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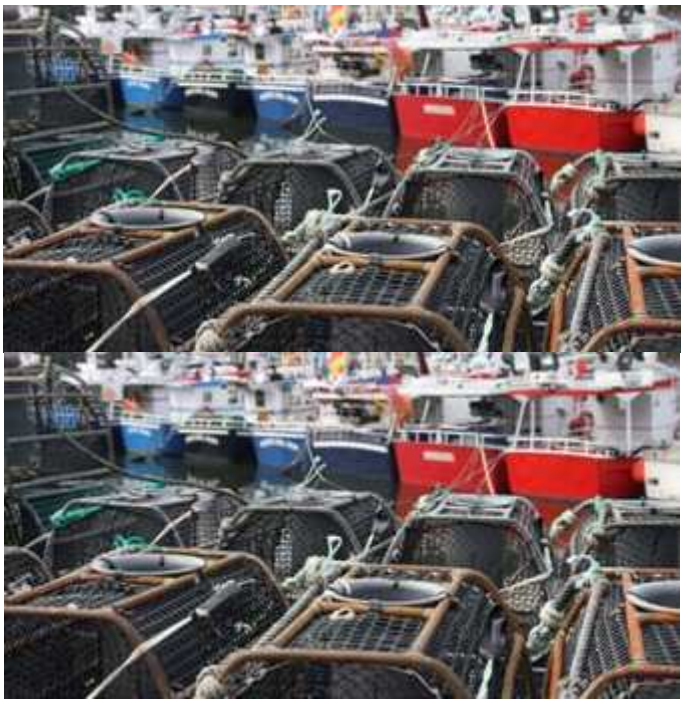

Western Asturias Octopus Traps fishery of Artisanal Cofradias

CLIENT: COFRADIA DE PESCADORES DE PUERTO DE VEGA (ASTURIAS)

CAB: BUREAU VERITAS IBERIA
Edificio Caoba Valportillo Primera 22-24. Pol. Ind. La Granja
ALCOBENDAS **MADRID** 28108

AUTHORS:
Angel F. González González
Gonzalo Macho Rivero
Jacobo de Novoa
Macarena Garcia Silva

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Glossary

Blim Limit biomass reference point, below which recruitment is expected to be impaired.

Bmsy Biomass achieving maximum sustainable yield

BOPA Official Gazette of the Principality of Asturias

Bpa Precautionary reference point for spawning stock biomass

CA Consequence Analysis

CITES Convention on International Trade in Endangered Species of Flora and Fauna

CEP Fisheries Experimentation Centre (Centro Experimentación Pesquera)

CFP Common Fisheries Policy

CMS Convention on Migratory Species

CPUE Catch per unit effort

DGPM Directorate General of Maritime Fisheries (Dirección General de Pesca Marítima)

EC European Commission

EEZ Exclusive Economic Zone

ETP Endangered, threatened and protected species

EU European Union

F Fishing Mortality

FCR Fishery Certification Requirements

FAO Food and Agriculture Organisation of the UN

Flim Limit reference point for fishing mortality that is expected to drive the stock to the biomass limit

FMSY Fishing mortality achieving maximum sustainable yield

Fpa Precautionary reference point of fishing mortality expected to maintain the SSB at the precautionary reference point

HCR Harvest Control Rules

IEO Spanish Institute of Oceanography (Instituto Español de Oceanografía)

MAGRAMA Ministry of Agriculture, Food, and the Environment (Ministerio de Agricultura, Alimentación, y Medio Ambiente)

MP Management Plan

MSC Marine Stewardship Council

MSE Management Strategy Evaluation

MSY Maximum Sustainable Yield

P1 MSC Principle 1

P2	MSC Principle 2
P3	MSC Principle 3
PSA	Productivity Susceptibility Analysis
RBF	MSC's risk based framework
SGP	General Secretariat for Fishing (Secretaría General de Pesca)
TAC	Total Allowable Catch
UoA	Unit of Assessment
UoC	Unit of Certification

1 Executive Summary

This **Prelimary Draft Report** provides details of the MSC assessment of the fishery process for the **Western Asturias Octopus Traps fishery** of Artisanal Cofradias prepared by the team and the CAB provided to the client. The client group covered by the certificate are four guilds from Asturias named: Cofradía Puerto de Vega, Ortiguera, Viavélez and Tapia de Casariego. Additionally, the 27 vessels included in the Octopus Manament Plan members of the refered fishing guilds. Henceforth, the term client will be used to refer to them.

