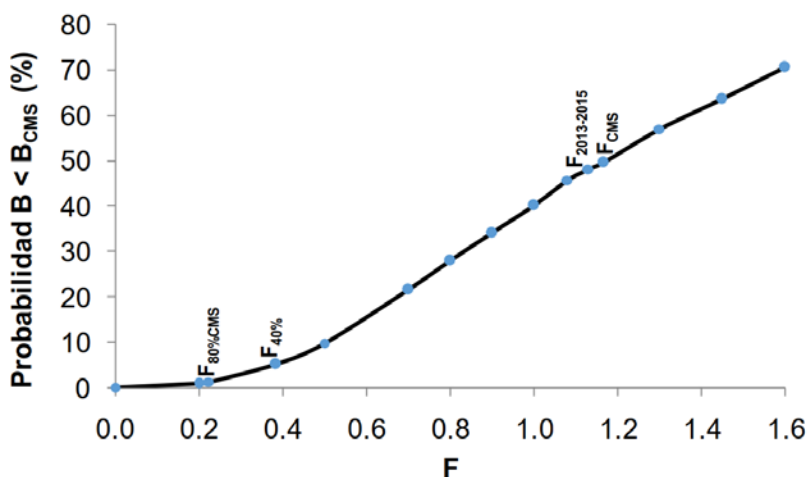
This inconsistency should also be investigated further.

**Table 6. Management parameters for the red rock lobster fishery in central Baja California, based on different model approaches. Reproduced from Vega-Velázquez (2018).**

Método	F/F <sub>CMS</sub>	B/B <sub>CMS</sub>	TPD (%)	Leyenda en diagrama de Kobe
Dinámico Biomasa Schaefer	0.68	1.32	-	DBS
Curva Captura - RPR machos	0.64	1.11	-	RPR m
Curva Captura - RPR hembras	0.74	1.07	12	RPR h
Jones-Thomson y Bell machos	1.07	0.97	-	JTB m
Jones-Thomson y Bell hembras	0.52	1.22	23	JTB h
ADAPT-EXCEL	0.86	0.98	21	AD-EX
ADAPT-NOAA	0.87	1.01	14	AD-NO
SCAA	0.60	1.12	21	SCAA

The stock assessment recommends that effort not be increased despite the estimated stock status above the level producing MSY. The assessment also recommends considering the inclusion of an upper size limit to increase the reproductive potential.

The stock assessment also includes representation of the uncertainty associated to the expected biomass if  $F$  is  $F_{msy}$ . As expected, the probability distribution indicates that there's almost a 50% chance that current biomass would be under  $B_{msy}$  if  $F = F_{msy}$ . Average estimated  $F$  from 2013 to 2015 produce a similar expectation about the biomass, whereas a reduction of 40% in  $F$  ( $F_{40msy}$ ) or 80% ( $F_{80msy}$ ) have a probability lower than 10% that the stock is under  $B_{msy}$  (Figure 10).



**Figure 10. Cumulative probability distribution of risk that the stock biomass of red rock lobster in central Baja California would be under  $B_{msy}$  under alternative management policies. Reproduced from Vega-Velázquez et al. (2018).**

### 3.1.3 Monitoring of Ecosystem Impacts

The logbook system, designed by INAPESCA and FEDECOOP, records data on retained and bycatch species, including species used for bait. Tropical lobsters are noted in the catch column along with red rock lobsters, at species level. From the 2011/12 season to date, the client has provided evidence of the use of the logbooks to report interactions with non-target species. At the start of the non-target monitoring program, the agreed sampling effort was to record data for at least one “lobster fishing team” (*equipo langostero*) which included vessel and traps, per cooperative and fishing area on one fishing trip each month. Sampling involved review of the logbook information that is recorded for all trips. There are cooperative technicians that report these data to FEDECOOP on a monthly basis as part of the regular fishery monitoring system. In response to conditions on the re-assessment, 100% of logbooks are now being reviewed and compiled by technicians for reporting to FEDECOOP.

#### Monitoring Program Challenges in the Re-assessment

During the re-assessment it was noted that some records contain species level details while others records only record detail to species groups, and they are not recording whether organisms encountered were retained, discarded, dead, or alive. There was historically no standardized data recording process to assure consistent resolution of information between cooperatives. In logbooks, the “observations” column is used to report “incidental catch” but in wide categories such as fish, sharks,

birds, etc., without specifying the species or the destination of the catch. A lack of reporting of species level information, for bait species 'sardines' in particular precludes a characterization of 'main' species with a high degree of certainty. Species have traditionally been recorded in numbers.

In addition to the fishery dependent reporting, the re-assessment team reviewed data from the 2006/07 season in a study conducted by Shester (2008) for his doctoral dissertation, whose purpose was to cover some information gaps found in the first evaluation. The findings of Shester vary significantly from the annual fishery data, with overall greater estimations of bycatch, particularly of cormorants. Due to this discrepancy and the deficiencies in the ongoing fishery dependent monitoring, conditions were placed on the main species to improve the consistency and depth of reporting by fishers.

#### Updates to the Monitoring System

At the first annual surveillance, a sample of hard copies of logbooks from 6 of the 9 cooperatives were provided upon request of the assessment team. The logbooks indicated inconsistent progress in terms of more detailed reporting, where some, but not all, reported the fate of sharks incidentally caught. In regards to shark post-capture status, the client also submitted a video demonstrating the live release of sharks by FEDECOOP fishers. The assessment team noted that there was some inconsistency between cooperatives in the logbook form being used, as INAPESCA has been testing modifications to the official forms. There was no apparent progress in recording bait species either caught or purchased.

As of the 2016/2017 fishing season, bycatch has been recorded in weight (kg) instead of numbers, and as noted above, logbooks are no longer being 'sampled', but rather 100% of logbook data is being collected by each cooperative and reported to FEDECOOP. Weights were estimated by each cooperative using samples from their respective plants, and scientific names are included in reporting. This provides the assessment team the ability to evaluate the entire catch composition for Principle 2 evaluation, including lobster, bycatch, and bait, by weight, as appropriate for the MSC process (Table 7).

At the second annual surveillance, bycatch information from the 2017/2018 fishing season was provided, as well as samples of logbooks from 5 cooperatives. In addition to the improvements noted in the first surveillance audit, detail as to whether the species is retained or discarded was provided. Bycatch that is used as bait is reported separately.

There is additional management in place now for blue lobster (*langosta azul*), with a minimum and maximum size now established. Blue lobster is now being reported with other bycatch and is only caught by cooperatives at the southern extent of the UoA. Volumes do not suggest that blue lobster (or any other bycatch species) classifies as Main.



**Table 7. Catch information from the 2016/2017 & 2017/2018 fishing seasons. Compiled from information provided by FEDECOOP (Ramade-Villanueva et al 2017, 2018; Ramade-Villanueva, pers. comm).**

Type	2016/2017		2017/2018	
	Weight (Kg)	Percentage of Total	Weight (Kg)	Percentage of Total
Red rock lobster	843,833	20.8%	1,332,577	27.24%
Other lobsters	22,927	0.6%	23,869*	0.49%
Bycatch	57,977	1.4%	70,990	1.45%
Bait	3,131,347	77.4%	3,411,706	70.82%

\*blue lobster only

### 3.1.3.1 Retained Species: Bait

#### Background

Bait in the fishery is obtained from two sources: (1) bycatch from the lobster fishery and (2) other fisheries occurring within the area of the unit of assessment. To date, information has been insufficient to allow estimation of the contribution of each of these sources.

FEDECOOP has used the generic “sardine” term for a category of bait that groups several small pelagic species, including Pacific sardine, anchoveta, mackerel, thread herring and others. The vast majority of bait utilized in the red rock lobster fishery are “sardines”, and data presented from 2016/2017 confirms that this trend persists (Table 7). “Sardines”, or small pelagics, bait is both purchased in Ensenada and caught or purchased locally by the FEDECOOP fishers in their respective cooperatives. Records have been traditionally kept, but not to the species level (M. Ramade, personal communication, June 2016).

In the absence of volumes corresponding to the different small pelagic species, in the full assessment the team used the landing data from the commercial small pelagics fishery off the coast of Baja California as a proxy to estimate species’ proportions for the purposes of the re-assessment. In the 2014 fishing season, Pacific sardine comprised 98.12% of the total catch of small pelagics in the western coast of Baja California while other species such as mackerel and anchovy summed to 1.88% (Enciso and Coterio 2015). The team determined that Pacific sardine (*Sardinops sagax*) was the dominant species in this group, and thus scored as main. However, because species’ proportion in the small pelagics fishery is highly variable across different years, a condition was placed for information for retained species (PI 2.1.3) with the aim to obtain more data to assign contributions of different small pelagic species with greater accuracy.

#### Updated Information

At the first annual surveillance, the client provided a summary of bait from the 2016-2017 season which demonstrates the continued dominance of “sardines” as bait. This data is presented as additional to the bait information presented for the fishery re-assessment. This year’s data continues to support that

“sardines” are the only bait species that would classify as ‘Main’ according the MSC criteria of proportion of total catch by weight.

The client did not provide evidence of species-level documentation of the composition of species reflected as ‘sardine’ in the fishery documentation. The assessment team revisited the challenges in providing species-level information on small pelagics being purchased. The Cooperative representatives agreed it was feasible to provide more detailed information on small pelagic species caught by client group fishers to be used as bait, though the relative proportion of the fishery-caught versus purchased bait will vary significantly year-to-year. Mr. Ramade of FEDECOOP was able to provide regional production statistics for Baja California identifying the landings of three small pelagics species (*anchoveta*, *macarela*, and *sardina*) from 2013-2017 in the region.

At the second annual surveillance, the client provided significant additional detail regarding bait provenance. Bait was presented with differentiation between the bait sourced through the cooperative versus purchased in Ensenada. And, bait was presented with scientific names. That data demonstrated that the vast majority of the bait used in the fishery remains Pacific sardine, and that the majority of this (81%) comes is sourced through each cooperative (either fished by the cooperative or bought locally). While all species commercially landed in Mexico for use as bait by law must be landed with an indicative fish ticket (*Aviso de arribo*), bait sourced through a local cooperative will have ready traceability through its use by the fishery, thus making species identification more reliable for locally sourced bait.

All landings by the cooperative are processed through the local plant, where separation of species, including small pelagics occurs. As a demonstration of this system, the bait records provided to the team separate mackerel caught by the cooperative from sardines- as species are segregated and recorded in the cooperative plants. Landings records, as well as local use or external sales will also be recorded within the cooperative. For bait purchased outside the cooperative, the cooperative will have a record of invoices with the species and respective volume, and provenance is more readily estimated based on locality. For bait purchased in Ensenada, the current system of records does not provide clear documentation as to stock provenance, and for small pelagics this likely depends on relative stock regimes both on the Pacific Coast and in the Gulf. The client did informally examine several blocks of bait purchased through Ensenada and concluded the composition must be at least 98% sardine. However, the team considers that this form of informal monitoring is not sufficient for assessment purposes.

So long as the bait continues to be primarily sourced through local cooperatives- in particular for sardine or any other species that may be considered Main in the future - the information system in place founded in cooperative-level traceability is sufficient to determine species and stock provenance.

**Table 8. Volume in kilograms and corresponding percentage of bait species/species group used in the red rock lobster fishery. Information was obtained from landing records and logbooks from ten FEDECOOP cooperatives for the 2013/14, 2014/15, and 2016/2017 lobster fishing seasons. NR: Not Reported. Reproduced from SCS 2016 and Ramade-Villanueva et al. 2015; 2017.**

		2013/14		2014/15		2015/2016		2016/17		2017/2018	
Common Name / <i>Local Common Name</i>	Scientific Names <sup>2</sup>	Volume (kg)	% of Bait	Volume (kg)	% of bait	Volume (kg)	% of bait	Volume (kg)	% of bait	Volume (kg)	% of bait
"Sardines" - <i>sardina</i> Small Pelagics (Purchased in Ensenada)	<i>Sardinops sagax</i>	2,513,435	65%	1,898,139	53%	2,758,628	98.6%	2,999,389	95.8 %	2,815,305	81.28%
"Sardines" - <i>sardina</i> Small Pelagics (Sourced locally)	<i>Sardinops sagax</i>	1,210,376	31%	1,553,023	43%					373,962	10.80%
ocean whitefish/ <i>blanco</i>		39,596	1%	NR <sup>1</sup>	-	NR <sup>1</sup>	-	NR	-	NR	
Fish/ <i>Pescado o carnada</i>		NR	-	59,294	2%	23,978	0.9%	20,434	0.7%	19,406	0.56%
Mackerel/ <i>macarela</i>	<i>Scomber japonicus</i>	39,460	1%	57,805	2%	4,500	0.2%	51,327	1.6%	169,242	4.89%
California sheephead/ <i>vieja</i>		3,869	0%	NR <sup>1</sup>	0%	NR <sup>1</sup>	-	NR	-	NR	
Bonito	<i>Sarda chiliensis</i>	15,825	0%	5,078	0%	10,551	0.4%	22,111	0.7%	16,053	0.46%
Sea Bass		43,298	1%	NR*	-	NR <sup>1</sup>	-	NR	-	NR	
Skipjack/ <i>barrilete</i>	<i>Katsuwonus pelamis</i>	2,000	0%	295	0%	NR <sup>1</sup>	-	27,000	0.9%	51,230	1.48%
Others		17,319	0%	NR	-	NR <sup>1</sup>	-	NR	-	NR	
Squid/ <i>calamar</i>		NR	-	633	0%	NR <sup>1</sup>	-	NR	-	NR	
Waste/ <i>Carcajes</i>		NR	0%	3,308	0%	NR <sup>1</sup>	-	NR	-	NR	
Barred sand bass / <i>cabrilla or verdillo</i>	<i>Paralabrax nebulifer</i>	NR	-	NR	-	NR <sup>1</sup>	-	4,685	0.1%	7,105	0.21%
Clams/ <i>mejillon</i>	<i>Mytilus californianus</i>	NR	-	NR	-	NR <sup>1</sup>	-	4,760	0.2%	10,380	0.30%
<i>Churi</i>		NR	-	NR	-	NR <sup>1</sup>	-	1,641	0.1%	NR	
California Corbina/ <i>boca dulce</i>	<i>Menticirrhus undulatus</i>	NR	-	NR	-	NR	-	NR	-	1,123	0.03%
<b>Total volume bait (kg)</b>		3,885,178	-	3,577,575	-	2,797,657	-	3,131,347	-	3,463,806	-

<sup>1</sup>It is likely that these data were grouped under the category "fish".

<sup>2</sup>Not available for species not recorded prior to 2017/2018.

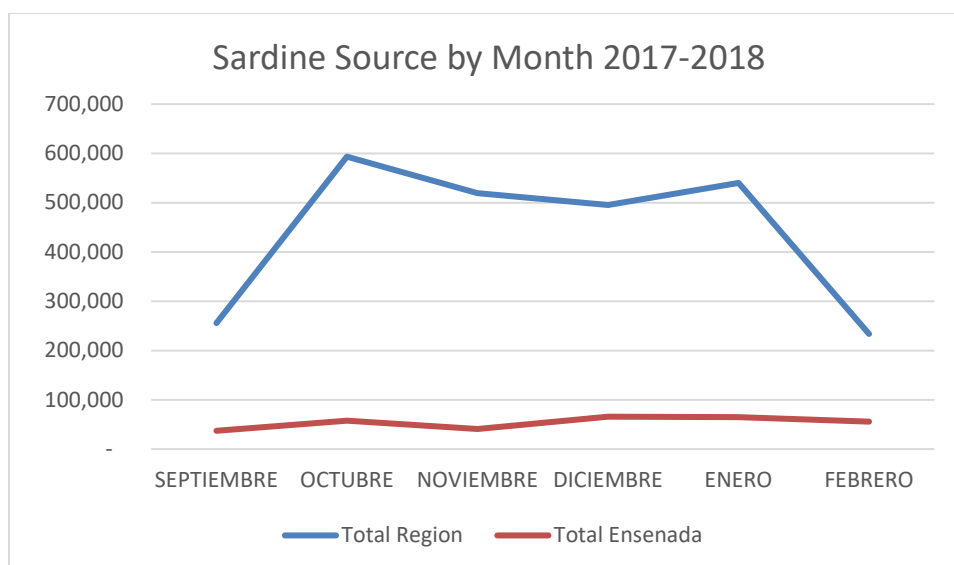
Based on the overall volumes recorded in the fishery (See Table 7), sardine remains the only Main retained species, at 57.56% of the total catch (including target, nontarget species, and bait). Mackerel, at 4.89% of total bait, comprises 3.46% of the total fishery catch by weight.

At the first annual surveillance regional landings from CONAPESCA were retrieved as a means for understanding the relative composition of bait. Data shows that anchoveta in particular had been landed in significant volumes relative to sardines, such that if that proportion carried over to bait used and identified as 'sardine' in the fishery, the species could classify as Main. However, as described above, at the second annual audit the client provided additional information regarding the provenance of sardine bait demonstrating that it is currently primarily sourced from cooperatives. And, the team was provided a detailed description of cooperative-level traceability systems that support the conclusion that bait labelled as sardine by the cooperative is not likely to contain significant volumes of other small pelagic species. On this basis, the assessment team is satisfied that anchoveta will not present a significant proportion of the bait in this fishery so long as bait is primarily sourced through the local cooperatives. Further to this, FEDECOOP members state that anchoveta is not typically caught by local small pelagics fishing vessels, and would require a smaller mesh size. Also, anchoveta is not a species targeted for use as bait by the lobster fishers.

It is not unforeseeable that mackerel, or another small pelagics species, could qualify as Main if stock regimes shift, underpinning the necessity of ongoing monitoring. Likewise, should purchases from Ensenada become more predominant, additional efforts would be needed to identify stock provenance of purchases to support Main species identification.

### Sardines

In addition to updated and more detailed information on the above, the client provided a breakdown of sardine provenance (whether purchased locally or through Ensenada) by month (Figure 11). This demonstrates that the relative proportions are not varying significantly throughout the fishery season.



**Figure 11. Sardine source by month. (Region= cooperative level capture/purchase; Ensenada= purchased in Ensenada) Source: M. Ramade pers. comm. 2018.**

Understanding that the majority of small pelagics used as bait in the lobster fishery are currently sourced through cooperatives, the assessment team requested overall small pelagics landings by cooperative for the past year to gain a more relevant understanding of relative species contribution. The data demonstrates that sardines dominate landings.

**Table 9. Small pelagics landings by cooperative in 2017. (Source: M. Ramade, pers comm 2018.)**

COOPERATIVA	<i>Sardina Monterrey</i>	<i>Barrilete</i>	<i>Macarela</i>	<i>Bonito</i>
PESCADORES NACIONALES	147,366	-	4,441	1,836
BUZOS Y PESCADORES	-	-	-	-
LA PURISIMA	283,582	-	-	-
BAHIA TORTUGAS	475,705	-	-	-
EMANCIPACIÓN	240,614	-	-	-
CALIFORNIA DE SAN IGNACIO	354,116	-	146,850	9,486
LEYES DE REFORMA	384,648	35,230	-	-
PROGRESO	112,156	-	35,033	7,041
PUNTA ABREOJOS	426,780	-	31,752	10,464
Total Percentage	90%	1%	8%	1%

The reassessment determined that the fishery was most likely sourcing from 2 stocks of Pacific sardine: the cold stock ranging from Northern Baja California, and the temperate stock spanning Southern and Central Baja. Cooperatives located further North and/or purchasing from Ensenada are the only cooperatives therefore likely to be sourcing from the cold stock. Further, the team found seasonal differences suggesting that sardines available from September-December are likely from the temperate stock. With the monthly sardine bait information provided to the team at this year's audit, the estimations from the full assessment can be confirmed as still accurate, as 70% of the sardines from all cooperatives

and sources was obtained between September and December (indicating temperate stock provenance); and the cooperatives that may source from Ensenada represent 20% of the total sardine used.