The audit team that conducted the assessment against to MSC standard was comprised of the following members from the Certification Body, Bureau Veritas Iberia: Macarena Garcia Silva, Seafood auditor and Scheme Manager for MSC fisheries from Bureau Veritas Iberia, in the role of project coordinator and team leader. Jacobo de Novoa, Director of the Fishery and Aquaculture Department, as team member in charge of the traceability section and to support the team leader. The expert team, selected for their stock assessment, ecosystem interactions, and fishery management experience, comprised Ángel Francisco González González as expert assessor under Principle 1 and 2 and Gonzalo Macho Rivero as expert assessor under Principle 2 and 3.

The assessment process began in December 2014.Public notice regarding to the launch of the MSC Certification Programme for the fishery was published the 11th of December 2014. The announcement and timeline were published on the MSC website to report all the steps carried out to get the MSC certification. The announcement template included the names and CVs of the assessment team members, the use of the default assessment tree included in V 2.0 of the MSC Fishery Certification Requirements (FCR).

The tasks schedule, is identified as Preliminary Assessment timeline and was also published at first. One of the main steps when assessing fishery compliance with the International MSC Standard involves meeting with the stakeholders in order to gather all the relevant information and become aware of any potential issues. The site was performed for the week starting February 2, 2015 with selected organisations and individuals with a direct interest in this fishery. The stakeholders involved in the fishery were contacted by telephone and dropping an email to schedule the site visit to prepare the fishery information which is required by the experts.

After the site visit, the team compiled and analysed all the relevant information, as well as the technical, written, and anecdotal resources collected during the visit. Each expert prepared a draft score and justification, and then discussed and weighed up the evidence. Lastly, the team used their judgement to agree on a final score regarding to MSC processes. The main **strengths** of this assessment process are listed below:

- Fishers' compliance is deemed to be strong and no conflicts have been observed in the fishery.
- The impact of the gear on the seabed is negligible.
- By-catch and discards are considered to be minimal and the species retained tiene una elevada supervivencia.
- The fishery has negilible interaction with endangered, threatened and protected species
- Notable progress has been made in compiling data about fisheries activities by fishermen further to the results of the Pre-assessment carried out in 2014.

- The presence of the CEP and the work it carries out in conjunction with the fleet are very positive and effective in terms of the sustainability of resources.
- Over time, time series of data related to efforts and catches have become longer, which improves predictions.
- There is a very good relationship and understanding between stakeholders and changes in regulation is done by consensus.

On the other hand the **weaknesses** are detailed herein:

- The lack of long-term dataseries, even on basic fishery parameters like CPUE, is one of the major constraints on improving our understanding of cephalopod population trends.
- Lack of specific harvest control rules by which fishing mortality can be managed in a prescribed manner and which encapsulates the precautionary principle. Biological reference points have not been developed yet
- In the local context (Asturias), there does not appear to be any short-term objectives explicitly designed to achieve the outcomes expressed by MSC's Principles 1 and 2
- Information on knowledge of octopus populations can be improved. ICES highlighted the need to compile reliable data regarding catches and efforts. It is also important to emphasise that statistics regarding octopod catches in ICES waters do not always distinguish between the two major species, *Octopus vulgaris* and *Eledone cirrhosa*, as noted in the WGCEPH report of 2014.

Both the assessment team and the Certification Body, Bureau Veritas, agreed that, on review, the Western Asturias Octopus Traps fishery of Artisanal Cofradias complies with MSC Principles and Criteria. Therefore, BV concludes the fishery should be awarded an MSC Fishery certificate.

The CAB has set three conditions for certification with respect to the Performance Indicators 1.2.2, 3.2.1, 3.2.3 In order to be awarded an MSC certificate for the fishery, the applicants must sign a written contract agreeing to develop an Action Plan to fulfil the 'Conditions' issued by the audit team. Details of the conditions are provided in Section 6.3.1 of this report.

2 Authorship and Peer Reviewers

Macarena García Silva, assessment team leader
Macarena's academic background includes a Bachelor of Science Degree in Environmental Science from the Madrid Polytechnic University (Spain) and a Master degree in Sustainable Management of Marine and Coastal Systems from Barcelona University (Spain). She was a manager in Inemar (Association for innovation in marine resources and sea studies). She has worked as an assistant in the Spanish Ministry of the Environment and Rural and Marine Affairs, carrying out different projects involving human activities and sea resources.

She has participated in several scientific publications, such as the "Ecological framework for the management of the different habitats in Spain (Council Directive 92/43/CE)", "Supporting report accompanying the thematic cartography of the MedRAS Project", and "Draft of the Basis for Marine Planning in Spain". She was responsible for the scientific and technical coordination of the bilingual publication "The Seas of Spain" from the Spanish Ministry of the Environment and Rural and Marine Affairs, and responsible for the scientific and technical coordination of the bilingual publication "Human Activities in the Seas of Spain".

She has been working as seafood auditor for Bureau Veritas Iberia (Agrofood Department) since September 2011, which involves the technical development of private sustainable labels and seafood companies' policies. She is the lead auditor for Friends of the Sea, MSC fisheries full assessment and pre-assessment, the chain of custody, and other quality labels (DOP, Mexillon de Galicia, Pesca de Rías). She is the MSC assessment team leader for 7 fisheries moreover she has completed the pre-assessment of numerous fisheries. Since March 2015 she is Scheme Manager of the MSC fishery Standard for Bureau Veritas Iberia.

Ángel Francisco González González, expert assessor under Principle 1 & 2
Twenty-three years experience working in marine resources from temperate, tropical and polar ecosystems participating in many projects devoted to fishery science, marine ecology and relationships between climatic factors and the population dynamics of marine species, especially cephalopods, studied from a holistic perspective and targeting an ecosystem approach.

The main aim during his earlier career was to analyze the fishery biology, fishery potential and bioecology of northeastern Atlantic squid stocks. After that period, he complemented his knowledge with studies on the fishery management of cephalopods.

Gonzalo Macho Rivero, expert assessor under Principle 2 & 3
His background comes as a marine biology and fisheries management researcher (1998 - ongoing), as a manager in fisheries resources for the fishers´ guild of Bueu in Galicia, Spain (2007-2008), and as an independent consultant in fisheries & marine ecology (2011 - ongoing). While in the Cofradía de Bueu he launched the MSC pre-assessment and final assessment of the razor clam fishery of the Ría de Pontevedra (Galicia, Spain) which was finally the first Spanish fishery being certified by MSC.

He has published more than 15 publications (SCI peer-reviewed journals) and participated in more than 20 national and international scientific projects on population dynamics of marine fishing resources (razor clams, cockles, gooseneck barnacle, clams & sea urchins), fisheries management and governance (octopus, razor clams, gooseneck barnacle, scallops, abalones, deep-sea fishes in Argentina, Chile, Spain and EU), reform of the EU common

fisheries policy, marine socio-ecological systems, fisheries socio-economics and climate change impacts on marine invertebrates.

Jacobo de Novoa, chain of custody auditor
Oceanographer, PhD in Marine Biology and Aquaculture, Masters in Total Quality. He has been Director of the Department of Fisheries and Aquaculture at BUREAU VERITAS IBERIA since 2006. Currently he is North Western PC Manager and Seafood Product Manager (Spain).

He is also auditor for other standards such as Friend Of The Sea, IFS, BRC, Globalgap Aquaculture, ISO 22000 and many private standards relating to the fisheries sector (DOP Mejillón de Galicia, NATUR, Gamba de Palamós, PescadeRias, etc). He is qualified for MSC fisheries as team leader, he was team leader In the first Spanish mollusc fishery in 2013.

In this assessment he will be in charge of the Chain of Custody requirements. Moreover he will assist the team leader during the assessment.