Relative to total sardine landings in Baja California in 2017 of 97,726,070 kg, the 3,189,267kg used by the fishery comprises approximately 3% of total landings (landings data from CONAPESCA). This is consistent with findings of the full assessment and supports the ongoing conclusion that the UoA would not have a material impact at the stock level.

### **3.1.3.2 Bycatch**

The re-assessment audit team considered that none of the reported bycatch species approached the 5% volume threshold for classification as 'main' non-target species. An update to non-fish bycatch reported in the re-assessment is provided below that continues to support this conclusion. In response to Condition 2-2, bycatch is now reported in weight (kg) instead of numbers, in order to facilitate the calculation of the catch composition by weight. Each cooperative is responsible for establishing an average weight per species, based on local sampling. With this change, no trends in bycatch can be directly evaluated relative to bycatch prior to 2015. Data from 2015-on suggests a general increasing trend in bycatch, but this may also be attributed to improvements in monitoring. Regardless, catch by weight totals confirm the full assessment's conclusion that the non-target species catch comprises a very low proportion of the total fishery catch (Table 7). In the second annual surveillance, FEDECOOP also provided more detailed information on species fate, noting whether species are typically retained or discarded.

**Table 10. Records of incidental catch by species or species group in kilograms from logbook records. NR: Not reported. Source: Ramade-Villanueva et al. 2017.**

Common name (species/group of species) <sup>1</sup>	Scientific name	2015/16 (kg)	2016/17 (kg)	2017/18 (kg)	Fate
Horn Shark / <i>Perro</i>	<i>Heterodontus francisci</i>	4,921	6,577	13,162	Live release
Swell Shark / <i>Gata</i>	<i>Cephaloscyllium ventriosum</i>	3,880	5,755	6,868	Live release
Moray eels/ <i>anguila</i>	<i>Gymnothorax sp.</i>	1,184	2,781	3,297	Live release
Octopus/ <i>pulpo</i>	<i>Octopus vulgaris</i> ; <i>O. bimaculoides</i>	8,764	8,716	13,860	Retained
Sea cucumber/ <i>pepino</i>	<i>Parastichopus parvimensis</i>	1	2	5	Live release
Sea birds (Cormorant) / cormoranes	<i>Phalacrocorax sp.</i>	5	3	12	Mortality
Crabs/ <i>cangrejo</i>	<i>Cancer spp. (mainly)</i>	9,934	9,746	0	Live release
Finfishes/ <i>escama</i>	<i>See below</i> <sup>2</sup>	16,156	24,007	7551	Varies
Mollusks/ <i>Moluscos</i>	<i>Kelletia kelletii</i> ; <i>Megastromea spp</i> ; <i>Haliotis spp</i>	390	390	248	Live release
<b>Total</b>		<b>45,240</b>	<b>57,977</b>	<b>70,990</b>	

<sup>1</sup>Tropical lobster catch estimated separately. See Table 7.

<sup>2</sup> Finfishes include small volumes of the following species: *Semicossyphus pulcher*, *Paralabrax clathratus* y *P. nebulifer*, *Embiotoca jacksoni*, *Ophiodon elongates*, *Seriola lalandi*, *Hypspops rubicundus*, *Paralichthys spp* *Argyrosomus regius*, *Kelletia kelletii*-, *Umbrina roncano*, *Caulolatilus princeps*, *Anisotremus davidsoni*, *Sebastes mystinus*, *S. miniatus* & *S. caurinus*

### 3.1.3.2.1 Sharks

There are two species of sharks with vulnerable life story traits, horn sharks (*Heterodontus francisci*) and swell sharks (*Cephaloscyllium ventriosum*), with consistent records of capture. The stock status for both of these shark species in the UoA waters is uncertain, however, SCS considers that neither element trigger the RBF. Per CRV1.3 Table AC2<sup>1</sup>, the RBF is triggered for bycatch species if “the impact of the fishery in assessment [cannot] be determined quantitatively”. As noted above, the fishery’s catch of swell and horn sharks is quantitatively available, and these numbers are quite low. Further, the mortalities reported are likely a significant overstatement, because the assessment team understands anecdotally that sharks are typically released alive (further evidence of this provided at the first annual surveillance audit discussed below). Based on this, horn and swell sharks, though data deficient, do not trigger application of the RBF.

<sup>1</sup> Note that the MSC confirmed that the RBF trigger table is intended to remain with the version of the assessment tree via an interpretation posted on October 31, 2017, available at: <http://msc-info.accreditation-services.com/questions/triggers-for-using-version-1-3-risk-based-framework/>

There are no explicit legal protections for these shark species, as neither of these two shark species are included in NOM-059-SEMARNAT-2010 for protected species. NOM-029-PESC (2006) specifies regulations to promote responsible fishing of sharks and rays, including required retention of all shark individuals and prohibits exclusive use or landing of fins without bodies on board (Section 4.1.1). NOM-029 lists specific species for which clause 4.1.1 does not apply and zero retention is permitted, but these species are not among those listed.

In October 2017 Mr. Ramade submitted a video demonstrating live release of sharks in the UoA, and where the logbooks provided to the assessment team reported post-release status, the status was either recorded as released or alive, presumably indicating both. The overall low volumes of encounters reported, and evidence that most sharks are successfully released alive, is sufficient to conclude that the fishery's impact on these species would be very low. However, FEDECOOP members also reported that there is some market for these shark species, and therefore recording fate remains important. Recording of bycatch has generally improved, but the assessment team recommends that efforts to implement consistent logbooks between cooperatives be made.

## **3.2 Updates on the management system and regulations**

A management plan was drafted in 2012, with the latest version dated April 2014 (Vega-Velázquez et al., 2014) but at the time of the 2<sup>nd</sup> re-assessment in 2016 had not yet been approved for publication in the official gazette (*Diario Oficial*, DOF). The plan has not been published yet at the time of the first surveillance audit and there was no new information that could indicate with certainty whether the plan will be published in the near future, though this remains the expressed objective of INAPESCA representatives.

There have been no other changes in the structure or operations of the management system.

### **3.2.1 Harvest Strategy and Control Rule**

Overall, the fishery operates under two broad regulatory mechanisms: a) limited access granting concessions that can last up to 20 years and are renewable; and b) “traditional” regulatory tools such as minimum size, temporal closures and protection of berried females. The red rock lobster fishery of Baja California has operated under the application of traditional passive management strategies such as minimum legal size and protection of egg bearing females. There are season closures that are established in relation to the reproductive activity of the lobster in different regions, but it is not related to a strategy to control fishing mortality. For this reason, there are no binding documents with explicit, pre-agreed harvest control rules that are designed to reduce effort in response to changes in indicators of stock status with respect to reference points. The lobster chapter in the Red Book (Vega-Velázquez 2006) however declared that if  $Est = B_{t_{Actual}}/B_{MSY}$  “stock status is determined according to the following decision rule:”



**Table 11. Decision Rule to Estimate the Stock Status. Source: Camacho-Barno *et al.* (2017)**

Status	Strategy	Action
<1 Status I: The stock is below optimum level	Recovery strategy required	<ul style="list-style-type: none"> <li>- Reduce effort</li> <li>- Reduce F</li> <li>- Adjust legal minimum size</li> <li>- Adjust length of fishing season</li> <li>- Establish no-fishing areas</li> <li>- Catch quota</li> <li>- Restock</li> <li>- Habitat enhancement</li> </ul>
>1 Status II: The stock is above optimum level	Fishery with further development potential	Increase effort and/or catch quota
=1 Status III: The stock is at optimum level	The fishery is at the adequate level	Continue management system

The harvesting level for the following season is based on the analysis of the last five fishing seasons taking into account stock size, biological, economic indicators and all other recommendations by INAPESCA. This information is used to determine if it is necessary to modify the number of boats, gear or fishers that will be permitted to participate in the fishing season. Season closures are defined after technical consultations with INAPESCA (and published in the Official Gazette). The closures are determined by zones and the client group is located in zone 1 where closures are from February 16<sup>th</sup> to September 15<sup>th</sup> (DOF 2014).

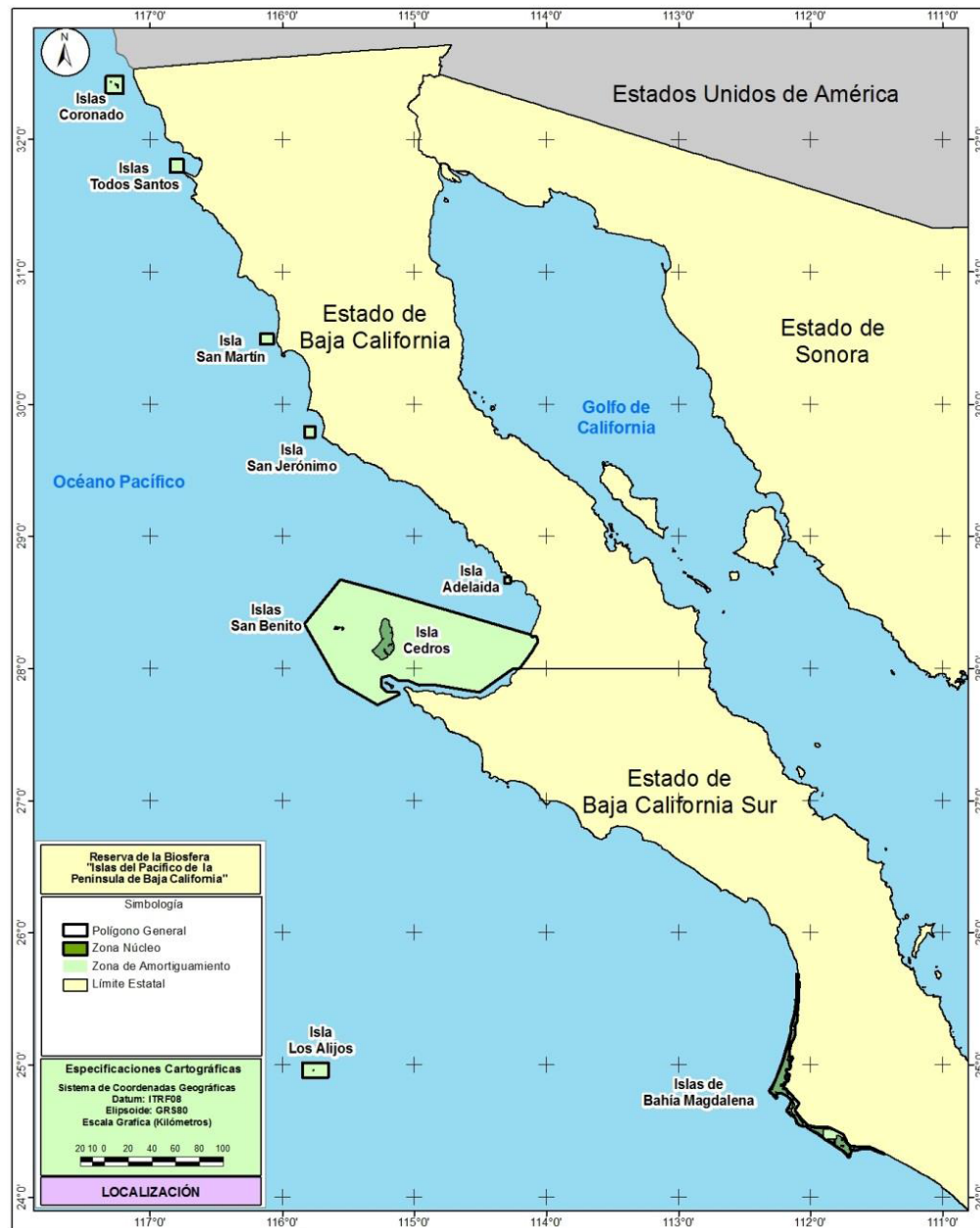
Results of the assessment after season 2017/18 continue suggesting that the stock is not overexploited and overfishing is not happening under MSY based indicators. Indicators under SPR suggest the stock is below the level producing MSY. However, several methodological aspects were identified and require revision and discussion about model related uncertainty. At the time of the second surveillance audit, the control rule continues operating with proposed actions for each state of the fishery (Table 11), but is not yet a binding procedure and lacks mechanisms to its application. Reference points have been proposed and some investigation is being conducted.

In order to meet the MSC requirements for a control rule, the limit and target reference points must be unequivocally identified and the control rule must operate based on such reference points. Also, there must be a clear description of the actions, providing a quantitative or otherwise well-supported rationale for how these actions will work to prevent the stock from reaching the defined LRP.

### **3.2.2 Establishment of a New Marine Reserve (First Annual Surveillance)**

On December 7, 2016, a new protected area was created, named the “*Reserva de la Biosfera la región conocida como Islas del Pacífico de la Península de Baja California*”. The reserve includes 21 islands, 97 islets and their adjacent waters. The reserve consists of a main zone and a buffer zone. In the buffer zone (*zona de amortiguamiento*), subsistence resource extraction is permitted, such as fishing with small vessels and native species aquaculture. Commercial and recreational fishing can only be undertaken by

local communities, or with their participation on vessels of <10.5m in length. Use of fishing techniques that affect the seabed are prohibited (trap lobster fishing is not considered a fishing technique detrimental to the seabed and is thus permitted).



**Figure 12.** Map of the *Reserva de la Biosfera la región conocida como Islas del Pacífico de la Península de Baja California*. Provided by FEDECOOP.

### 3.2.3 Prohibition of Retention of Lobster by Trawlers (First Annual Surveillance)

FEDECOOP indicated that in the last three to five years there was an increase in the abundance of shrimp leading to an increment in the presence of shrimp trawlers. This situation was of concern because lobster was being caught as bycatch in the shrimp fishery. FEDECOOP sought to increase the range of extension of the marine portion in the Vizcaino protected area, however, before that negotiation progressed, the Pacific Islands Reserve was established (see above) which prohibits the retention of lobster. Shrimp trawlers are no longer allowed inside the protected area. Additionally, lobsters incidentally caught in the shrimp fishery in the neighborhood must be released in the location where caught. Shrimp trawlers are no longer fishing inside the now protected areas.

### 3.3 Updates on Personnel involved in science, management or industry

FEDECOOP provided the following list of changes to personnel:

<b>DEPENDENCIA</b> <b>Organization</b>	<b>CARGO</b> <b>Role</b>	<b>ANTERIOR</b> <b>Previous</b>	<b>VIGENTE</b> <b>New</b>
CONAPESCA	Dir. Gral. de Ordenamiento Pesquero y Acuicola	MC Victor Manuel Arriaga Haro	Ing. César Demetrio Estrada Neri
INAPESCA	Dir. CRIAP La Paz BCS	Biol. Armando Vega Velázquez	Dr. Juan Gabriel Díaz Uribe
CONAPESCA	Coordinador de Inspección y Vigilancia, Delegación Baja California	Ing. Roldan Maldonado Ponce	Biól. Joaquin Alberto Cruz Rios

### 3.4 Changes to the fishing operations and traceability systems

Not applicable. There have been no material changes to the fishing operations or traceability system.

## 4 Assessment Process

### 4.1 Assessment Methodologies

**Table 12. Scheme Documents**

MSC Scheme Document	Issue Date
MSC Certification Requirements and Guidance v1.3 (Tree)	January 2013
MSC Fisheries Certification Requirements and Guidance v2.0 (Process)	October 2014
General Certification Requirements v2.2	March 2018
Surveillance Reporting Template v1.0	April 2015

**Table 13. Schedule of surveillance audits.**

Surveillance Level	Year 1	Year 2	Year 3	Year 4
Level 6 (Normal Surveillance)	On-site surveillance audit	On-site surveillance audit	On-site surveillance audit	On-site surveillance audit & re-certification site visit

The surveillance audit was carried out in accordance with the default assessment tree of the MSC Certification Requirements (CR) v1.3, under which the fishery was most recently certified. Following the MSC guidelines for implementation timeframes, the surveillance was conducted in accordance with the new process requirements in FCR v2.0.

The issues for the certifier, in addition to checking progress against conditions to close out, is to determine whether a random check on the performance of the fishery verifies continued compliance with the MSC standards and to document the most recent research, landings, and survey trends relating to the fishery.

The annual surveillance audit process is comprised of five general parts:

1. The certification body provides questions around areas of inquiry to determine if the fishery is maintaining the level of management observed during the original certification.
2. The certification body informs stakeholders that they have the opportunity to contribute to the surveillance audit by participating in a face-to-face interview process or by submitting comments in writing. The certification body must inform stakeholders of the opportunity to provide comment at least 30 days before the onsite meeting.
3. The surveillance assessment team meets with the fishery client in an opening meeting to allow the client to present the information gathered and to answer questions asked by the surveillance team. The surveillance team can then ask questions about the information provided to ensure full understanding of how well the fishery management system is functioning and if the fishery management system is continuing to meet the MSC standards. Additional interviews are conducted of fishery management and science personnel as well as stakeholders.

4. The surveillance team determines if any PIs should be re-scored and presents its findings to the client fishery at the end of the site visit in a closing meeting. The results outline the assessment team's understanding of the information presented and its conclusion regarding the fishery management system's continued compliance with MSC standards.
5. The surveillance team submits a final report to the client and to MSC for posting on the MSC website. If there are continued compliance concerns, these are presented as non-conformances that require further action and audits as specified in the surveillance report.

## 4.2 Consultations

SCS identified relevant stakeholders for this fishery through professional networks of SCS and the assessment team, as well as know-how of the organizations working in the area. A list of over 100 individuals from over 40 different organizations was compiled including representatives from the government, private sector and non-profit sectors working at regional and national levels (Table 14). The main form of communication to stakeholders has been via email to personal or organizational email addresses. Stakeholders on the list received an email with the surveillance announcement, the MSC stakeholder template to provide input and an invitation to participate in the onsite meeting.

No stakeholders submitted comments or expressed interest in participating in the onsite meeting within the 30-day consultation period. No stakeholders requested a private meeting with the team.

The announcement of the surveillance audit included the dates and location for the onsite meeting, which took place in Ensenada Monday and Tuesday, November 26-27, 2018. The announcement was published to the MSC website on October 18, 2018. Stakeholders were informed of the announcements through the MSC website and through email.

An audit plan was provided to the client for distribution to all audit attendees before the meeting.

At the onsite meeting the assessment team met with representatives from management agencies, research institutions and the client group, for details see Table 15 and Table 16.