Jose Peiró, peer reviewer
He is an independent fisheries consultant and founding partner of Naunet Fisheries Consultants, a marine consultancy firm based in Norwich (UK). His principal area of expertise is in relation to both artisanal and commercial fisheries and rural aquaculture. Currently working for some NGO's (WWF/North Sea Foundation/Monterey Bay Aquarium) conducting fisheries assessments and developing initiatives to improve living conditions in fishing communities in the South of Europe and the North of Africa.

With more than 8 years of experience working in a wide range of projects associated with marine biodiversity and the sustainable use of living aquatic resources. In 2012 and 2013. He worked as a fisheries scientist in a British marine consultancy specialized in assessing the impact of offshore wind farms on fishing resources. Before he also worked as a marine biologist and fisheries researcher in two marine scientific centres in Portugal, focused mainly on collecting fishing data and developing environmental education programs in the area.

As well as having worked as a researcher, he completed many trips on commercial fishing vessels in the capacity of scientific observer in the NAFO area, West coast of Africa and the Iberian coast. Worked aboard a broad range of fishing vessels including trawlers, long-liners and other small-scale vessels. He has also experience on finfish and shellfish aquaculture that he gained working in the Amazonian basin and as a quality supervisor in fish farms in Spain. He has also worked as a local expert for Food Certification International in Marine Stewardship Council assessments in both Spain and Portugal and currently assigned as a P2 expert for two shrimps fisheries undertake within the North Sea.

Earl G. Dawe, peer reviewer
Retired in 2015 (effective July 24, 2015) following a 35-year research career which focused on the fisheries, population biology, and ecology of cephalopods (particularly short-finned squid) as well as crustaceans (particularly snow crab). Research effort has most recently focused on ecosystem structure and functioning, particularly the relative effects of ocean climate versus predation on finfish and crustacean resources. Career included heavy involvement in the review and formulation of scientific advice for management of shellfish resources in Atlantic Canada as well as the advisory/consultative part of managing the Newfoundland fisheries for short-finned squid and snow crab. Also, recently participated, as science advisor, in MSC certification of the NL snow crab fishery.

An extensive list (totalling 170) of scientific/technical reports and journal articles (58 in the primary, peer reviewed literature) on various aspects of population biology and ecology as well as fisheries biology and management of both short-finned squid and snow crab.

The full team conducted the RBF within CR v2.0 training. The MSC carried out an specific training by phone for all the team that covered all the componets of Principle 1 and Principle 2 because the online training was not ready in the online platform.

3 Description of the Fishery

3.1 Unit of Assessment (UoA) and Scope of Certification Sought

3.1.1 UoA and Proposed Unit of Certification (UoC)

Bureau Veritas Certification confirms that the fishery falls within the scope of the requested MSC certification for assessment.

According to the MSC-MSCI Vocabulary, the Unit of Certification (UoC) is defined as “the target stock(s) combined with the fishing method/gear and practice (including vessel(s) type/s) pursuing that stock, and any fleets, or group of vessels, or individual fishing operators that are covered by an MSC fishery certificate.”

The proposed Unit of Assessment (UoA) is what the assessment team is going to assess. The description is based on target stock combined with the fishing method/gear and practice (including vessels type /s) pursuing that stock, and any fleets, or group of vessels, or other eligible fishers that are included in the MSC fishery assessment.

The CAB reviewed the definition before, during and after the site visit to clarify what was included in the assessment, and what was not. The CAB has reviewed the information available, and concludes that one unit of assessment (UoA) is suitable and in accordance with MSC Principles. The description of the UoA is the following:

Stock: *Octopus vulgaris* stock from Asturias and the Galician Cantabrian Sea. ICES area VIIIc division.
Fishing area: The fishing grounds maps of Asturias comprises the waters off the Principality of Asturias, from the coastline to a distance of 46 nm, covering the waters between 43º 23 'and 44º 15' and 7 ° 33 'West, where the fleet under assessment operates.
Fishing method/gear: artisanal traps
Fishing management: Spanish Government, General Secretariat for Fishing (SGP) and the Asturias Government
Fleet: 27 vessels from Comarca del Comarca del Navia-Porcía (Tapia de Casariego, Viavélez, Ortiguera, Puerto de Vega).
Other Eligible vessels fishers that are members of a fishing guild within the management plan (MP). Therefore the guilds Cofradías de Cudillero, Oviñana, Luarca and Figueras may become eligible to join the UoC under the Certificate Sharing.

Other eligible fishers would comprise fishers from others Cofradías of Asturias not included in the UoA targeting the same octopus stock using artisanal traps and operating under the MP. Therefore the Cofradías of Cudillero, Oviñana, Luarca y Figueras may become eligible to join the UoC under a certificate sharing arrangement.

List of vessels included in the UoA :

1. Cofradía Tapia de Casariego

Nombre	Código del buque	Matrícula y folio
Faro de Tapia	23064	GI-8 4-94
Jairo	25771	GI-8 1-03
Carmina	10932	GI-1 1-65
Perla del Eo	14760	GI-8 1297
Paz de Mar	26610	GI-8 3-05
Rondelo	25998	VILL-1 1-04
El Rocín	24326	GI-8 99
Domi Jesu	26426	GI-8 2-05

2. Cofradía Viavélez

Nombre	Código del buque	Matrícula y folio
Soirana II	7650	GI-8 1271
Faro de Guía	24713	GI-8 5-00
Vicente	12483	GI-8 969
Rubén David	25318	GI-8 3-01
Tres Marinos	26213	VI-3 3-04
Isbert	25512	GI-8 2-02
Ramón Jesús		3ª AV-3 1-14

3. Cofradía Ortiguera

Nombre	Código del buque	Matrícula y folio
Nuevo Nubei	27354	GI-8 03-09
Estrevalle	15044	GI-8 1321
La Hidra	27550	AV-3 1-13
Siempre Calafate	24291	FE-1 3-99

4. Cofradía Puerto de Vega

Nombre	Código del buque	Matrícula y folio
Piloto del mar	24852	GI-8 7-00
Nuevo Jesús José	24225	GI-8 5-99
Istillarty	24845	GI-8 9-00
Peña la Guía	27094	GI-4 2-07
Nueva Saramar	27292	GI-8 1-09
Ruta del Alba	24825	GI-8 6-00
Pilar marina	24164	GI-8 4-99
Siempre la Ninfa	24238	GI-8 6-99

3.1.2 Total Allowable Catch (TAC) and Catch Data

No total TAC is established for this fishery. Nevertheless, for the last fishing season (2014-2015), the MP for the 8 cofradías (Cudillero, Oviñana, Luarca, Puerto de Vega, Ortiguera, Viavélez, Tapia de Casariego and Figueras) stablished a maximum total catch per boat of 10.000kg (Resolución de 26 de noviembre de 2014).

Octopus vulgaris (Cuvier, 1797), is the cephalopod species with the highest landings in Asturias, this fishery being of great importance for the artisanal fleet in this region (P. Fernández-Rueda, L. García-Flórez, 2006).

The fishing season 2013/2014 has registered the lowest catches results from the historic series due to the adverse weather conditions and therefore poor activity at sea. During the season 2013-14 it was sold at the fish auction 40,967 kg, with an income of 193,440.
Figure 1.