**Table 14. List of stakeholder organizations contacted for the MSC Assessment**

Organization	Type
CICIMAR	Research
CICIMAR - IPN	Research
Instituto Nacional de Pesca/ CRIP – Mazatlan & Ensenada	Government
Scripps Institution of Oceanography	Research
Cause Natura A.C	
Contraloria Ciudadana para la Rendicion de Cuentas A.C	
American Bird Conservancy	NGO
Autonomous Univ of Baja	Research
Center for Biological Diversity	NGO
CIBNOR	Research
COBI	NGO

Comision Nacional de Areas Naturales	Government
CONANP	Government
CONANPESCA	Government
Consejo Asesor del Conjunto de Areas Naturales Protegidas Federales	Government
Conservacion de Islas	NGO
Conservation International - Mexico	NGO
EDF	NGO
Greenpeace	NGO
Humane Society International	NGO
INAPESCA	Government
Marine Conservation Society	NGO
Monterey Bay Aquarium	Research
Natural Resources Defense Council	NGO
NIPARAJA	NGO
NOS Noroeste Sostenible	NGO
Ocean Conservancy	NGO
Oceana	NGO
PEW	NGO
Prescott College Bahia Kino in Sonora	Research
Univisidad Autonoma de Sinaloa	Research
PRONATURA	NGO
SEMARNAT	Government
Sustainable Fisheries Partnership	NGO
The Nature Conservancy	NGO
Turtle is Rest Net	NGO
UC Riverside	Research
University of Veracruz	Research
WildCoast	NGO
WWF Mexico	NGO
FEDECOOP	Industry

**Table 15. Onsite Meeting Attendees**

Name	Affiliation
Carlos Alvarez-Flores	SCS Global Services
Jennifer Humberstone	SCS Global Services
Claudia Miranda Saucedo	Coop. California de San Ignacio
Francisco J. Rousseau	FEDECOOP
Gustavo Villavicencio	Coop. Leyes de Reforma
Benigno Hernández	CRIP- Ensenada
Ramon Martinez	Coop. Buzos y Pescadores
Eduardo Enriquez	Coop. Punta Abreojos
Julian Castro	INAPESCA CRIP-EDA
Gabriel Llanos	INAPESCA CRIP – La Paz
Juan Carlos Bonilla	Coop. La Purísima
Mario Ramade Villanueva	FEDECOOP

Armando Vega Velazquez	INAPESCA
Josué Cortés Baeza	INAPESCA
Alberto Cantu	CONANP
Joaquin Alberto Cruz Rios	Comisión nacional de Acuacultura y Pesca: Inspección y Vigilancia

**Table 16. Summary of Meetings. All meetings held at the FEDECOOP office in Ensenada, Mexico.**

<b>Day 1 – November 26, 2018</b>	
8:30am-9:30am	Opening presentation for MSC surveillance by SCS team, including the scope of the audit: <div style="margin-left: 40px;">1- Review updates to the fishery since certification 2- Review progress on open conditions</div>
9:30am – 11:30am	Progress on Conditions 2-1, 2-2, presented by Mario Ramade of FEDECOOP
11:30am-12:30pm	Review of updates to the fishery since the 1 <sup>st</sup> annual surveillance and Principle 3 (Condition 3-2), by Mario Ramade and Technical representative
12:30pm – 3:00pm	Break/Lunch
3:00pm – 5:00 pm	Progress on Conditions 1-1, 1-2, 1-3, presented by Armando Vega and INAPESCA TEAM
6:00pm-8:00pm	Assessment team meeting for preliminary scoring
<b>Day 2 – November 27, 2018</b>	
9:00am – 9:30 am	Opening meeting regarding MSC process by SCS team
9:30am-11:00am	Closing Meeting presented by SCS team
11:00am – 2:00pm	INAPESCA & FEDECOOP follow-up meeting/Assessment team private meeting

### 4.3 Harmonization Considerations

Harmonization considerations were not applicable to this surveillance audit. There is only an overlap between this fishery in terms of national level management (PIs 3.1.X), and there are no open conditions pertaining to these PIs, nor did the assessment team learn of new information material to those scores.

### 4.4 Assessment Team

The surveillance team consisted of Dr. Carlos M. Alvarez-Flores and Mrs. Jennifer Humberstone. Dr. Alvarez-Flores was the team lead (responsible for Principles 1 & 3), and Mrs. Humberstone was the staff

coordinator and team member responsible for Principle 2. Assessment team experience and qualification summaries were provided in the assessment announcement and can be found below:

**Dr. Carlos Alvarez-Flores**

Dr. Carlos Alvarez-Flores was born in Mexico City and obtained Bachelors of Science and Master of Science degrees at the National University of Mexico. He later moved to Seattle, USA to obtain a Doctor of Philosophy degree at the School of Fisheries of the University of Washington. His research interests are focused on the management and conservation of wildlife and fisheries. This includes abundance estimation; assessment of population status; estimation of population parameters; the effect of human intervention; direct harvest; bycatch and associated environmental effects; projections based on biological potential; population viability; risk assessment; design of alternative management strategies. His training was related to large, pelagic, data rich fisheries, and 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, the hunt of bowhead whales in Canada, the bycatch of albatrosses in pelagic fisheries of the central Pacific. In contrast, his current assignments are related to small-scale, coastal fisheries that are very data poor. Therefore, his present challenges are to combine ideas, techniques, knowledge and experience to improve the performance of these problematic fisheries in developing countries. Most of his experience has been focused on practical investigations applied to population and fishery assessment and management as a consultant for governments, NGOs and the private sector of different countries. To the present, he has worked for SCS for over two years in MSC pre-assessments, assessments and surveillance audits of different types of fisheries in different countries, including full assessments of small pelagic sardine and thread herring fisheries in the Northern and Southern Gulf of California.

**Mrs. Jennifer Humberstone**

Jennifer Humberstone holds a Master of Environmental Science and Management degree from the Bren School at the University of California Santa Barbara, where she specialized in fisheries management and natural resource economics. Jennifer has designed spatial bio-economic models to facilitate management decisions and performed research for the National Center for Ecological Analysis and Synthesis. Mrs. Humberstone has cross-sectoral and international project management experiences working with diverse stakeholders including fishers, government, private industry, and NGOs. Jennifer is proficient in Spanish and has marine resource management field experience in both the Philippines and the Dominican Republic: where she spent over two years building initiatives in protected areas, ecotourism, and fisheries management. She has over 4 years of scientific diving field experience. Jennifer is an ISO 9001 lead auditor and has completed the MSC V2.0 Team Leader training modules, including the SAM-FAM and Traceability modules. In her role at SCS, she is currently participating in and/or coordinating the MSC pre-assessment, surveillance audits, and full assessment of fisheries worldwide, including several fisheries in the Americas and numerous invertebrate fisheries.



## 5 Results

The tables below summarize open conditions, including corresponding rationale, associated milestones, Client Action Plan (CAP), and current progress.

In discussing the status of progress on conditions at the first annual surveillance, the client and assessment team discussed critical CAP components, and necessary remedial actions (per FCRV2.0 7.23.13.1.b.i) for four conditions that were deemed 'behind target'. At the second annual surveillance audit, the client provided evidence of fulfilment of the remedial action requirements, in addition to evidence of progress against the Year 2 milestone. All remedial actions were considered fulfilled, but two of three P1 conditions were found to be behind target relative to the Year 2 milestone.

Two conditions were closed at the 2<sup>nd</sup> surveillance based on progress demonstrated (Condition 2-1, 3-2). A revised rationale for these PIs can be found in Appendix 1, along with re-scoring undertaken at the first annual surveillance. From the first annual audit a revised rationale was also provided for PI 2.2.1 that explains the consideration of swell and horn sharks in support of the full assessment team's conclusion that the species did not require application of the Risk Based Framework.

Immediately following the closing meeting the onsite attendees convened to discuss actions to be undertaken in 2019 to bring the fishery back on target and remain in compliance with the MSC Standard. The assessment team revised milestones to better fit the trajectory of actions and progress achieved thus far, without revising the overall expectation or condition requirements or timelines.

**Table 17. Summary of Assessment Conditions**

Condition number	Performance indicator (PI)	Status	PI original score	PI revised score
1-1	1.1.2(b)	Behind Target	75	NA
1-2	1.2.2 (a)	Behind Target	65	NA
1-3	1.2.2(b)	On Target	65	NA
2-1	2.1.3 (d)	Closed Year 2	75	80
2-2	2.2.3	On Target	70	NA
3-1	3.2.4 (a)	Closed Year 1	60	80
3-2	3.2.4 (b)	Closed Year 2	60	80

**Table 18. Summary of Assessment Conditions**

Updated Principle-Level Computed Scores	
Principle	Score
Principle 1 – Target Species	80.6
Principle 2 – Ecosystem	<del>81.3</del> 81.7
Principle 3 – Management System	<del>87.6</del> <del>88.6</del> 89.6

**Table 19. Revised PI Level Scores (Conditions indicated in red, highlighted fields indicate changed scores)**

Prin- ciple	Wt (L1)	Component	Wt (L2)	PI No.	Performance Indicator (PI)	Wt (L3)	Weight in Principle	Score
						<u>Either</u>		
One	1	Outcome	0.5	1.1.1	Stock status	0.5	0.25	90
				1.1.2	Reference points	0.5	0.25	75
				1.1.3	Stock rebuilding			
		Management	0.5	1.2.1	Harvest strategy	0.25	0.125	80
				1.2.2	Harvest control rules & tools	0.25	0.125	65
				1.2.3	Information & monitoring	0.25	0.125	90
				1.2.4	Assessment of stock status	0.25	0.125	80
Two	1	Retained species	0.2	2.1.1	Outcome	0.333	0.0667	80
				2.1.2	Management	0.333	0.0667	80
				2.1.3	Information	0.333	0.0667	80
		Bycatch species	0.2	2.2.1	Outcome	0.333	0.0667	80
				2.2.2	Management	0.333	0.0667	80
				2.2.3	Information	0.333	0.0667	70
		ETP species	0.2	2.3.1	Outcome	0.333	0.0667	85
				2.3.2	Management	0.333	0.0667	90
				2.3.3	Information	0.333	0.0667	85
		Habitats	0.2	2.4.1	Outcome	0.333	0.0667	80
				2.4.2	Management	0.333	0.0667	95
				2.4.3	Information	0.333	0.0667	80
		Ecosystem	0.2	2.5.1	Outcome	0.333	0.0667	80
				2.5.2	Management	0.333	0.0667	80
				2.5.3	Information	0.333	0.0667	80
Three	1	Governance and policy	0.5	3.1.1	Legal & customary framework	0.25	0.125	95
				3.1.2	Consultation, roles & responsibilities	0.25	0.125	90
				3.1.3	Long term objectives	0.25	0.125	100
				3.1.4	Incentives for sustainable fishing	0.25	0.125	80
		Fishery specific management system	0.5	3.2.1	Fishery specific objectives	0.2	0.1	80
				3.2.2	Decision making processes	0.2	0.1	100
				3.2.3	Compliance & enforcement	0.2	0.1	100
				3.2.4	Research plan	0.2	0.1	80
				3.2.5	Management performance evaluation	0.2	0.1	80

**Table 20. Condition 1-1 (Revised in Year 2)**

Performance Indicator(s) & Score(s)	PI 1.1.2	(b)	75
	Limit and target reference points are appropriate for the stock.	The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity.	
Condition	Define explicit reference points that are appropriate for the stock and can be estimated. The Limit Reference Point is set above the level at which there is an appreciable risk of impairing reproductive capacity. The Target Reference Point works to maintain the stock at a level consistent with Bmsy or some measure or surrogate with similar intent or outcome.		
Milestones	<div>1. <b>Surveillance 1 (2017):</b> By the first year, appropriate reference points have been identified and initial testing has been conducted. Initial consultation has started.</div> <div>2. <b>Surveillance 2 (2018):</b> By the second year, appropriate reference have been discussed and accepted by the community. The process to formalize the publication of the reference points has started.</div> <div><del>3. <b>Surveillance 3 (2019):</b> By the third year, the reference points have been published in the official gazette and are ready to be used in the following fishing season.</del></div> <div><del>4. <b>Surveillance 4 (2020):</b> By the fourth year the reference points are defined and operate according to the requirements of PI 1.1.2.</del></div> <div>3. <b>Surveillance 3 (2019):</b> By the third year, there has been agreement on priority factors to consider for inclusion in a set of interim reference points, and resulting proposed interim reference points- as well as associated interim HCRs (per Condition 1-2)- have been tested to a level that allows practical implementation with results distributed among fishers, authorities and stakeholders to obtain feedback</div> <div>4. <b>Surveillance 4 (2020):</b> By the fourth year, the final interim reference points are fully developed based on stakeholder feedback, agreed and are functional elements of the harvest strategy.</div>		
Client action plan (Year 1 only)	Responsible Party/ies: INAPESCA, FEDECOOP		
	1. <b>Surveillance (2017):</b> By the first year, appropriate reference points have been identified and initial testing has been conducted. Initial consultation has started.		
	Activities:	<div>- Review biological aspects that determine lobster population dynamics.</div> <div>- Identify biomass levels that could cause recruitment to be compromised.</div> <div>- Identify fishing mortality levels that produce MSY.</div> <div>- Conduct a workshop to consult with fishers and experts if the identified reference points are appropriate for the stock and the fishery.</div> <div>- Initial simulation testing is conducted.</div>	
	Expected outcome:	- Meeting minutes	
	Expected score:	No anticipated changes in score at this stage	
	2. <b>Surveillance (2018):</b> By the second year, appropriate reference have been discussed and accepted by the community. The process to formalize the publication of the reference points has started.		

	<b>Activities:</b>	<ul style="list-style-type: none"> <li>- Testing is completed and reference points are established.</li> <li>- A final workshop is conducted where reference points are discussed and approved by fishers, authorities and stakeholders.</li> <li>- Consultations are conducted to agree on the mechanism to formalize the use of the approved reference points for the fishery.</li> </ul>
	<b>Expected outcome:</b>	<ul style="list-style-type: none"> <li>- Meeting minutes</li> <li>- Draft of National Fishing Chart or Management plan</li> </ul>
	<b>Expected score:</b>	No anticipated changes in score at this stage
	<p><del><b>3. Surveillance (2019):</b> By the third year, the reference points have been submitted for publication in the official gazette and are ready to be used in the following fishing season</del></p> <p><b>3. Surveillance (2019):</b> By the third year, there has been agreement on priority factors to consider for inclusion in a set of interim reference points, and resulting proposed interim reference points- as well as associated interim HCRs (per Condition 1-2)- have been tested to a level that allows practical implementation with results distributed among fishers, authorities and stakeholders to obtain feedback</p>	
	<b>Activities:</b>	<ul style="list-style-type: none"> <li><del>— Annual meeting to update the stock status and evaluate it from the reference points</del></li> <li>- Submitting to CONAPESCA the draft the National Fishing Chart or Management Plan, for the official publication</li> <li>- Develop and implement a simulation experiment to test the performance of interim reference points and harvest control rule under alternative management scenarios.</li> <li>- Conduct a Regional Workshop to with the goals of: <ul style="list-style-type: none"> <li>o Discuss and analyze previously identified biological aspects that determine lobster population dynamics, biomass levels that could cause recruitment to be compromised, fishing mortality levels that produce MSY.</li> <li>o Incorporate the above information to support interim reference points (INAPESCA/FEDECOOP).</li> <li>o Discuss the results of simulations testing the performance of a proposed harvest control rule which incorporates the proposed interim reference points.</li> <li>o Update the stock status based on agreed alternatives about the interim reference points and control rule.</li> </ul> </li> </ul>
	<b>Expected outcome:</b>	<ul style="list-style-type: none"> <li><del>— Meeting minutes</del></li> <li><del>— Stock assessment report</del></li> <li>- Official publication of National Fishing Chart or Management Plan</li> <li>- New stock assessment report (INAPESCA).</li> <li>- Progress report with results of testing simulations for interim reference points and control rule.</li> </ul>

		<ul style="list-style-type: none"> <li>- Workshop minutes with the results and agreements reached about priority factors in the design of the interim reference points and simulation of different HCR scenarios.</li> </ul>
	<b>Expected score:</b>	No anticipated changes in score at this stage
	<p><del><b>4. Surveillance (2020):</b> By the fourth year the reference points are defined and operate according to the requirements of PI 1.1.2.</del></p> <p><b>4. Surveillance (2020):</b> By the fourth year, the final interim reference points are fully developed based on stakeholder feedback, agreed and are functional elements of the harvest strategy.</p>	
	<b>Activities:</b>	<ul style="list-style-type: none"> <li>- Additional evaluation of performance of interim reference points and control rule based on feedback from stakeholders.</li> <li>- Annual meeting to update the stock status and evaluate the interim reference points and HCR.</li> </ul>
	<b>Expected outcome:</b>	<ul style="list-style-type: none"> <li>- Meeting minutes</li> <li>- Stock assessment report</li> </ul>
	<b>Expected score:</b>	Score expected to increase to 80, condition is closed
Progress on Condition [Year 1]	<p><b>Achievements against action plan</b></p> <ul style="list-style-type: none"> <li>- Review biological aspects that determine lobster population dynamics. (Y)</li> <li>- Identify biomass levels that could cause recruitment to be compromised. (N)</li> <li>- Identify fishing mortality levels that produce MSY. (Y)</li> <li>- Conduct a workshop to consult with fishers and experts if the identified reference points are appropriate for the stock and the fishery. (N)</li> <li>- Initial simulation testing is conducted. (N)</li> </ul> <p><b>Finding</b></p> <p>Some level of information has been produced in the most recent stock assessment (Camacho-Bareño et al 2017), however, the analysis still considered the MSY the only reference point for decision making without specification of whether it was a target or limit reference point. There was therefore, no identification of appropriate reference points as required in the CR CB2.3. No initial testing was therefore possible.</p> <p>Noticing that this portion of the action plan was not conducted, at the end of the audit, participants convened a meeting to set up a plan to meet and discuss this and other issues that require attention according to the action plan. Meeting minutes are included in Appendix 3 (Report Section 7.3.2).</p>	
Progress on Condition [Year 2]	<p><b>Finding at second surveillance</b></p> <p>A workshop was convened in July 2018 to discuss alternative approaches to determine reference points and to further develop the control rule. The process included testing alternative assessment methodologies to observe the resulting levels of population status relative to alternative reference points. The investigation proposed that the fishing mortality rate producing</p>	

	<p>MSY should be taken as a limit reference point based on a simulation-based calculation of a probability near 50% that population status would be under the level producing MSY.</p> <p>A discussion during the presentation of the stock assessment results that included the development of the reference points revealed a grade of complexity that had not been realized in previous audits nor during reassessment. In particular, a portion of the uncertainty is associated with natural environmental factors that are being acknowledged as relevant in determining recruitment strength. Stakeholders note that such important factors should be incorporated in any decision-making system and be related to reference points and control rules. Additionally, it was observed that the new definition of a limit reference point associated to MSY is conservative and that although precautionary, may involve a social cost that has yet to be discussed with the fishers. These additional complexities, and others, merit further investigation and development; meanwhile, the fishery is seeking to agree on interim reference points within condition timelines that may be further revised as the supporting models and information supporting fishery management increases in sophistication.</p> <p>The assessment team considers that although reference points have not yet been agreed, progress is satisfactory in terms of initiating and moving forward in the development of reference points that appropriate to the stock and can be estimated, therefore the fishery is considered to be back on target for milestones for year 1 in Condition 1-1.</p> <p>However, the process of establishing reference points was found to require additional time and effort given the afore-mentioned complexities. Despite advancements made, the proposed reference points and their implications have not been fully explored with the fishers- or proposed with an associated detailed HCR, and therefore are not yet approved and pre-agreed.</p> <p>Given that there's no final decision about the reference points no consultation has taken place yet regarding alternatives to formalize the use of the approved reference points and the milestone for year 2 was not met.</p> <p>In light of the progress made and current discussions, the team considered it appropriate to revise the milestones to better suit the trajectory of client actions while still maintaining the overall timeline and performance expectations relative to the condition.</p>
Status of condition	<p><b>Behind target.</b></p> <p><b>Remedial actions (specified per MSC FCRv2.0 7.23.13.1.b.i)</b></p> <p>Develop and implement a new action plan that is consistent with the redefined milestones described in previous sections. (Action plan is included above; implementation to be verified at the 3<sup>rd</sup> annual surveillance audit.)</p>

**Table 21. Condition 1-2 (Milestones revised in Year 2)**

Performance Indicator(s) & Score(s)	PI 1.2.2	(a)	65
	There are well defined and effective harvest control rules in place.	Well defined harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached.	
Condition	The harvest control rule must be pre-agreed, well defined and in place; it must be consistent with the harvest strategy to ensure that the exploitation rate is reduced as the limit reference point is approached.		
Milestones	1. <b>Surveillance 1 (2017):</b> By the first year, the harvest control rule is proposed and initial testing has been conducted. Initial consultation has started.		