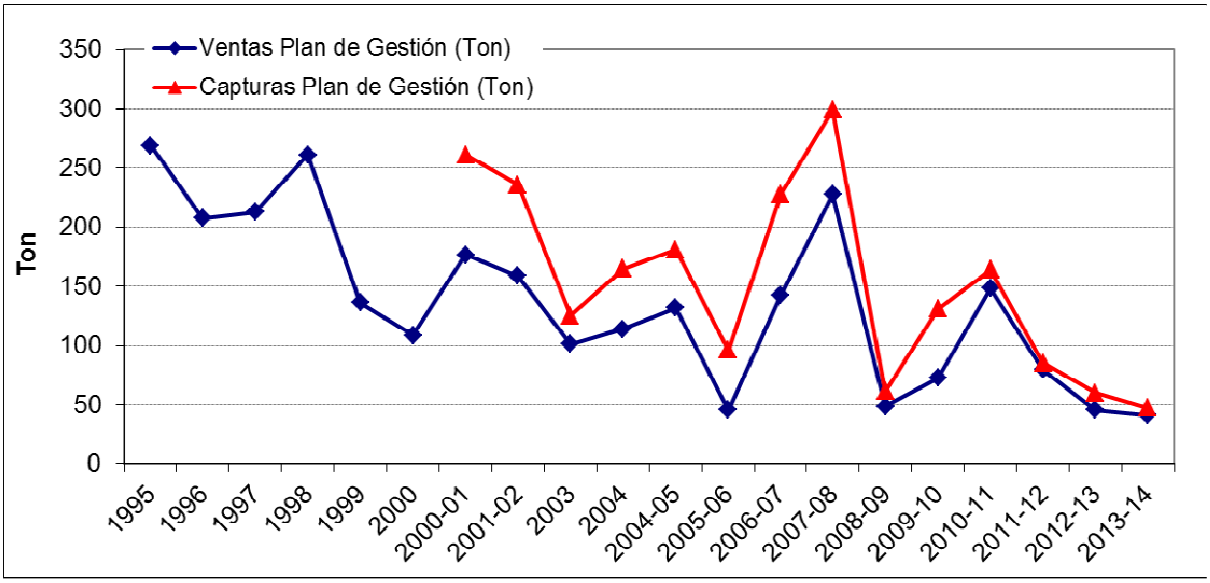

Figure 1 Historic record of catches (in red) and sales (in blue) registered in the area of the octopus MP in Asturias. Data source: Fernández, Mª del Pino. 2014.

3.2 Overview of the fishery

The common octopus, *Octopus vulgaris*, is the most important commercially fished octopus species along the coasts of the Atlantic and Mediterranean (Josupiet, 2000); global catches reached more than 37 000 t in 2007 (FAO, 2009). However, this results are truly underestimations since the worlwide records of octopus catch (unidentified), provided by FAO, ranged from 270 000 to 370 000 tonnes by year from 1990 to 2010.

The Figure 2 shows the catches of octopodids in European ICES waters from 2000 to 2013. Octopodidae catches here described usually comprise 2 species: *Octopus vulgaris* and *E. cirrhosa*. In case of the figure below, most of the catches were recorded in trawlers and so the most abundance species here is E. cirrhosa (ICES, 2014).