	<p><b>2. Surveillance 2 (2018):</b> By the second year, the harvest control rule has been pre-agreed and is well defined. The rule has been discussed and accepted by the community. The process to formalize the publication of the control rule has started.</p> <p><b>3. Surveillance 3 (2019):</b> By the third year, the harvest control rule is pre-agreed, published in the official gazette and is ready to be used in the following fishing season in parallel with the reference points.</p> <p><b>4. Surveillance 4 (2020):</b> By the fourth year the harvest control rule is well defined, in place and operating according to the requirements of PI 1.2.2.</p> <p><b>3. Surveillance 3 (2019):</b> By the third year, the current control rule has been refined with greater detail and tested in association with proposed interim reference points, based on the feedback on priority factors described in milestone 3 of condition 1-1. Results have been distributed among fishers, authorities and stakeholders to obtain feedback towards an agreement of the new structure of the HCR.</p> <p><b>4. Surveillance 4 (2020):</b> By the fourth year, a new interim HCR is fully developed, agreed, is a functional element of the harvest strategy and its application is formalized.</p>																				
Client action plan (Year 1 only)	<table border="1"> <tr> <td colspan="2">Responsible Party/ies: INAPESCA, FEDECOOP</td></tr> <tr> <td colspan="2"><b>1. Surveillance (2017):</b> By the first year, appropriate reference points have been identified and initial testing has been conducted. Initial consultation has started.</td></tr> <tr> <td><b>Activities:</b></td><td> <ul style="list-style-type: none"> <li>- Review biological aspects that determine lobster population dynamics.</li> <li>- Identify biomass levels that could cause recruitment to be compromised.</li> <li>- Identify fishing mortality levels that produce MSY.</li> <li>- Conduct a workshop to consult with fishers and experts if the identified reference points are appropriate for the stock and the fishery.</li> <li>- Initial simulation testing is conducted.</li> </ul> </td></tr> <tr> <td><b>Expected outcome:</b></td><td>- Meeting minutes</td></tr> <tr> <td><b>Expected score:</b></td><td>No anticipated changes in score at this stage</td></tr> <tr> <td colspan="2"><b>2. Surveillance (2018):</b> By the second year, appropriate reference have been discussed and accepted by the community. The process to formalize the publication of the reference points has started.</td></tr> <tr> <td><b>Activities:</b></td><td> <ul style="list-style-type: none"> <li>- Testing is completed and reference points are established.</li> <li>- A final workshop is conducted where reference points are discussed and approved by fishers, authorities and stakeholders.</li> <li>- Consultations are conducted to agree on the mechanism to formalize the use of the approved reference points for the fishery.</li> </ul> </td></tr> <tr> <td><b>Expected outcome:</b></td><td> <ul style="list-style-type: none"> <li>- Meeting minutes</li> <li>- Draft of National Fishing Chart or Management plan</li> </ul> </td></tr> <tr> <td><b>Expected score:</b></td><td>No anticipated changes in score at this stage</td></tr> <tr> <td colspan="2"><b>3. Surveillance (2019):</b> By the third year, the reference points have been submitted for publication in the official gazette and are ready to be used in the following fishing season</td></tr> </table>	Responsible Party/ies: INAPESCA, FEDECOOP		<b>1. Surveillance (2017):</b> By the first year, appropriate reference points have been identified and initial testing has been conducted. Initial consultation has started.		<b>Activities:</b>	<ul style="list-style-type: none"> <li>- Review biological aspects that determine lobster population dynamics.</li> <li>- Identify biomass levels that could cause recruitment to be compromised.</li> <li>- Identify fishing mortality levels that produce MSY.</li> <li>- Conduct a workshop to consult with fishers and experts if the identified reference points are appropriate for the stock and the fishery.</li> <li>- Initial simulation testing is conducted.</li> </ul>	<b>Expected outcome:</b>	- Meeting minutes	<b>Expected score:</b>	No anticipated changes in score at this stage	<b>2. Surveillance (2018):</b> By the second year, appropriate reference have been discussed and accepted by the community. The process to formalize the publication of the reference points has started.		<b>Activities:</b>	<ul style="list-style-type: none"> <li>- Testing is completed and reference points are established.</li> <li>- A final workshop is conducted where reference points are discussed and approved by fishers, authorities and stakeholders.</li> <li>- Consultations are conducted to agree on the mechanism to formalize the use of the approved reference points for the fishery.</li> </ul>	<b>Expected outcome:</b>	<ul style="list-style-type: none"> <li>- Meeting minutes</li> <li>- Draft of National Fishing Chart or Management plan</li> </ul>	<b>Expected score:</b>	No anticipated changes in score at this stage	<b>3. Surveillance (2019):</b> By the third year, the reference points have been submitted for publication in the official gazette and are ready to be used in the following fishing season	
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<b>2. Surveillance (2018):</b> By the second year, appropriate reference have been discussed and accepted by the community. The process to formalize the publication of the reference points has started.																					
<b>Activities:</b>	<ul style="list-style-type: none"> <li>- Testing is completed and reference points are established.</li> <li>- A final workshop is conducted where reference points are discussed and approved by fishers, authorities and stakeholders.</li> <li>- Consultations are conducted to agree on the mechanism to formalize the use of the approved reference points for the fishery.</li> </ul>																				
<b>Expected outcome:</b>	<ul style="list-style-type: none"> <li>- Meeting minutes</li> <li>- Draft of National Fishing Chart or Management plan</li> </ul>																				
<b>Expected score:</b>	No anticipated changes in score at this stage																				
<b>3. Surveillance (2019):</b> By the third year, the reference points have been submitted for publication in the official gazette and are ready to be used in the following fishing season																					

	<b>3. Surveillance (2019):</b> By the third year, the current control rule has been refined with greater detail and tested in association with proposed interim reference points, based on the feedback on priority factors described in milestone 3 of condition 1-1. Results have been distributed among fishers, authorities and stakeholders to obtain feedback towards an agreement of the new structure of the HCR.	
	<b>Activities:</b>	<ul style="list-style-type: none"> <li>— Annual meeting to update the stock status and evaluate it from the reference points</li> <li>— Submitting to CONAPESCA the draft the National Fishing Chart or Management Plan, for the official publication</li> <li>- Develop and implement a simulation experiment to test the performance of interim reference points and harvest control rule under alternative management scenarios.</li> <li>- Conduct a Regional Workshop to with the goals of:               <ul style="list-style-type: none"> <li>o Discuss and analyze previously identified biological aspects that determine lobster population dynamics, biomass levels that could cause recruitment to be compromised, fishing mortality levels that produce MSY.</li> <li>o Incorporate the above information to support interim reference points (INAPESCA/FEDECOOP).</li> <li>o Discuss the results of simulations testing the performance of a proposed harvest control rule which incorporates the proposed interim reference points.</li> <li>o Update the stock status based on agreed alternatives about the interim reference points and control rule.</li> </ul> </li> </ul>
	<b>Expected outcome:</b>	<ul style="list-style-type: none"> <li>— Meeting minutes</li> <li>— Stock assessment report</li> <li>— Official publication of National Fishing Chart or Management Plan</li> <li>- New stock assessment report (INAPESCA).</li> <li>- Progress report with results of testing simulations for interim reference points and control rule.</li> <li>- Workshop minutes with the results and agreements reached about priority factors in the design of the interim reference points and simulation of different HCR scenarios.</li> </ul>
	<b>Expected score:</b>	No anticipated changes in score at this stage
	<b>4. Surveillance (2020):</b> By the fourth year the reference points are defined and operate according to the requirements of PI 1.1.2.	
	<b>4. Surveillance (2020):</b> By the fourth year, a new interim HCR is fully developed, agreed, is a functional element of the harvest strategy and its application is formalized.	
	<b>Activities:</b>	<ul style="list-style-type: none"> <li>— Annual meeting to update the stock status and evaluate it from the reference points</li> </ul>



		<ul style="list-style-type: none"> <li>- Additional evaluation of performance of interim reference points and control rule based on feedback from stakeholders.</li> <li>- Annual meeting to update the stock status and evaluate the interim reference points and HCR.</li> </ul>	
	<b>Expected outcome:</b>	<ul style="list-style-type: none"> <li>- Meeting minutes</li> <li>- Formal agreement to interim reference points and HCR</li> <li>- Stock assessment report</li> </ul>	
	<b>Expected score:</b>	Score expected to increase to 80, condition is closed	
Progress on Condition [Year 1]	<p><b>Achievements against action plan</b></p> <ul style="list-style-type: none"> <li>- Conduct a workshop to consult with fishers and experts if the identified harvest control rules are appropriate for to maintain or reach the reference points. (N)</li> <li>- Initial simulation testing is conducted. (N)</li> </ul> <p><b>Finding</b></p> <p>The last stock assessment report (Camacho-Bareno et al 2017) modified the structure of the control rule presented in the Fisheries Management Plan (Vega-Velazquez et al. 2014). The changes include possible actions to implement the strategy associated with the status estimated using the original equation. The status variable in the decision rule is the ratio of the current biomass to one half the pre-exploitation level of biomass, which is assumed to produce MSY. Because there are no explicit definitions of reference points, there are no clear expectations as to whether the Bmsy is a target or a limit. Therefore, the operation of the control rule is uncertain and incomplete because in its present form it cannot “reduce the exploitation rate as limit reference points are approached” as required in the CR Table CB5 PI1.2.2, SIs at SG80.</p> <p>The client is advised to refer to the Guidance to the CR, Section GCB2.6, but in particular to keep in mind that the basic requirement for the HCR is that it has to reduce the exploitation rates as the limit reference point is approached. In other words, the rule must be aimed to keep the stock above the limit reference point and should attempt to maintain the stock at or around the reference point. With this in mind, the control rule cannot be considered well defined if alternative courses of action are not accompanied with a clear and explicit definition of the specific circumstances that will make the manager follow one alternative or the other and how the action will reduce the exploitation rate to achieve its goal. To complement this description, the proposed actions also require a more detailed description of how they would be implemented, including decision-making, communication to fishers, and monitoring of implementation and effectiveness.</p> <p>The fishery was found to be behind target and the following remedial actions were presented: <i>Within 12 months, elaborate a plan to produce a formal definition of reference points that are consistent with the definitions in the MSC Certification Requirements. Also, develop a strategy with explicit instructions about how the control rule would operate under such definitions. After an initial proposition and testing, a single workshop can be conducted to get feedback towards the final definition of the control rule, this workshop can also serve to discuss how decisions resulting from the use of the control rule can be implemented.</i></p>		

<p><b>Progress on Condition [Year 2]</b></p>	<p><b>Findings at second surveillance:</b></p> <p>A workshop was convened in July 2018 to discuss alternative approaches to determine reference points and to further develop the control rule. The process included testing alternative assessment methodologies to observe the resulting levels of population status relative to alternative reference points. The investigation proposed that the fishing mortality rate producing MSY should be taken as a limit reference point based on a simulation-based calculation of a probability near 50% that population status would be under the level producing MSY. The procedure included the construction of a cumulative probability curve that represents the level of risk that biomass would be under Bmsy given different levels of fishing mortality. This approach allows visualization of the current status of the stock relative to the reference point and can be used to determine course of action based on stock status.</p> <p>A discussion during the presentation of the stock assessment results that included the development of the reference points revealed a grade of complexity that had not been realized in previous audits nor during reassessment. In particular, a portion of the uncertainty is associated to natural environmental factors that are being acknowledged as relevant in determining recruitment strength. Stakeholders note that such important factors should be incorporated in any decision-making system and be related to reference points and control rules. Additionally, it was observed that the new definition of a limit reference point associated to MSY is conservative and that although precautionary, may involve a social cost that has yet to be discussed with the fishers. The social impact of the rule is considered relevant to evaluate the appropriateness of the HCR to the stock and to the practical needs required for implementation.</p> <p>While the results of the investigation did not fully meet the Year 2 milestone to have agreement on a procedure with explicit instructions about how the control rule would operate, the progress is considered satisfactory against the milestone for year 1 “By the first year, the harvest control rule is proposed and initial testing has been conducted. Initial consultation has started”. Therefore, the fishery is considered to be back on target for milestones for year 1 and is Behind Target on Year 2.</p> <p>In light of the progress made and current discussions, the team considered it appropriate to revise the milestones to better suit the trajectory of client actions while still maintaining the overall timeline and performance expectations relative to the condition.</p>
<p><b>Status of condition</b></p>	<p><b>Behind target.</b></p> <p><b>Remedial actions (specified per MSC FCRv2.0 7.23.13.1.b.i)</b></p> <p>Develop and implement a new action plan that is consistent with the redefined milestones described in previous sections. (Action plan is included above; implementation to be verified at the 3<sup>rd</sup> annual surveillance audit.)</p>

**Table 22. Condition 1-3**

*Milestones revised and timeline extended to align with Conditions 1-1 and 1-2.*

Performance Indicator(s) & Score(s)	PI 1.2.2	(b)	65
	<b>There are well defined and effective harvest control rules in place.</b>	<b>The selection of the harvest control rules must take into account the main uncertainties.</b>	
<b>Condition</b>	The harvest control rule must be pre-agreed, well defined and in place; it must be consistent with the harvest strategy to ensure that the exploitation rate is reduced as the limit reference point is approached.		

Milestones	<ol style="list-style-type: none"> <li><b>Surveillance 1 (2017):</b> By the first year, the main sources of uncertainty affecting the performance of the HCR have been identified and a basic analytical structure has been outlined. <del>Some initial testing has taken place.</del></li> <li><del><b>Surveillance 2 (2018):</b> By the second year, analyses have been completed and the main uncertainties have been accounted for in the performance of the HCR. The new or revised HCR is incorporated in the regulations and the process to formalize its publication in the official gazette has started.</del></li> <li><b>Surveillance 2 (2018):</b> By the second year, an evaluation model is implemented and some testing is conducted.</li> <li><del><b>Surveillance 3 (2019):</b> By the third year, analyses have been completed and the main uncertainties have been accounted for in the performance of the HCR.</del></li> <li><del><b>Surveillance 4 (2020):</b> By the fourth year, the new or revised HCR includes the main uncertainties and is incorporated in the regulations. Condition closed.</del></li> <li><b>Surveillance 3 (2019):</b> By the third year, analyses exploring the effects of different sources of uncertainty include the interim reference points and harvest control rule and are part of the testing being conducted on the whole harvest strategy development.</li> <li><b>Surveillance 4 (2020):</b> By the fourth year, the selection of the harvest control rule takes into account the main uncertainties</li> </ol>																						
Client action plan (Year 1 only)	<table border="1"> <tr> <td colspan="2"><b>1. Surveillance (2017):</b> By the first year, the main sources of uncertainty affecting the performance of the HCR have been identified and a basic analytical structure has been outlined. Some initial testing has taken place.</td></tr> <tr> <td><b>Activities:</b></td><td>- Annual meeting to evaluate the stock status, the reference points and the HCR, testing some simulation methods including uncertainty</td></tr> <tr> <td><b>Expected outcome:</b></td><td>- Meeting minutes - Stock assessment report</td></tr> <tr> <td><b>Expected score:</b></td><td>No anticipated changes in score at this stage</td></tr> <tr> <td colspan="2"><del><b>2. Surveillance (2018):</b> By the second year, analyses have been completed and the main uncertainties have been accounted for in the performance of the HCR. The new or revised HCR is incorporated in the regulations and the process to formalize its publication in the official gazette has started.</del></td></tr> <tr> <td colspan="2"><b>2. Surveillance (2018):</b> By the second year, an evaluation model is implemented and some testing is conducted</td></tr> <tr> <td><b>Activities:</b></td><td>Annual meeting to evaluate the stock status, the reference points and the HCR, with simulation methods including uncertainty</td></tr> <tr> <td><b>Expected outcome:</b></td><td>- Meeting minutes - Draft of National Fishing Chart or Management plan</td></tr> <tr> <td><b>Expected score:</b></td><td>No anticipated changes in score at this stage</td></tr> <tr> <td colspan="2"><b>3. Surveillance (2019):</b> By the third year, analyses exploring the effects of different sources of uncertainty include the interim reference points and harvest control rule and are part of the testing being conducted on the whole harvest strategy development</td></tr> <tr> <td><b>Activities:</b></td><td>- Develop and implement a simulation experiment to test the performance of interim reference points and harvest control rule under alternative management scenarios.</td></tr> </table>	<b>1. Surveillance (2017):</b> By the first year, the main sources of uncertainty affecting the performance of the HCR have been identified and a basic analytical structure has been outlined. Some initial testing has taken place.		<b>Activities:</b>	- Annual meeting to evaluate the stock status, the reference points and the HCR, testing some simulation methods including uncertainty	<b>Expected outcome:</b>	- Meeting minutes - Stock assessment report	<b>Expected score:</b>	No anticipated changes in score at this stage	<del><b>2. Surveillance (2018):</b> By the second year, analyses have been completed and the main uncertainties have been accounted for in the performance of the HCR. The new or revised HCR is incorporated in the regulations and the process to formalize its publication in the official gazette has started.</del>		<b>2. Surveillance (2018):</b> By the second year, an evaluation model is implemented and some testing is conducted		<b>Activities:</b>	Annual meeting to evaluate the stock status, the reference points and the HCR, with simulation methods including uncertainty	<b>Expected outcome:</b>	- Meeting minutes - Draft of National Fishing Chart or Management plan	<b>Expected score:</b>	No anticipated changes in score at this stage	<b>3. Surveillance (2019):</b> By the third year, analyses exploring the effects of different sources of uncertainty include the interim reference points and harvest control rule and are part of the testing being conducted on the whole harvest strategy development		<b>Activities:</b>	- Develop and implement a simulation experiment to test the performance of interim reference points and harvest control rule under alternative management scenarios.
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<b>Expected score:</b>	No anticipated changes in score at this stage																						
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<b>Expected outcome:</b>	- Meeting minutes - Draft of National Fishing Chart or Management plan																						
<b>Expected score:</b>	No anticipated changes in score at this stage																						
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<b>Activities:</b>	- Develop and implement a simulation experiment to test the performance of interim reference points and harvest control rule under alternative management scenarios.																						

		<ul style="list-style-type: none"> <li>- Evaluate potential effects of sources of uncertainty on the HCR.</li> <li>- Conduct a Regional Workshop to with the goals of: <ul style="list-style-type: none"> <li>o Discuss and analyze previously identified biological aspects that determine lobster population dynamics, biomass levels that could cause recruitment to be compromised, fishing mortality levels that produce MSY.</li> <li>o Incorporate the above information to support interim reference points (INAPESCA/FEDECOOP).</li> <li>o Discuss the results of simulations testing the performance of a proposed harvest control rule which incorporates the proposed interim reference points.</li> <li>o Update the stock status based on agreed alternatives about the interim reference points and control rule.</li> <li>o Assure integration of stock assessment, reference points, information and control rule to conform a harvest strategy.</li> </ul> </li> </ul>
	<b>Expected outcome:</b>	<ul style="list-style-type: none"> <li>- Stock assessment report (INAPESCA).</li> <li>- Workshop minutes with the results and agreements reached in the first round of discussions about priority factors in the design of the reference points and simulation of different HCR scenarios.</li> </ul>
	<b>Expected score:</b>	No anticipated changes in score at this stage.
	<b>4. Surveillance (2020):</b> By the fourth year, the selection of the harvest control rule takes into account the main uncertainties.	
	<b>Activities:</b>	<ul style="list-style-type: none"> <li>- Additional evaluation of performance of interim reference points and control rule based on feedback from stakeholders.</li> <li>- Review of models included in the stock assessment to resolve differences resulting in model uncertainty added to the HCR based decision making.</li> <li>- Annual meeting to update the stock status and evaluate the interim reference points and HCR.</li> </ul>
	<b>Expected outcome:</b>	<ul style="list-style-type: none"> <li>- Meeting minutes</li> <li>- Formal agreement to interim reference points and HCR.</li> <li>- Stock assessment report</li> </ul>
<b>Progress on Condition [Year 1]</b>	<b>Expected score:</b>	Score expected to increase to 80, condition is closed.
	<b>Achievements against action plan</b> <ul style="list-style-type: none"> <li>- Annual meeting to evaluate the stock status, the reference points and the HCR, testing some simulation methods including uncertainty.</li> </ul> <b>(N)</b> <b>Finding</b>	

	<p>The main uncertainties have not been identified yet and no proposition of how to insert them in the stock assessment has been presented. See progress on conditions 1-1 and 1-2 for a summary of the actions taken to date relative to the definition of reference points and the HCR. The team considered that a prerequisite level of development of the HCR is necessary for the fulfillment of this condition's requirements, such that some progress on conditions 1-1 and 1-2 are necessary to achieve material progress on this condition. On this basis, the surveillance team considered that initial timeline for these milestones may have provided insufficient consideration of this dependency and were unrealistic. There was an agreement to revise the timeline and indicated in the revised milestones above to better align with the actions as laid out in Conditions 1.1 and 1.2.</p> <p>The fishery was found to be behind target and the following remedial actions were presented (specified per MSC FCRv2.0 7.23.13.1.b.i):  Within 12 months, identify sources of uncertainty and start developing a simulation framework for testing. The client is advised to observe the following content in the Guidance to the CR in GCB2.6 <i>"The requirement that the control rules and/or management actions are designed to take into account uncertainty can be supported by testing. Testing can include the use of experience from analogous fisheries, empirical testing (for example practical experience of performance or evidence of past performance) and simulation testing (for instance using computer-intensive modelling such as MSE)"</i>.</p>
Progress on Condition [Year 2]	<p>The stock assessment was conducted testing the performance of alternative models, calculating stock status accounting for observer error, and simulations were used to compute the probability of outcomes based on alternative course of action. Progress against the requirements in the remedial actions and the milestones in the action plan is back on target for both years 1 and 2.</p> <p>Because there is no final decision about reference points and the HCR, more testing and exploration must be conducted in addition to what has already been done and progress on these analyses will be reviewed in subsequent surveillances.</p>
Status of condition	<p><b>On Target</b></p> <p>Note that per the inter-related Conditions 1-1 and 1-2 that have been found Behind Target findings, the team revised milestones and the client provided an updated action plan. Develop and implement a new action plan that is consistent with the redefined milestones described in previous sections. (Action plan is included above; implementation to be verified at the 3<sup>rd</sup> annual surveillance audit.)</p> <p>The client is advised to observe the following content in the Guidance to the CR in GCB2.6 <i>"The requirement that the control rules and/or management actions are designed to take into account uncertainty can be supported by testing. Testing can include the use of experience from analogous fisheries, empirical testing (for example practical experience of performance or evidence of past performance) and simulation testing (for instance using computer-intensive modelling such as MSE)"</i>.</p>

**Table 23. Condition 2-1**

Performance Indicator(s) & Score(s)	PI 2.1.3	(d)	75
	Information on the nature and extent of retained species is	Sufficient data continue to be collected to detect any increase in risk level (e.g.	

	<b>adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage retained species</b>	<b>due to changes in the outcome indicator score or the operation of the fishery or the effectiveness of the strategy)</b>	
<b>Condition</b>	By the second surveillance provide information at the species level that is adequate to detect any increase in risk level due changes in the outcome indicator score or the operation of the fishery or the effectiveness of the partial strategy in place.		
<b>Milestones</b>	1. Surveillance 1 (2017): By the first year information is being collected on bait/retained species with sufficient level of accuracy. 2. Surveillance 2 (2018): By the second year the client presents information at the species level on the volume and origin of bait and other retained species in this fishery.		
<b>Client action plan activities</b>	Responsible Party/ies: INAPESCA, FEDECOOP, CONAPESCA <b>Surveillance 1 (2017):</b> By the first year information is being collected on bait/retained species.		
	<b>Activities:</b>	At this stage FEDECOOP with the support of INAPESCA will start a program for taxonomic identification of all retained and baits species. A control will be put in place to implement that record the volume and source of the bait used.	
	<b>Expected outcome:</b>	By the first surveillance the client will provide evidence that bait data collection is being collected for the first year. This will include a list of bait species with scientific names preliminary data on volumes and evidence that the monitoring system has been improved.	
	<b>Expected score:</b>	No anticipated changes in score at this stage.	
	<b>Surveillance 2 (2018):</b> By the second year the client presents information at the species level on the volume and origin of bait and other retained species in this fishery.		
	<b>Activities:</b>	FEDECOOP will continue the record for bait and with the support of INAPESCA will analyze all information collected monthly (Record for Bait and Landing Records).	
	<b>Expected outcome:</b>	By the second surveillance the client will provide a technical report, per fishing season, which includes characterization of species used as bait in lobster fishing, specifying volume by species and source.	
	<b>Expected score:</b>	Expected score: 80, condition is closed.	
<b>Progress on Condition [Year 1]</b>	<b>Achievements against action plan.</b> <ul style="list-style-type: none"><li>- At this stage FEDECOOP with the support of INAPESCA will start a program for taxonomic identification of all retained and baits species. <b>(N)</b></li><li>- A control will be put in place to implement that record the volume and source of the bait used. <b>(N)</b></li><li>- By the first surveillance the client will provide evidence that bait data collection is being collected for the first year. <b>(N)</b></li><li>- This will include a list of bait species with scientific names preliminary data on volumes and evidence that the monitoring system has been improved. <b>(N)</b></li></ul>		

### Finding

The client presented a summary of bait used by the UoA that included volume and common names (versus scientific names). The data did not differentiate between the bait purchased in Ensenada versus caught by UoA fishers. The client group noted that while it is feasible to provide more detailed records of bait caught by UoA fishers, it is not feasible to identify in more detail the composition of species purchased in Ensenada (because the fish come in mass frozen blocks and are not identified in detail beyond 'sardine' in accompanying paperwork). The fishery considers that almost all bait is '*sardina monterey*' (Pacific sardine), and that several other small pelagic species would be undesirable to use as bait and are avoided.

In order to characterize Ensenada bait species composition, regional production statistics for small pelagics were recognized as useful as a potential proxy. Landings of small pelagics species (*sardina*, *macarela*, and *anchoveta*) were found to be available online, and landings for the last 5 years were provided. The assessment team notes that this landings data suggests that *anchoveta* may in some years comprise a significant proportion of landings in Baja California, such that if the same relative small pelagics species composition applies to the bait used in the UoA (classified as 'sardina' by the UoA), *anchoveta* may qualify as 'main'. This is because bait comprises such a large proportion of the overall catch by weight in the fishery, and 'sardines' consistently represent the vast majority of bait used by the UoA. Because Baja-wide landings from CONAPESCA are not fishery-specific data and thus cannot be directly extrapolated as representative of bait caught and purchased by the UoA, fishery technicians assert that there is a preference for Pacific sardine for use as bait over other small pelagics species, and because there is some evidence of differentiation of small pelagics species (i.e. mackerel) in the bait data provided by FEDECOOP (Table 7), the assessment team does not consider a reclassification of *anchoveta* as 'main' merited at this stage. However, the inter-annual variability demonstrated underscores the importance of provision of improved information on bait species caught and purchased by the UoA.

INAPESCA suggested that the data collected via their "*muestra masiva*" may be useful, as this includes a characterization of bait used by the fishers. INAPESCA staff have not put efforts into formalizing this data as it has not been an area of management focus historically, but report they could likely produce a summary table of species-specific bait data in the future. In addition, there may be more detailed information on the small pelagics fishery landings that could provide for additional information on small pelagics catch composition of the bait purchased from distributors by the UoA (J. Castro, pers. Comm).

In a post-audit meeting in which the onsite meeting attendees discussed plans to meet the remedial actions, the participants agreed to revise the logbook form (*bitácora de pesca*) to record more detailed information as required by conditions 2-1 and 2-2. See Appendix 3 (Report Section 7.3.2).

### Behind target.

#### Remedial actions (specified per MSC FCRv2.0 7.23.13.1.b.i)

Within 12 months, or prior to the second annual surveillance audit, the assessment team expects a report on bait that includes the following information:

- characterization of all bait that distinguishes bait purchased versus captured by the UoA, with volumes by month. This should include all species used for bait.
- Species-specific characterization of the bait categorized as '*sardina*'. There are several alternatives discussed during this audit that may achieve this objective, that the client may consider using in concert:



	<ul style="list-style-type: none"> <li>○ more detailed species-specific reporting of bait captured by UoA fishers for use in the fishery</li> <li>○ use of small pelagics production statistics to characterize the proportional composition of small pelagics in the area.</li> </ul> <p>use of data from the '<i>muestra masiva</i>' from INAPESCA to characterize bait use by species</p>
Progress on Condition [Year 2]	<p>The client provided an additional year of data regarding bait from the 2017/2018 fishing season. Data presented provided more detail: including species name and provenance (whether sourced from the local cooperative ("Region") or purchased in Ensenada), for all bait species. For sardines, this information was provided by month, and small pelagics landings by cooperative was also provided.</p> <p>Data provided demonstrated that the vast majority of the bait used in the fishery remains Pacific sardine, and that the majority of this (88%) comes is sourced through each cooperative (either fished by the cooperative or bought locally). While all species commercially landed in Mexico for use as bait by law must be landed with an indicative fish ticket (<i>Aviso de arribo</i>), bait sourced through a local cooperative will have ready traceability through its use by the fishery, thus making species identification more reliable for locally sourced bait.</p> <p>All landings by the cooperative are processed through the local plant, where separation of species, including small pelagics occurs. As a demonstration of this system, the bait records provided to the team separate mackerel caught by the cooperative from sardines- as this occurs in the plants. Landings records, as well as local use or external sales will also be recorded within the cooperative. For bait purchased outside the cooperative, the cooperative will have a record of invoices with the species and respective volume. For bait purchased in Ensenada, the current system of records does not provide clear documentation as to stock provenance. The client did informally examine several blocks of bait purchased through Ensenada and concluded the composition must be at least 98% sardine. However, this informal monitoring is not sufficient for assessment purposes.</p> <p><b>So long as the bait continues to be primarily sourced through local cooperatives- in particular for sardine or any other species that may be considered main in the future - the information system in place founded in cooperative-level traceability is sufficient. The team does note that mackerel comprised ~3.5% of the total catch by weight, indicating the importance of ongoing monitoring of all bait used. Further, ongoing provision of evidence indicating differentiation of provenance of sardine (or any Main species used as bait) by cooperative/Ensenada and by month is also fundamental to identifying stock provenance.</b></p> <p><b>This condition can be closed on time, but bait will continue to be subject to annual monitoring.</b></p>
Status of condition	Closed

**Table 24. Condition 2-2**

Performance Indicator(s) & Score(s)	PI 2.2.3	(b,c)	70
	Information on the nature and the amount of bycatch is	Information is sufficient to estimate outcome status with respect to	



	adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch	biologically based limits; Information is adequate to support a partial strategy to manage main bycatch species.	
Condition	By the third surveillance, provide accurate information at the species level on the volume (weight) of bycatch species in this fishery, information and evidence of end use of sharks and other bycatch species.		
Milestones	<p>1. <b>Surveillance 1 (2017):</b> By the first year, data collection of bycatch species with logbooks has been improved. This includes the annotation of the type and number of sharks captured and a comment on whether they were retained or discarded dead or released alive.</p> <p>2. <b>Surveillance 2 (2018):</b> By the second year the client presents evidence that information of bycatch species is being systematically collected and analyzed.</p>		
Client action plan	Responsible Party/ies: INAPESCA, FEDECOOP		
	Surveillance 1 (2017): By the first year, data collection of bycatch species with logbooks has been improved. This includes the annotation of the type and number of sharks captured and a comment on whether they were retained or discarded dead or released alive.		
	Activities:	At this stage FEDECOOP with the support of INAPESCA will identify all bycatch species, including sharks, fish and invertebrates and will start to record volume of bycatch species in each of the concession areas of the SCPP within the unit of assessment.	
	Expected outcome:	Report of bycatch species during the lobster season 2017/18	
	Expected score:	No anticipated changes in score at this stage.	
	Surveillance 2 (2018): By the second year the client presents evidence that information of bycatch species is being systematically collected and analyzed.		
	Activities:	The client, together with the staff of INAPESCA will continue the application of an improved system of recording for bycatch species and this is systematically and continuously applied over the entire client group.	
	Expected outcome:	Report of bycatch species during the lobster season 2018/19	
	Expected score:	No anticipated changes in score at this stage.	
	Surveillance 3 (2019): By the third year client presents information on bycatch species (quantity, composition and end use) that is sufficient to estimate outcome status.		

	<b>Activities:</b>	The client, together with the staff of INAPESCA will continue the application of an improved system of recording for bycatch species and this is systematically and continuously applied over the entire client group.
	<b>Expected outcome:</b>	Report of bycatch species during the lobster season 2018/19, which incorporates information on volumes, composition and end use of bycatch species.
	<b>Expected score:</b>	80, condition is closed
<b>Progress on Condition [Year 1]</b>	<p><b>Achievements against action plan.</b></p> <ul style="list-style-type: none"> <li>- At this stage FEDECOOP with the support of INAPESCA will identify all bycatch species, including sharks, fish and invertebrates and will start to record volume of bycatch species in each of the concession areas of the SCPP within the unit of assessment. (Y)</li> <li>- Report of bycatch species during the lobster season 2017/18 (Y)</li> </ul> <p><b>Finding</b></p> <p>FEDECOOP provided a summary of incidentally captured species that included scientific names, and weights (rather than numbers). The team was also provided with a video demonstrating live release of sharks, and records of logbooks from 6 cooperatives, though not all cooperatives appear to be recording bycatch species encountered or the end use and status of sharks. The assessment team also noted that the format of the logbooks was not uniform across all cooperatives, which may contribute to inconsistency in reporting.</p> <p>The assessment team considers this condition on target on the basis of the improvements in reporting to the species level and by weight. However, there are aspects of the Year 1 milestone that were not completely fulfilled and must be improved in order for the fishery to remain on target and close the condition.</p> <p>By year two the assessment team expects to receive evidence that the monitoring program has continued to improve in its collection of information and in particular that there is improved consistency in reporting across all cooperatives (recording all bycatch and the fate of sharks (retained/discard, live/dead)).</p> <p><u>The assessment team reminded the client that for the next annual surveillance, per the client action plan, they expect to receive a summary of data that includes a summarized breakdown with additional detail of fate (retained, released dead, released alive) for sharks in the annual reporting on incidental species interactions, in addition to evidence of reporting by all cooperatives in the form of a sample of logbooks.</u></p> <p>In a post-audit meeting in which the onsite meeting attendees discussed plans to meet the 2<sup>nd</sup> annual audit requirements, the participants agreed to revise the logbook form (<i>bitacora de pesca</i>) to record more detailed information as required by conditions 2-1 and 2-2. See Appendix 3 (Report Section 7.3.2).</p>	

<b>Progress on Condition [Year 2]</b>	<p>At the second annual surveillance, bycatch information from the 2017/2018 fishing season was provided, as well as samples of logbooks from 5 cooperatives. In addition to the improvements noted in the first surveillance audit, detail as to whether the species is retained or discarded was provided.</p> <p>Data clearly indicates that bycatch comprises a negligible proportion of total catch by weight, and in the first two years the client has provided additional evidence that the key species of concern (mainly sharks) are released alive. The assessment team recommends that further work be done to improve upon consistency in logbook formats between cooperatives and reporting by fishers within cooperatives. However, data continues to indicate that bycatch impacts are low.</p>
<b>Status of condition</b>	<b>On target</b>

**Table 25. Condition 3-1**

	<b>PI 3.2.4</b>	<b>(a)</b>	<b>60</b>
<b>Performance Indicator(s) &amp; Score(s)</b>	<b>The fishery has a research plan that addresses the information needs of management.</b>	<b>A research plan provides the management system with a strategic approach to research and reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2.</b>	
<b>Condition</b>	A research plan must be developed as a written document that includes a plan for the fishery under assessment, relevant to the scale and intensity and the issues requiring research. The plan must provide the management system with a strategic approach to research and reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2.		
<b>Milestones</b>	<ol style="list-style-type: none"> <li><b>1. Surveillance (2017):</b> By the first year the management plan was published in the official gazette; it's including the general research program with objectives and goals in the short, medium and long term.</li> <li><b>2. Surveillance (2018):</b> By the second year the client presents evidence of the evaluation of results of the program research and it's review for updating objectives and goals in the short, medium and long term.</li> </ol>		
<b>Client action plan (Year 1 only)</b>	<ul style="list-style-type: none"> <li>- Public consultation of the draft of management plan for lobster fishery, to submit at CONAPESCA to formalize it.</li> <li>- Annual meeting to discuss at research plan to reach the objectives and conditions of the certification.</li> </ul>		
<b>Progress on Condition [Year 1]</b>	<p><b>Achievements against action plan.</b></p> <ul style="list-style-type: none"> <li>- Public consultation of the draft of management plan for lobster fishery, to submit at CONAPESCA to formalize it. <b>(NA)</b></li> <li>- Annual meeting to discuss a research plan to reach the objectives and conditions of the certification. <b>(NA)</b></li> </ul> <p><b>Finding</b></p> <p>The main purpose of this Condition is that the fishery has a research program that is described in a formal document has the characteristic outlined in CR CB4.10.3. The client action plan proposed activities that were related to the management plan, in</p>		

	<p>which a research program may be described in satisfaction with the SG80 criteria, but is not the only avenue through which a satisfactory research plan could be presented. At the first annual surveillance audit, the INAPESCA Regional Center in La Paz provided evidence of a modified their regular Annual Operative Program (POA; INAPESCA 2016) with structure and content that better fits the requirements “a written document that includes a specific research plan for the fishery under assessment, relevant to the scale and intensity and the issues requiring research” (CR CB4.10.3). Therefore, the fishery is considered to be in full compliance with PI 3.2.4 Sla at the SG80 level. Conditions are evaluated for conformity against the certification requirements and not the client action plan (See FCRv2.0 7.23.13.1), and therefore, although the actions stipulated in the client’s action plan were not achieved, the condition is considered met and is now closed.</p>
Status of condition	<b>Condition closed.</b>

**Table 26. Condition 3-2**

Performance Indicator(s) & Score(s)	PI 3.2.4	(b)	60
	<b>The fishery has a research plan that addresses the information needs of management.</b>	<b>Research results are disseminated to all interested parties in a timely fashion.</b>	
Condition	Results of research conducted to inform management actions must be disseminated to all parties in a timely fashion.		
Milestones	<ol style="list-style-type: none"> <li><b>Surveillance 1 (2017):</b> By the first year Annual meetings between INAPESCA and FEDECOOP are held after each fishing season to discuss results of the analysis of the fishery.</li> <li><b>Surveillance 2 (2018).</b> By the second year the client presents evidence of the annual meeting between INAPESCA and FEDECOOP are implemented after each lobster season</li> </ol>		
Client action plan (Year 1 only)	<ul style="list-style-type: none"> <li>Annual meeting to evaluate the results of the lobster season 2016/17</li> </ul>		
Progress on Condition [Year 1]	<p><b>Achievements against action plan</b></p> <ul style="list-style-type: none"> <li>Annual meeting to evaluate the results of the lobster season 2016/17.</li> </ul> <p><b>(Y)</b></p> <p><b>Finding</b></p> <p>We received a copy of the minutes of the meeting in September where the results of 2016/17 season were presented. INAPESCA and FEDECOOP agreed that the meeting was unusually late for reasons out of their control, and although these meetings usually take place earlier, there was a general sense of satisfaction with the flow of information from research. There are still a few details to improve in the flow of data both from FEDECOOP to INAPESCA and vice versa, but there was a good sense of collaboration between stakeholders. The team agrees that the condition can be considered to be on target.</p> <p>The fishery was informed that for the next surveillance audit, the team expects to receive information and evidence two weeks in advance of the onsite. The response was that the information can be produced in the technical meeting and submitted so</p>		

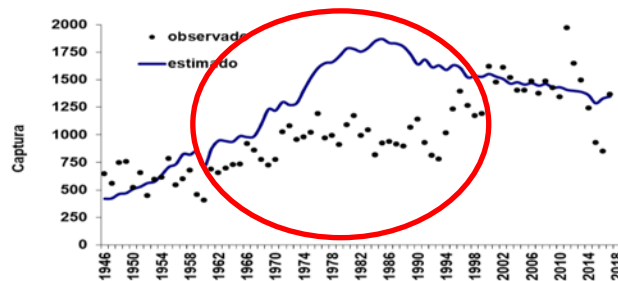
	<p>that the onsite can take place in November instead of December (December is not considered a good time for the surveillance audit).</p> <p>If meetings continue to take place regularly and the flow of information improves as agreed, at the next surveillance audit this condition could be closed. The fishery however is also advised to continue in compliance with this requirement as the team will keep monitoring the appropriate and timely flow of information.</p> <p>The fishery was determined to be on target for this Condition.</p>
Progress on Condition [Year 2]	<p>The assessment team received a copy of the minutes of a meeting held on April 2018 where fishers and authorities from INAPESCA exchanged information about the status of the fishery, investigations on the relationship of climate and catch and reached agreements on relevant aspects of the fishery.</p> <p>The assessment team considered that there's evidence of a regular system of communication between interested parties so that results of research conducted to inform management actions are disseminated to all parties in a timely fashion. The Condition is considered to be on target for year 2 and can therefore be closed. The team will continue to request annual meeting minutes to monitor ongoing performance relative to this scoring issue.</p>
Status of condition	<b>Closed.</b>

**Table 27. Recommendation 1-1**

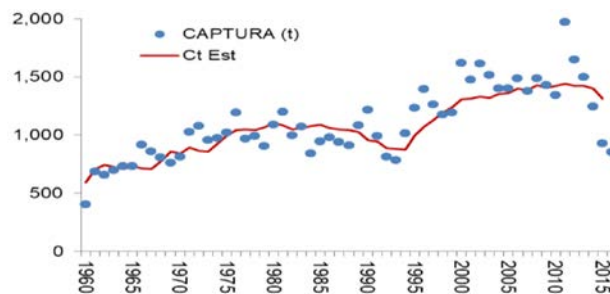
	PI 1.2.4	(a,e)	85 (current)
Performance Indicator(s) & Score(s)	<p><b>There is an adequate assessment of the stock status.</b></p>	<p><b>a) The assessment is appropriate for the stock and for the harvest control rule.</b></p> <p><b>e) The assessment of stock status is subject to peer review.</b></p>	
Rationale	<p>After the onsite visit, the assessment team received a copy of the latest stock assessment report presented during the 2<sup>nd</sup> surveillance audit. Upon careful review of the report a potential problem in the assessment was detected in the plot of the fit of predicted catch to the records of removals. Other issues are also described. The assessment team was not able to address these questions in the course of the surveillance audit because the report was not received prior to onsite meetings.</p> <p>These issues are not deemed material to scoring at this time because of the exploratory nature of the modelling efforts; however, as an assessment will support the reference points and HCR, such questions will need to be clarified and PI 1.2.4 must be re-evaluated with any proposed final reference points and HCR.</p> <p><b>Logistic model</b></p> <p>The methods section indicates that catch was known with precision and variability in the CPUE was due to observation error. There is lack of clarity in the subsequent methodology description, where it is indicated that q was estimated using a maximum likelihood function with lognormal error, while the best estimate of r and K was obtained using Excel's Solver, minimizing the objective function of the residual SS between the observed and calculated catch. This description is problematic because if data is known precisely, it is understood that no estimate of predicted catch is</p>		

obtained and therefore no catch related fitting function is added to the total objective function. If a catch component is added to the objective function, then it is assumed that the catch is also known with error, not known precisely.

Further, if both catch and CPUE are assumed with error, then the objective function would have at least two fitting functions: one fitting the catch and another fitting the CPUE. Ideally, they should be of the same type (eg. Either ML, SS). Combining ML with SS in the same objective function would require an explanation of the assumptions required to use one or the other. If SS are used to fit the catch in the model, then it should be explained why it is assumed that all catch records have the same associated variance and therefore the SS would not need to be weighted (all points are equally important to fit the model predicted catch). It is possible that the scale of the resulting SS is much larger than the resulting negative log-likelihood and if so, it may represent a problem during the optimization process.



Finally, these considerations lead to the problem observed in the figure above (reproduced from Vega-Velázquez et al. 2017), the plot of predicted vs observed catch clearly showing a fitting problem highlighted inside the red oval. Assuming that catch is known with very small error (giving some latitude to the stated assumption), there is nothing in the model (at least as described in the methods) preventing each predicted catch from being almost identical to the observation. Even if some unknown factors force the predicted catch not to be identical (ie. the line going through all points or very close), the curve should at least attempt to go through the cloud of points as it did in last year's assessment (see below; reproduced from Camacho-Bareno et al. 2017).



It should be kept in mind that a poor fit of model predictions to highly precise data can lead to relevant errors and biases associated to the parameter estimates, including those regulating the population dynamics and derived parameters for management (e.g.  $F/F_{msy}$ ,  $C/MSY$  or  $B/B_{msy}$ ). **Under these circumstances, the resulting stock assessment may not be appropriate for the stock and/or the harvest control rule. Under these circumstances, the audit team considers that the best course of action is**

	<p><b>to have this model implementation and resulting estimates of parameters of dynamics and management revised by a new independent party.</b></p> <p><b>Jones' method</b> In the description of the application of the length based Jones' model, there's not sufficient detail about how the method was applied. This method is highly sensitive to the assumption of equilibrium, providing seriously biased results if the assumption is poorly met. The methods section in Vega-Velázquez et al. (2018) indicate that this procedure "allows determination of the optimal fishing strategy, through the age specific array of F (catch pattern), which on the long term generates the maximum stock yield". The relevance of verification of such conclusions must be supported by a solid fundament of reliability on the assumption about equilibrium (e.g. through appropriate selection of the period and number of years to conduct the analysis).</p> <p><b>Catch curves</b> The slope of the catch curve regression method usually provides an estimate of the total mortality rate (Z) to which natural mortality (usually assumed known) is subtracted to obtain an estimate of the fishing mortality rate F. Also, and most importantly, the estimated Z in these methods are strongly dependent on the assumptions of asymptotic selectivity and constant recruitment. In the report by Vega-Velázquez (2018) the results section present estimates of F without reference about how that was obtained. No discussion of assumption violations is considered either.</p> <p><b>Structured models</b> No particular issue was identified in the utilization of these models except that the level of methodological description is scarce.</p> <p><b>Spawning Potential Ratio</b> Indicators obtained with all models suggest that the SPR is under the reference point of 35%, a result in clear contrast compared to the optimistic results with all other MSY based indicators. This inconsistency should be investigated further.</p>
<p><b>Recommendation</b></p>	<p>Ensure that a stock assessment used to support finalized reference points and the HCR is appropriate for the stock and harvest control rule and is subject to peer review*.</p> <p>*The team recommends that peer review include 2 independent parties and a full review of stock assessment procedures, methods and implementation to detect possible sources of error that could cause erroneous conclusions about stock status and misguide decisions. This should include review of model structure, actual computer implementation, replication of computer runs to detect issues and verify results are consistent even under different initial conditions.</p>

## 6 References

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## 7 Appendices

### 7.1 Appendix 1. Re-scoring evaluation tables (if necessary)

Changes to rationales from the initial full assessment are indicated by struck-through deletions and underlined additions.

**Table 28. Evaluation Table for PI 2.1.3- Rescored at Year 2 Surveillance**

PI 2.1.3		Information on the nature and extent of retained species is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage retained species		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Qualitative information is available on the amount of main retained species taken by the fishery.	Qualitative information and some quantitative information are available on the amount of main retained species taken by the fishery.	Accurate and verifiable information is available on the catch of all retained species and the consequences for the status of affected populations.
	Met?	Y	Y	N
	Justification	<p>In a monthly and seasonal manner, during the fishing season (September –February), the source and quantity of bait used during the fishing operations is recorded and summarized using a specific reporting form (<i>Registro de Producción Mensual de Carnada- Pesquería de Langosta</i>). The data recorded include and differentiate between, Pacific sardines purchased in Ensenada and captured locally. As mentioned above, other information sources are the landing tickets (<i>aviso de arribo</i>) for Pacific sardine landed in the UoA, and records for sardine otherwise landed in Ensenada and purchase by the UoA. The Fisheries Management Plan for the small pelagics fishery presents information on historical trends of capture, fishing effort and CPUE.</p> <p>The assessment team received a report that provided details on species groups (e.g. sardine, mackerel, others) and amounts of bait used by each co-op during the fishing seasons 2012/13, 2013/14 and 2014/15.</p> <p>There is qualitative and some quantitative information available on the amount and origin of Pacific sardine used for bait in the fishery (SG80). Aside from Pacific sardines the other (minor) retained species are the other two species of tropical lobsters and the 13 different fish species. The fish species captured and retained in the lobster fishery are recorded by fishers in the logbooks. The self-reported information from the logbooks appears to be of varying accuracy and has not been verified. Similarly, there is not sufficient accuracy in the information presented for Pacific sardines to confidently determine their stock origin, thus this scoring issue does not meet SG100.</p> <p>This scoring issue meets SG80.</p>		
b	Guidepost	Information is adequate to qualitatively assess outcome status with respect to biologically based limits.	Information is sufficient to estimate outcome status with respect to biologically based limits.	Information is sufficient to quantitatively estimate outcome status with a high degree of certainty.
	Met?	Y	Y	N

PI 2.1.3		Information on the nature and extent of retained species is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage retained species		
	Justification	<p>The main species in this fishery, Pacific sardines, may originate from two stocks; the cold (northern) stock which is shared with the United States, and the temperate (southern) stock targeted solely by the commercial small pelagic fishery operating off the west coast of Baja California, Mexico. The status of the cold stock biomass is evaluated yearly by NOAA for its U.S.A. management and is considered under PI 2.1.1a that it is not likely to be within biologically based limits. The temperate stock is monitored by CONAPESCA in Mexico, information is collected yearly primarily on landings, however, there is no assessment of the status of this stock available. For this reason the team took a precautionary approach and was unable to assert that this stock is likely to be within biologically based limits. Information on landings in the port of Ensenada provided sufficient information to assume that the Pacific sardine sourced in the last seasons of the lobster fishery originated from the temperate stock. Thus this PI focuses on the temperate stock. The outcome status of the Pacific sardine was evaluated on the basis that the volume(weight) used by lobster fishery is small relative to the total catch recorded in the west coast of Baja California for this species. Despite the lack of information of the status of the temperate stock, with information on the weight of Pacific sardine used by the lobster fishery, the landings of the commercial fishery, and data on allocation of the different stocks to landings in Ensenada the team was able to conclude that the amount of Pacific sardine used is not large enough to have a consequential effect on the status of temperate stock, meeting SG80.</p> <p>Information is not considered sufficient to quantitatively estimate outcome status with a high degree of certainty for Pacific sardine and other retained (minor) species, thus SG 100 is not met.</p> <p>This scoring issue meets SG80.</p>		
c	Guidepost	Information is adequate to support measures to manage main retained species.	Information is adequate to support a partial strategy to manage main retained species.	Information is adequate to support a strategy to manage retained species, and evaluate with a high degree of certainty whether the strategy is achieving its objective.
	Met?	Y	Y	N
	Justification	<p>Overall the information is considered adequate to support the partial strategy to manage Pacific sardine. FEDECOOP is currently recording data on the amount of bait purchased from Ensenada and the amount of sardines caught within the UoA used for bait. This amount of information allows to compare the relative contribution of the Pacific sardine to the larger fishery targeting this species. However, there is insufficient information on the origin and use of the other retained species used as bait to meet S100.</p> <p>This scoring issue meets SG80.</p>		

PI 2.1.3		Information on the nature and extent of retained species is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage retained species		
d	Guidepost		Sufficient data continue to be collected to detect any increase in risk level (e.g. due to changes in the outcome indicator score or the operation of the fishery or the effectiveness of the strategy)	Monitoring of retained species is conducted in sufficient detail to assess ongoing mortalities to all retained species.
	Met?		N Y	N
	Justification	<p>The current information systems does not collect sufficient data at the species and origin level for retained species to detect an increase in risk level. If there were variations in the species composition of bait purchased in Ensenada or landed in the UoA, and Pacific sardine no longer represented &gt;98% of the catch, this change may go undetected by the fishery. In the same manner, changes in distribution and contribution to landings in Ensenada of the cold and temperate stock may also go undetected as the fishery is not collecting sufficient information to detect changes in the contribution of the different stock for Pacific sardine.</p> <p>In the first two surveillance audits, the client fishery demonstrated several improvements in the monitoring of bait species, presenting more detailed information to the assessment team. The information provided identify bait by species and demonstrated a system capable of identifying bait provenance as local to the cooperative or purchased in Ensenada. All fish products landed as bait are required by law to be landed with a formal <i>aviso de arribo</i>, thus all bait used in the fishery will be accounted for in a respective management system. The majority of the bait, including sardines, are being sourced by through local cooperatives, providing traceability through landing, processing and use by the fishery. Should the relative contribution of bait purchased through Ensenada increase, additional efforts may be needed to provide sufficient information to identify species and stock provenance for high volume bait species.</p> <p>Ongoing bait data provided indicates that Pacific sardine remains the only main species, and improvements to the monitoring system and records as provided to the team demonstrate that the fishery is able to detect changes in bait composition, and thus risk. The SG80 is now met. Because there is still some uncertainty with regards to the bait species purchased in extremely low volumes, SG100 is not met.</p>		
References		DOF (2012c); Ramade et al. 2014 and 2015		
OVERALL PERFORMANCE INDICATOR SCORE (See Table 21, page 72, for Scoring Methodology):				75 80
<b>CONDITION NUMBER (if relevant):</b>  <del>2-1 By the second surveillance audit, provide information at the species level that is adequate to detect any increase in risk level due changes in the outcome indicator score or the operation of the fishery or the effectiveness of the partial strategy in place.</del>				

**Table 29. Evaluation Table for PI 2.2.1 (Not rescored; additional detail added in Year 1 Surveillance regarding RBF classification)**

PI 2.2.1		The fishery does not pose a risk of serious or irreversible harm to the bycatch species or species groups and does not hinder recovery of depleted bycatch species or species groups		
Scoring Issue		SG 60	SG 80	SG 100
<b>a</b>	<b>Guidepost</b>	Main bycatch species are likely to be within biologically based limits (if not, go to scoring issue b below).	Main bycatch species are highly likely to be within biologically based limits (if not, go to scoring issue b below).	There is a high degree of certainty that bycatch species are within biologically based limits.
	<b>Met?</b>	Not scored	Not scored	Not scored
	<b>Justification</b>	<p>This fishery has a low volume (weight) of bycatch species. Two shark species are considered ‘main’: horn sharks (<i>Heterodontus francisci</i>) and swell sharks (<i>Cephaloscyllium ventriosum</i>) which are considered vulnerable based on their life history traits (i.e. high age of sexual maturity/low fertility). According to the interviews with the technicians of the cooperatives and the FEDECOOP representative, the sharks are released alive, but the team received no evidence demonstrating that this occurs or quantifying live return rates.</p> <p>Horn sharks (<i>Heterodontus francisci</i>) are classified as “Data Deficient” by the IUCN Red List status, there is no information on population structure, the status of these species is uncertain and biologically based limits are not available. Without sufficient information to assert that this species is likely to be within biological based limits outcome is evaluated under scoring issue b.</p> <p>Swell sharks (<i>Cephaloscyllium ventriosum</i>) are considered to be of “Least Concern” by the IUCN Red List, there is evidence suggesting a single population expanding from California to Chile, and it is considered to be a common species in California and the northern part of the Gulf of California (Villavicencio-Garayzar et al. 2015). However, there is no conclusive information to confirm whether this species is likely within biological based limits, and thus this species is also evaluated in scoring issue b.</p> <p>Despite the uncertainty in the stock status in the UoA area for both of these species, SCS considers that neither element triggers the RBF. Per CRV1.3 Table AC2<sup>2</sup>, the RBF is triggered for bycatch species if “the impact of the fishery in assessment [cannot] be determined quantitatively”. As noted above, the fishery’s catch of swell and horn sharks is quantitatively available, and these numbers are quite low. Further, the mortalities reported are likely a significant overstatement, because the assessment team understands anecdotally that sharks are typically released alive (further evidence of this was provided at the first annual surveillance audit). Based on this, horn and swell sharks, though data deficient, do not trigger application of the RBF.</p>		
<b>B</b>	<b>Guidepost</b>	If main bycatch species are outside biologically based limits there are mitigation measures in place that are expected	If main bycatch species are outside biologically based limits there is a partial strategy of demonstrably effective	

<sup>2</sup> Note that the MSC confirmed that the RBF trigger table is intended to remain with the version of the assessment tree via an interpretation posted on October 31, 2017, available at: <http://msc-info.accreditation-services.com/questions/triggers-for-using-version-1-3-risk-based-framework/>

		to ensure that the fishery does not hinder recovery and rebuilding.	mitigation measures in place such that the fishery does not hinder recovery and rebuilding.	
	<b>Met?</b>	Y	Y	
	<b>Justification</b>	<p>There is not sufficient information available for the two shark species (horn and swell sharks) to confirm the species are within biologically based limits. However, there are several measures in place that work together and represents a “partial strategy”: primarily the fishing gear (traps) and live release of the sharks. For both of these shark species the discard post-harvest mortality, or proportion of individuals that die as a result of interaction with traps/pots, is considered to be low. Thus, should the populations of either of these shark species be outside their biological limits, the live release from traps has been demonstrated to have high post-release survivorship, and thus would not hinder the recovery and rebuilding of these species.</p> <p>This scoring issue meets SG80.</p> <p>Issues regarding the accuracy of the anecdotal live releases of sharks are addressed in PI 2.2.3.</p>		
<b>c</b>	<b>Guidepost</b>	If the status is poorly known there are measures or practices in place that are expected to result in the fishery not causing the bycatch species to be outside biologically based limits or hindering recovery.		
	<b>Met?</b>	Y		
	<b>Justification</b>	<p>The status of, horn sharks (<i>Heterodontus francisci</i>) and swell sharks (<i>Cephaloscyllium ventriosum</i>) is poorly known. However, as described in scoring issue b, the use of traps and live release of sharks, are considered to be measures that result in low mortality of the individuals captured, and thus are expected to result in the fishery not causing any of these species to be outside biologically based limits.</p> <p>This meets the requirements of the SG 60 level.</p>		
<b>References</b>		M. Ramade and FEDECOOP technician pers. comm. (2015); Ramade et al. (2013, 2014, 2015); Shester (2008)		
<b>OVERALL PERFORMANCE INDICATOR SCORE (See Table 21, page 72, for Scoring Methodology):</b>				<b>80</b>
<b>CONDITION NUMBER (if relevant):</b>				

**Table 30. Evaluation Table for PI 3.2.4**

<b>PI 3.2.4</b>	<b>The fishery has a research plan that addresses the information needs of management</b>		
<b>Scoring Issue</b>	SG 60	SG 80	SG 100

PI 3.2.4		The fishery has a research plan that addresses the information needs of management		
a	Guidepost	Research is undertaken, as required, to achieve the objectives consistent with MSC's Principles 1 and 2.	A research plan provides the management system with a strategic approach to research and reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2.	A comprehensive research plan provides the management system with a coherent and strategic approach to research across P1, P2 and P3, and reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2.
	Met?	(Y)	<del>(N)</del> (Y)	(N)
	Justification	Research by INAPESCA is undertaken as required to achieve objectives that are consistent with MSC's Principles 1 and 2. This research is usually organized in Annual Operative Plans and is determined by the current needs of the fishery (e.g. INAPESCA 2010). There is an old Monitoring Plan (INAPESCA 2006) that describes sampling protocols to investigate lobster reproductive biology and to conduct massive fisheries sampling. The objectives of this Plan were to obtain reproductive information to support the season closure and the minimum size rule and to obtain biometric information to determine equivalences of minimum size to cephalothorax length and tail weight. A more comprehensive outline of a Research Program is found in the Draft of the Management Plan, <del>but no current active document contains a full comprehensive description of the Plan as required in terms of</del> <u>At the first annual surveillance audit, the INAPESCA Regional Center in La Paz provided evidence of a modified their regular Annual Operative Program (POA; INAPESCA 2016) with structure and content that better fits the requirements "a written document that includes a specific research plan for the fishery under assessment, relevant to the scale and intensity and the issues requiring research" (CR CB4.10.3). Therefore this scoring issue meets SG60 but not SG80. This document satisfies the MSC requirements for a plan with a strategic approach to research and reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2. The SG80 is met.</u>		
B	Guidepost	Research results are available to interested parties.	Research results are disseminated to all interested parties in a timely fashion.	Research plan and results are disseminated to all interested parties in a timely fashion and are widely and publicly available.
	Met?	(Y)	<del>(N)</del> (Y)	(N)
	Justification	<p><del>INAPESCA has made results of research available but it has taken excessive time to reach interested parties and are often not widely and publicly available. This situation meets the standard at SG60 but not SG80.</del></p> <p><b>The assessment team received copies of minutes of a meeting held on April 2018 where fishers and authorities from INAPESCA exchanged information about the status of the fishery, investigations on the relationship of climate and catch and reached agreements on relevant aspects of the fishery. The team considered this to be evidence of a regular system of communication between interested parties so that results of research conducted to inform management actions are disseminated to all parties in a timely fashion. The fishery satisfies the requirements at SG80. Although research results are available to interested parties, the team does not have evidence that these are widely and publicly available.</b></p>		

PI 3.2.4	The fishery has a research plan that addresses the information needs of management	
References		
OVERALL PERFORMANCE INDICATOR SCORE (See Table 21, page 72, for Scoring Methodology):		<del>60-70</del> 80
<p><b>CONDITION NUMBER (if relevant):</b></p> <p><del>3-1.</del> A research plan must be developed as a written document that includes a plan for the fishery under assessment, relevant to the scale and intensity and the issues requiring research. The plan must provide the management system with a strategic approach to research and reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2.</p> <p><del>3-2.</del> Results of research conducted to inform management actions must be disseminated to all parties in a timely fashion.</p>		



## **7.2 Appendix 2. Stakeholder submissions (if any)**

No stakeholder comments were received. See Section 4.

## 7.3 Appendix 3. Client Action Plan

### 7.3.1 Original Client Action Plan

Presented as nested in the condition tables in the re-assessment report.

**Table 31. Condition 1-1**

<b>Performance Indicator</b>	<b>PI 1.1.2(b) Limit and target reference points are appropriate for the stock</b>	
<b>Score</b>	75	
<b>Rationale</b>	There's no definition of limit reference point.	
<b>Condition</b>	Define explicit reference points that are appropriate for the stock and can be estimated. The Limit Reference Point is set above the level at which there is an appreciable risk of impairing reproductive capacity. The Target Reference Point works to maintain the stock at a level consistent with Bmsy or some measure or surrogate with similar intent or outcome.	
<b>Milestones</b>	<ol style="list-style-type: none"> <li><b>Surveillance 1 (2017):</b> By the first year, appropriate reference points have been identified and initial testing has been conducted. Initial consultation has started.</li> <li><b>Surveillance 2 (2018):</b> By the second year, appropriate reference have been discussed and accepted by the community. The process to formalize the publication of the reference points has started.</li> <li><b>Surveillance 3 (2019):</b> By the third year, the reference points have been published in the official gazette and are ready to be used in the following fishing season.</li> <li><b>Surveillance 4 (2020):</b> By the fourth year the reference points are defined and operate according to the requirements of PI 1.1.2.</li> </ol>	
<b>Client action plan</b>	Responsible Party/ies: INAPESCA, FEDECOOP <b>1. Surveillance (2017):</b> By the first year, appropriate reference points have been identified and initial testing has been conducted. Initial consultation has started.	
	<b>Activities:</b>	<ul style="list-style-type: none"> <li>- Review biological aspects that determine lobster population dynamics.</li> <li>- Identify biomass levels that could cause recruitment to be compromised.</li> <li>- Identify fishing mortality levels that produce MSY.</li> <li>- Conduct a workshop to consult with fishers and experts if the identified reference points are appropriate for the stock and the fishery.</li> <li>- Initial simulation testing is conducted.</li> </ul>
	<b>Expected outcome:</b>	- Meeting minutes
	<b>Expected score:</b>	No anticipated changes in score at this stage
	<b>2. Surveillance (2018):</b> By the second year, appropriate reference have been discussed and accepted by the community. The process to formalize the publication of the reference points has started.	

	<b>Activities:</b>	<ul style="list-style-type: none"> <li>- Testing is completed and reference points are established.</li> <li>- A final workshop is conducted where reference points are discussed and approved by fishers, authorities and stakeholders.</li> <li>- Consultations are conducted to agree on the mechanism to formalize the use of the approved reference points for the fishery.</li> </ul>
	<b>Expected outcome:</b>	<ul style="list-style-type: none"> <li>- Meeting minutes</li> <li>- Draft of National Fishing Chart or Management plan</li> </ul>
	<b>Expected score:</b>	No anticipated changes in score at this stage
	<b>3. Surveillance (2019):</b> By the third year, the reference points have been submitted for publication in the official gazette and are ready to be used in the following fishing season	
	<b>Activities:</b>	<ul style="list-style-type: none"> <li>- Annual meeting to update the stock status and evaluate it from the reference points</li> <li>- Submitting to CONAPESCA the draft the National Fishing Chart or Management Plan, for the official publication</li> </ul>
	<b>Expected outcome:</b>	<ul style="list-style-type: none"> <li>- Meeting minutes</li> <li>- Stock assessment report</li> <li>- Official publication of National Fishing Chart or Management Plan</li> </ul>
	<b>Expected score:</b>	No anticipated changes in score at this stage
	<b>4. Surveillance (2020):</b> By the fourth year the reference points are defined and operate according to the requirements of PI 1.1.2.	
	<b>Activities:</b>	<ul style="list-style-type: none"> <li>- Annual meeting to update the stock status and evaluate it from the reference points</li> </ul>
	<b>Expected outcome:</b>	<ul style="list-style-type: none"> <li>- Meeting minutes</li> <li>- Stock assessment report</li> </ul>
	<b>Expected score:</b>	Score expected to increase to 80, condition is closed
<b>Consultation on condition</b>	Letters of support from INAPESCA and FEDECOOP in relation with action plan	

**Table 32. Condition 1-2**

<b>Performance Indicator</b>	<b>PI 1.2.2(a) There are well defined and effective harvest control rules in place</b>
<b>Score</b>	65
<b>Rationale</b>	The red rock lobster fishery of Baja California has operated under the application of traditional passive management strategies such as minimum legal size and protection of egg bearing females. For this reason, there are no binding documents with well-defined, pre-agreed harvest control rules that are designed to reduce effort in response to changes in indicators of stock status with respect to reference points (SG80). At SG60 HCRs don't need to be well defined, there needs to be "at least some

	<p>implicit agreement supported by past management actions from which to understand that ‘generally understood’ rules exist, and there should be no reason to expect that management will not continue to follow such generally understood rules in future” (MSC Interpretations Log).</p> <p>The lobster chapter in the Red Book (Vega 2006) declares that if <math>Est = (B_t - Actual) / B_{MSY}</math>, “stock status is determined according to the following decision rule:”</p> <p>Status 1.</p> <p><math>Est \leq 1</math>: The stock is below optimum level <math>\Rightarrow</math> Recovery strategy required.</p> <p>Status 2.</p> <p><math>Est &gt; 1</math>: The stock is above optimum level <math>\Rightarrow</math> Fishery with further development potential.</p> <p>Status 3.</p> <p><math>Est = 1</math>: The stock is at optimum level <math>\Rightarrow</math> The fishery is at the adequate level.</p> <p>The team did not receive any evidence that this rule is systematically used either to define a recovery strategy or to explicitly describe how to compute the catch amount for further development of the fishery. There wasn’t either any evidence of a formal procedure to translate or connect actual actions to the decision reached if the rule was applied. . For example under “recovery strategy” there are no procedures or actions, explaining how the strategy would change the length of the closure season or the number of active traps.</p> <p>Fishing effort is regulated based on an internal process at each cooperative that takes into account the performance of fishers, stock size, technical recommendations from INAPESCA staff and economic factors (see details in section 4.8 on Management in the Background). This process is guaranteed as a safe guard to hold the exclusive rights granted in the concession title obtained to harvest a specific area. As per the needs at the SG 60, this is interpreted as an informal approach in which understood rules are in place and are consistent with the harvest strategy. The MSC Interpretations log also says that “Evidence that positive action has been taken in the past should be considered to be evidence that there is a generally understood rule in place.” To indicate “whether the fishery will in future take appropriate management action in line with what they perceive as the ‘generally understood’ rule. The history of the fishery also demonstrates that in practice, fishing pressure has been consistently and systematically maintained to keep the stock above it’s optimal level (Bmsy proxy).</p> <p>The current approach doesn’t act to reduce exploitation effort as a limit reference point is approached because no limit reference point has been declared, but evidence indicates an effective process to modify the current operation of tools and agreements to prevent the stock to depart from the estimated current biomass status above the level producing MSY. Although not adhering precisely to the definition at SG60, the team considered that the approach is equivalent in intent and outcome and accepted it meets the standard at SG60. Because there’s no explicit pre-agreed, well-defined rule in place, the fishery cannot meet SG80.</p>
<b>Condition</b>	The harvest control rule must be pre-agreed, well defined and in place; it must be consistent with the harvest strategy to ensure that the exploitation rate is reduced as the limit reference point is approached.
<b>Milestones</b>	1. <b>Surveillance 1 (2017)</b> : By the first year, the harvest control rule is proposed and initial testing has been conducted. Initial consultation has started.

	<p>2. <b>Surveillance 2 (2018):</b> By the second year, the harvest control rule has been pre-agreed and is well defined. The rule has been discussed and accepted by the community. The process to formalize the publication of the control rule has started.</p> <p>3. <b>Surveillance 3 (2019):</b> By the third year, the harvest control rule is pre-agreed, published in the official gazette and is ready to be used in the following fishing season in parallel with the reference points.</p> <p>4. <b>Surveillance 4 (2020):</b> By the fourth year the harvest control rule is well defined, in place and operating according to the requirements of PI 1.2.2.</p>
Client action plan	Responsible Party/ies: INAPESCA, FEDECOOP
	1. <b>Surveillance (2017):</b> By the first year, the harvest control rule is proposed and initial testing has been conducted. Initial consultation has started.
	<b>Activities:</b> <ul style="list-style-type: none"> <li>- Conduct a workshop to consult with fishers and experts if the identified harvest control rules are appropriate for to maintain or reach the reference points.</li> <li>- Initial simulation testing is conducted.</li> </ul>
	<b>Expected outcome:</b> Meeting minutes
	<b>Expected score:</b> No anticipated changes in score at this stage
	2. <b>Surveillance (2018):</b> By the second year, the harvest control rule has been pre-agreed and is well defined. The rule has been discussed and accepted by the community. The process to formalize the publication of the control rule has started.
	<b>Activities:</b> <ul style="list-style-type: none"> <li>- Testing is completed and HCR are established.</li> <li>- A final workshop is conducted where HCR are discussed and approved by fishers, authorities and stakeholders.</li> <li>- Consultations are conducted to agree on the mechanism to formalize the use of the approved HCR for the fishery.</li> </ul>
	<b>Expected outcome:</b> <ul style="list-style-type: none"> <li>- Meeting minutes</li> <li>- Draft of National Fishing Chart or Management plan</li> </ul>
	<b>Expected score:</b> No anticipated changes in score at this stage
	3. <b>Surveillance (2019):</b> By the third year, the harvest control rule is pre-agreed, published in the official gazette and is ready to be used in the following fishing season in parallel with the reference points.
	<b>Activities:</b> <ul style="list-style-type: none"> <li>- Annual meeting to update the stock status and evaluate it from the reference points to take action related with HCR.</li> <li>- Submitting to CONAPESCA the draft the National Fishing Chart or Management Plan, for the official publication</li> </ul>
	<b>Expected outcome:</b> <ul style="list-style-type: none"> <li>- Meeting minutes</li> <li>- Stock assessment report</li> <li>- Official publication of National Fishing Chart or Management Plan</li> </ul>

	<b>Expected score:</b>	No anticipated changes in score at this stage
	<b>4. Surveillance (2020):</b> By the fourth year the harvest control rule is well defined, in place and operating according to the requirements of PI 1.2.2.	
	<b>Activities:</b>	- Annual meeting to update the stock status and evaluate it from the reference points to take action related with HCR.
	<b>Expected outcome:</b>	- Meeting minutes - Stock assessment report
	<b>Expected score:</b>	Score expected to increase to 80, condition is closed
<b>Consultation on condition</b>	Letters of support from INAPESCA and FEDECOOP in relation with action plan	

**Table 33. Condition 1-3**

<b>Performance Indicator</b>	<b>PI 1.2.2(b) There are well defined and effective harvest control rules in place</b>	
<b>Score</b>	65	
<b>Rationale</b>	The Guidance to the CR V1.3 indicates in GCB2.6, that uncertainty can be addressed by testing either through simulation, comparison with analogous fisheries or empirical testing. No evidence was provided to indicate that such type of testing or other approach to evaluate the potential impacts of the main uncertainties on the decisions made after application of the control rule. The SG80 cannot be met in this scoring issue.	
<b>Condition</b>	The selection of the control rule must take into account the main uncertainties.	
<b>Milestones</b>	<ol style="list-style-type: none"> <li><b>Surveillance 1 (2017):</b> By the first year, the main sources of uncertainty affecting the performance of the HCR have been identified and a basic analytical structure has been outlined. Some initial testing has taken place.</li> <li><b>Surveillance 2 (2018):</b> By the second year, analyses have been completed and the main uncertainties have been accounted for in the performance of the HCR. The new or revised HCR is incorporated in the regulations and the process to formalize its publication in the official gazette has started.</li> </ol>	
	Responsible Party/ies: INAPESCA	
<b>Client action plan</b>	<b>1. Surveillance (2017):</b> By the first year, the main sources of uncertainty affecting the performance of the HCR have been identified and a basic analytical structure has been outlined. Some initial testing has taken place.	
	<b>Activities:</b>	- Annual meeting to evaluate the stock status, the reference points and the HCR, testing some simulation methods including uncertainty
	<b>Expected outcome:</b>	- Meeting minutes - Stock assessment report

	<b>Expected score:</b>	No anticipated changes in score at this stage
	<b>2. Surveillance (2018):</b> By the second year, analyses have been completed and the main uncertainties have been accounted for in the performance of the HCR. The new or revised HCR is incorporated in the regulations and the process to formalize its publication in the official gazette has started.	
	<b>Activities:</b>	Annual meeting to evaluate the stock status, the reference points and the HCR, with simulation methods including uncertainty
	<b>Expected outcome:</b>	<ul style="list-style-type: none"> <li>- Meeting minutes</li> <li>- Draft of National Fishing Chart or Management plan</li> </ul>
	<b>Expected score:</b>	Score expected to increase to 80, condition is closed
<b>Consultation on condition</b>	Letters of support from INAPESCA and FEDECOOP in relation with action plan	

**Table 34. Condition 2-1**

<b>Performance Indicator</b>	<b>PI 2.1.3 Information on the nature and extent of retained species is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage retained species</b>	
<b>Score</b>	75	
<b>Rationale</b>	See PI 2.1.3 d	
<b>Condition 2-1</b>	By the second surveillance provide information at the species level that is adequate to detect any increase in risk level due changes in the outcome indicator score or the operation of the fishery or the effectiveness of the partial strategy in place.	
<b>Milestones 2-1</b>	3. Surveillance 1 (2017): By the first year information is being collected on bait/retained species with sufficient level of accuracy. 4. Surveillance 2 (2018): By the second year the client presents information at the species level on the volume and origin of bait and other retained species in this fishery.	
<b>Client action plan</b>	Responsible Party/ies: INAPESCA, FEDECOOP, CONAPESCA <b>Surveillance 1 (2017):</b> By the first year information is being collected on bait/retained species.	
	<b>Activities:</b>	At this stage FEDECOOP with the support of INAPESCA will start a program for taxonomic identification of all retained and baits species. A control will be put in place to implement that record the volume and source of the bait used.
	<b>Expected outcome:</b>	By the first surveillance the client will provide evidence that bait data collection is being collected for the first year. This will include a list of bait species with scientific names preliminary data on volumes and evidence that the monitoring system has been improved.
	<b>Expected score:</b>	No anticipated changes in score at this stage.

	<b>Surveillance 2 (2018):</b> By the second year the client presents information at the species level on the volume and origin of bait and other retained species in this fishery.	
	<b>Activities:</b>	FEDECOOP will continue the record for bait and with the support of INAPESCA will analyze all information collected monthly (Record for Bait and Landing Records).
	<b>Expected outcome:</b>	By the second surveillance the client will provide a technical report, per fishing season, which includes characterization of species used as bait in lobster fishing, specifying volume by species and source.
	<b>Expected score:</b>	Expected score: 80, condition is closed.
<b>Consultation on condition</b>	Letters of support from INAPESCA and FEDECOOP in relation with action plan	

**Table 35. Condition 2-2**

<b>Performance Indicator</b>	<b>PI 2.2.3 Information on the nature and the amount of bycatch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch</b>	
<b>Score</b>	70	
<b>Rationale</b>	See PI 2.2.3	
<b>Condition</b>	By the third surveillance, provide accurate information at the species level on the volume (weight) of bycatch species in this fishery, information and evidence of end use of sharks and other bycatch species.	
<b>Milestones</b>	<ol style="list-style-type: none"> <li><b>Surveillance 1 (2017):</b> By the first year, data collection of bycatch species with logbooks has been improved. This includes the annotation of the type and number of sharks captured and a comment on whether they were retained or discarded dead or released alive.</li> <li><b>Surveillance 2 (2018):</b> By the second year the client presents evidence that information of bycatch species is being systematically collected and analyzed.</li> </ol>	
<b>Client action plan</b>	Responsible Party/ies: INAPESCA, FEDECOOP  <b>Surveillance 1 (2017):</b> By the first year, data collection of bycatch species with logbooks has been improved. This includes the annotation of the type and number of sharks captured and a comment on whether they were retained or discarded dead or released alive.	
	<b>Activities:</b>	At this stage FEDECOOP with the support of INAPESCA will identify all bycatch species, including sharks, fish and invertebrates and will start to record volume of bycatch species in each of the concession areas of the SCPP within the unit of assessment.
	<b>Expected outcome:</b>	Report of bycatch species during the lobster season 2017/18



	<b>Expected score:</b>	No anticipated changes in score at this stage.
	<b>Surveillance 2 (2018):</b> By the second year the client presents evidence that information of bycatch species is being systematically collected and analyzed.	
	<b>Activities:</b>	The client, together with the staff of INAPESCA will continue the application of an improved system of recording for bycatch species and this is systematically and continuously applied over the entire client group.
	<b>Expected outcome:</b>	Report of bycatch species during the lobster season 2018/19
	<b>Expected score:</b>	No anticipated changes in score at this stage.
	<b>Surveillance 3 (2019):</b> By the third year client presents information on bycatch species (quantity, composition and end use) that is sufficient to estimate outcome status.	
	<b>Activities:</b>	The client, together with the staff of INAPESCA will continue the application of an improved system of recording for bycatch species and this is systematically and continuously applied over the entire client group.
	<b>Expected outcome:</b>	Report of bycatch species during the lobster season 2018/19, which incorporates information on volumes, composition and end use of bycatch species.
	<b>Expected score:</b>	80, condition is closed
<b>Consultation on condition</b>	A letter of support from INAPESCA in relation with action plan	

**Table 36. Condition 3-1**

<b>Performance Indicator</b>	<b>PI 3.2.4 (a) The fishery has a research plan that addresses the information needs of management</b>
<b>Score</b>	60
<b>Rationale</b>	Research by INAPESCA is undertaken as required to achieve objectives that are consistent with MSC's Principles 1 and 2. This research is usually organized in Annual Operative Plans and is determined by the current needs of the fishery (e.g. INAPESCA 2010). There is an old Monitoring Plan (INAPESCA 2006) that describes sampling protocols to investigate lobster reproductive biology and to conduct massive fisheries sampling. The objectives of this Plan were to obtain reproductive information to support the season closure and the minimum size rule and to obtain biometric information to determine equivalences of minimum size to cephalothorax length and tail weight. A more comprehensive outline of a Research Program is found in the Draft of the Management Plan, but no current active document contains a full comprehensive description of the Plan as required in

	terms of “a written document that includes a specific research plan for the fishery under assessment, relevant to the scale and intensity and the issues requiring research” (CR CB4.10.3). Therefore this scoring issue meets SG60 but not SG80.	
<b>Condition</b>	A research plan must be developed as a written document that includes a plan for the fishery under assessment, relevant to the scale and intensity and the issues requiring research. The plan must provide the management system with a strategic approach to research and reliable and timely information sufficient to achieve the objectives consistent with MSC’s Principles 1 and 2.	
<b>Milestones</b>	<p><b>1. Surveillance (2017):</b> By the first year the management plan must be published in the official gazette; it’s including the general research program with objectives and goals in the short, medium and long term.</p> <p><b>2. Surveillance (2018):</b> By the second year the client must present evidence of the evaluation of results of the program research and it’s review for updating objectives and goals in the short, medium and long term</p>	
<b>Client action plan</b>	<p>Responsible Party/ies: INAPESCA, FEDECOOP</p> <p><b>1. Surveillance (2017):</b> By the first year the management plan was published in the official gazette; it’s including the general research program with objectives and goals in the short, medium and long term.</p>	
	<b>Activities:</b>	<ul style="list-style-type: none"> <li>- Public consultation of the draft of management plan for lobster fishery, to submit at CONAPESCA to formalize it.</li> <li>- Annual meeting to discuss at research plan to reach the objectives and conditions of the certification.</li> </ul>
	<b>Expected outcome:</b>	<ul style="list-style-type: none"> <li>- Official publication of the lobster management plan.</li> <li>- Minutes of meeting</li> <li>- Research plan whit objectives and goals in short, medium and long term</li> </ul>
	<b>Expected score:</b>	No expected change of score
	<b>Surveillance (2018 ):</b> By the second year the client presents evidence of the evaluation of results of the program research and it’s review for updating objectives and goals in the short, medium and long term	
	<b>Activities:</b>	<ul style="list-style-type: none"> <li>- Annual meeting to evaluate the results of the program research 2017</li> <li>- Updating objectives and goals in the short, medium and long term form the program research 2018.</li> </ul>
	<b>Expected outcome:</b>	<ul style="list-style-type: none"> <li>- Minute of meeting</li> <li>- Research plan whit objectives and goals in short, medium and long term</li> </ul>
	<b>Expected score:</b>	80, condition is closed
<b>Consultation on condition</b>	A letters of support from INAPESCA and FEDECOOP in relation with action plan	

**Table 37. Condition 3-2**

<b>Performance Indicator</b>	<b>PI 3.2.4 (b) The fishery has a research plan that addresses the information needs of management</b>
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<b>Score</b>	60	
<b>Rationale</b>	INAPESCA has made results of research available but it has taken excessive time to reach interested parties and is often not widely and publicly available. This situation meets the standard at SG60 but not SG80.	
<b>Condition</b>	Results of research conducted to inform management actions must be disseminated to all parties in a timely fashion.	
<b>Milestones</b>	<p><b>1. Surveillance 1 (2017):</b> By the first year annual meetings between INAPESCA and FEDECOOP must be held after each fishing season to discuss results of the analysis of the fishery.</p> <p><b>2. Surveillance (2018).</b> By the second year, the client must present evidence that the annual meeting between INAPESCA and FEDECOOP are implemented after each lobster season.</p>	
<b>Client action plan</b>	<p>Responsible Party/ies: INAPESCA, FEDECOOP</p> <p><b>Surveillance (2017):</b> Annual meetings between INAPESCA and FEDECOOP are held after each fishing season to discuss results of the analysis of the fishery.</p>	
	<b>Activities:</b>	- Annual meeting to evaluate the results of the lobster season 2016/17
	<b>Expected outcome:</b>	<ul style="list-style-type: none"> <li>- Minute of meeting</li> <li>- Stock assessment report</li> </ul>
	<b>Expected score:</b>	No anticipated changes in score at this stage
	<p><b>2. Surveillance (2018):</b> By the second year the client presents evidence of the annual meeting between INAPESCA and FEDECOOP are implemented after each lobster season.</p>	
	<b>Activities:</b>	- Annual meeting to evaluate the results of the lobster season 2017/18
	<b>Expected outcome:</b>	<ul style="list-style-type: none"> <li>- Minute of meeting</li> <li>- Stock assessment report</li> </ul>
	<b>Expected score:</b>	Expected score: 80, condition is closed.
<b>Consultation on condition</b>	Letter of support from INAPESCA and FEDECOOP in relation with action plan	

**7.3.2 Additional Actions Agreed to at the 1<sup>st</sup> Annual Surveillance Audit to Meet Audit Requirements. Meeting Minutes. December 5, 2017.**

*Ramon Mtc.*

SAGARPA  Instituto Nacional de Pesca *NP*

**INSTITUTO NACIONAL DE PESCA Y ACUACULTURA**  
**UNIDAD LA PAZ-CENTRO REGIONAL DE INVESTIGACIÓN ACUÍCOLA Y PESQUERA**

**REUNIÓN TÉCNICA SOBRE PESQUERÍA DE LANGOSTA ROJA (*Panulirus interruptus*)**  
**CERTIFICADA ECOLÓGICAMENTE SOSTENIBLE EN LA REGIÓN CENTRO-Occidental DE LA PENÍNSULA DE BAJA CALIFORNIA**

<b>LUGAR Y FECHA</b>	Federación Regional De Sociedades Cooperativas Pesqueras "Baja California" F.C.L. 4 y 5 de diciembre del 2017, en la sala de juntas de la FEDECOOP, ubicadas en avenida Soto # 283, de la colonia Obrera, en la ciudad de Ensenada, B.C.
<b>OBJETIVO</b>	Acordar un plan de trabajo para atender las recomendaciones derivadas de la auditoría anual de la Pesquería de Langosta Roja certificada bajo el estándar del MSC, de la zona centro-occidental de la península de Baja California, para seguimiento del plan de acción necesario para mantener la certificación de recurso ecológicamente sostenible
<b>INTERVIENEN</b>	<p><b>AUTORIDADES</b></p> <p><b>BIOL. ARMANDO VEGA VELAZQUEZ</b> JEFE DE UNIDAD LA PAZ CENTRO REGIONAL DE INVESTIGACIÓN ACUÍCOLA Y PESQUERA (CRIAP LA PAZ) INSTITUTO NACIONAL DE PESCA Y ACUACULTURA</p> <p><b>M. EN C. JOSÉ JULIAN CASTRO GONZÁLEZ</b> JEFE DEL CRIAP UNIDAD ENSENADA INAPESCA</p> <p><b>INVESTIGADORES DEL INPESCA CRIAP LA PAZ</b></p> <p><b>SECTOR PESQUERO: FEDERACIÓN REGIONAL DE SOCIEDADES COOPERATIVAS PESQUERAS "BAJA CALIFORNIA" F.C.L. (FEDECOOP):</b></p> <ul style="list-style-type: none"> <li>• C. FRANCISCO JAVIER ROUSSEAU ZÚÑIGA. PRESIDENTE DE CONSEJO DE ADMINISTRACION</li> <li>• M. EN C. MARIO R. RAMADE VILLANUEVA. JEFE DEL DEPTO, DE PESQUERIAS</li> </ul> <p><b>ASESORES TECNICOS DE SCPP CONCESIONARIAS DE LANGOSTA FILIALES DE LA FEDECOOP:</b></p> <ul style="list-style-type: none"> <li>• RAMON FRANCISCO MARTINEZ- S.C.P.P. BUZOS Y PESCADORES</li> <li>• OCEAN. JUAN CARLOS BONILLA GUTIERREZ-S.C.P.P. LA PURÍSIMA</li> <li>• BIOL. CARMINA SALINA IVAN- S.C.P.P. EMANCIPACIÓN</li> <li>• LOURDES BERENICE RAMIREZ SAUCEDO- S.C.P.P. CALIFORNIA DE SAN IGNACIO</li> <li>• ING. GUSTAVO VILLAVICENCIO PERALTA- S.C.P.P. LEYES DE REFORMA</li> <li>• OCEAN. JUAN DOMINGO AGUILA OSUNA-S.C.P.P. PROGRESO</li> <li>• OCEAN. EDUARDO ENRIQUEZ GONZALEZ- S.C.P.P. PUNTA ABREOJOS</li> </ul>
<b>OBJETIVO DE LA REUNIÓN</b>	Analizar situación actual de la pesquería de langosta roja en la región centro-occidental de la península de Baja California y seguimiento del plan de acción para mantener la certificación de recurso ecológicamente sostenible (estándar MSC)

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OCCIDENTAL DE LA PENÍNSULA DE BAJA CALIFORNIA**

<b>DESARROLLO DE LA REUNIÓN</b>	<p>De acuerdo con la agenda de la reunión el Biol. Armando Vega Velázquez Jefe la Unidad la Paz del INAPESCA presentó los resultados de la "EVALUACION DE LA PESQUERIA DE LANGOSTA ROJA EN LA REGION CENTRAL PENINSULA DE BAJA CALIFORNIA (PUNTA ABREOJOS A BAHIA VIZCAINO): TEMPORADA 2016-2017", y explico el programa de investigación regional del INAPESCA sobre la pesquería de langosta; con lo que se cubrió el requerimiento de información relacioanda con el principio y 3 del estándar del MSC.</p> <p>Con relación al princio 2 el M en C Mario R. Ramade Villanueva (FEDECOOP Baja California), presentó el Informe de temporada de langosta 2016-2017 en las SCPP filiales de la FEDECOOP. Describe resumen de reportes de producción y esfuerzo pesquero por SCPP, especies utilizadas como carnadas, pesca incidental de otras especies en trampas langosteras, estimación de impactos de barcos camaroneros en la pesca incidental de langosta en las ultimas 3 temporadas, así como las medidas regulatorias tomadas por la CONAPESCA y la CONANP para evitar y mitigar efectos de redes de arrastre en las áreas de pesca de langosta.</p> <p>Al final de la auditoria se realizó mesa de de trabajo entre personal técnico de INAPESCA y de las Cooperativas concesionarias de langosta, en la que se revisaron las observaciones y recomendaciones de los auditores del MSC. Así como una revisión de inventario de información captada en bases de datos de muestreos biológicos y pesqueros (Muestreos masivos. Comerciales, registros de producción, especies utilizadas como carnadas, pesca incidental, langosta "mochas"), aportada por las SCPP concesionarias de langosta Derivada de esta se llegaron a los siguientes acuerdos:</p>
<b>ACUERDOS:</b>	<p><b>ACUERDOS:</b></p> <ol style="list-style-type: none"> <li>1. El INAPESCA realizar adecuaciones al formato oficial de BITACORA DE PESCA, que permita registrar información más detallada sobre pesca incidental, incidencia de langosta "mochas" langostas lechosas, y especies utilizadas como carnada; El cual junto con los formatos de muestreos masivos y comerciales en archivo electrónico se entregara a las SCPP de la FEDECOOP BC, a más tardar en enero del 2018, con el fin de facilitar y estandarizar la colecta y captura de datos en archivo electrónico</li> </ol>



Pana Mtz.

**INSTITUTO NACIONAL DE PESCA Y ACUACULTURA  
UNIDAD LA PAZ-CENTRO REGIONAL DE INVESTIGACIÓN ACUÍCOLA Y PESQUERA****REUNIÓN TÉCNICA SOBRE PESQUERÍA DE LANGOSTA ROJA (*Panulirus interruptus*)  
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2. El INAPESCA agilizará las gestiones para la publicación del plan de manejo pesquero de langosta de la península de Baja California a más tardar en 2018
3. El INAPESCA entregará a la FEDECOOP el programa anual de investigación y monitoreo de la pesquería de langosta, así como el informe técnico en extenso de "EVALUACIÓN DE LA PESQUERÍA DE LANGOSTA ROJA EN LA REGIÓN CENTRAL PENÍNSULA DE BAJA CALIFORNIA (PUNTA ABREOJOS A BAHÍA VIZCAINO): TEMPORADA 2016-2017" a más tardar el 15 de diciembre 2017
4. El INAPESCA organizará una reunión técnica durante el mes de abril de 2018, con la finalidad de analizar la temporada en curso de langosta (2017-2018). Así mismo, se llevará a cabo un taller técnico en el mes de julio de 2018, donde se invitará a especialistas extranjeros expertos en evaluación y manejo de Pesquerías de langosta; con objeto de discutir y definir los puntos de referencia derivados de modelos de dinámica poblacional utilizados por el INAPESCA así como las reglas de decisión en caso de alcanzar tales punto de referencia y en su caso las estrategia y acciones pertinentes para el control de la pesquería, para cubrir uno de los requerimientos del plan de acción para mantener la certificación de langosta roja bajo el estándar del MSC. Así mismo en enero de 2018 el Jefe del CRIAP La Paz presentara plan de trabajo tentativo y presupuesto a FEDECOOP para cubrir gastos de la participación de especialistas extranjeros, para su gestión en instancias correspondientes.

**CLAUSURA****CLAUSURA**

Siendo las 13:30 horas del día 05 de diciembre de 2017 se da por concluida la Reunión de trabajo para atender las recomendaciones derivadas de la auditoría anual de la Pesquería de Langosta Roja certificada bajo el estándar del MSC.

Se anexa lista de asistencia de la presente reunión

**INSTITUTO NACIONAL DE PESCA Y ACUACULTURA  
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NOMBRE	FIRMA
ARMANDO VEGA VELÁZQUEZ JEFE DEL CRIAP-UNIDAD LA PAZ	
JOSÉ JULIÁN CASTRO JEFE DEL CRIAP-UNIDAD ENSENADA	
MARIO R. RAMADE VILLANUEVA FEDECOOP B.C.	
C. FRANCISCO JAVIER ROUSSEAU ZÚÑIGA PRESIDENTE DE CONSEJO DE ADMINISTRACIÓN	
CARMINA SALINAS IVÁN S.C.P.P. EMANCIPACIÓN	
EDUARDO ENRIQUEZ G. S.C.P.P. PUNTA ABREOJOS	
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