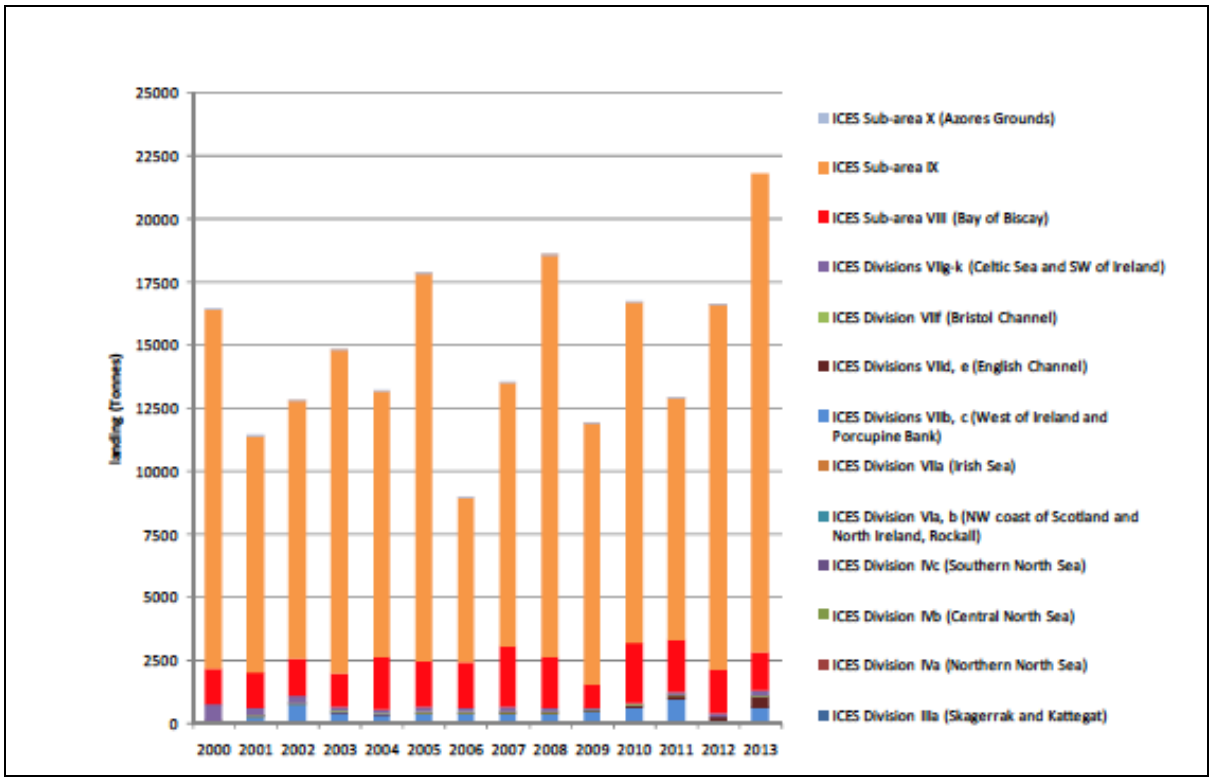

Figure 2 Octopodis catches in European ICES waters (2000-2013). Data source: ICES

Then official data provided showed that catches of Octopodids in Div. VIId,e almost completely (99%) deployed by England Wales and Northern Ireland. France catches in these Divisions are anecdotic. Traditionally English catches of this species groups in average were around 19 t from 2000 to 2006. Since then catches has largely increased with a maximum of 248 t in 2012 with a similar valour in 2013. Catches in ICES Divisions VIIg-k (Celtic Sea and SW of Ireland) are comprised in 2013, by 63 % of English catches and 25 % coming from Scotland. Irish catches comprises 22 % of the whole catches in 2013. France contributes with very small amount to the catches, except in 2013 with 85% (181 tn). Spain presented important catches of Octopodidae in the first years of the data series, but since 2008 catches decreased and no data is provided for 2011 and 2013. Level of catches for the most important contributor (England) was at around 88 t in average, decreasing in the last years of the series to at 13 t.

For more southern areas (Div. VIIIabd, VIIIc and IXa), main countries exploiting these species are Spain, Portugal and France, with negligible catches recorded by The Netherlands. No species identification has been provided for all countries and areas for commercial catches except for Spain and Portugal in Div. VIIIc and IXa.

Despite the biology of *O. vulgaris* was largely afforded in other areas of its distribution range, there is not many biological studies undertaken in waters of Asturias or the Bay of Biscay that can be applied in the fishery subjected of this evaluation. Since the paralarvae of this species is pelagic, there is a high chance that the early stages of development are subjected to the influence of oceanographic conditions, especially those related with physical parameters, such as upweling events, mesoscale eddyes or fronts. Upwelling conditions are related to strong recruitment from Mauritanian to NW Spanish waters. *O. vulgaris* is the most abundant and ubiquitous cephalopod species occurring in the Saharan Bank (NW Africa from 21º N to 26º N). In this area, there are probably two stocks, one off Dakhla (26ºN-23ºN) and the other off Cape Blanc (21ºN-19ºN). The first is overexploited while the second is relatively underexploited. The common octopus of the Nouakchott area probably constitutes a third stock *O. vulgaris* is taken throughout the year as target species in bottom trawls and in the creel artisanal coastal fishery in depths between 20 and 200 m in the Mediterranean, off West Africa and the north-eastern Atlantic. The estimated landings for this species are around 149 000 mt in the eastern-central Atlantic, most of them being captured in Moroccan-Mauritanian waters. Most of the catches in the ECA were reported as *Octopus nei*, but the majority corresponded to *O. vulgaris* (Guerra et al., 2014). Some experiences of culture have been undertaken mainly in Spain and Japan.

The fishery operates with a MP elaborated by the DGPM from Asturia's Government with the collaboration of the fishing guilds (Cofradías). This co-management plan is reviewed every year.

The common name of the body within which the fishery is undertaken is the Cantabrian Sea. However, the activity of the fishers under assessment is undertaken within internal waters (< 12 mn) and more specifically. Figure 3.

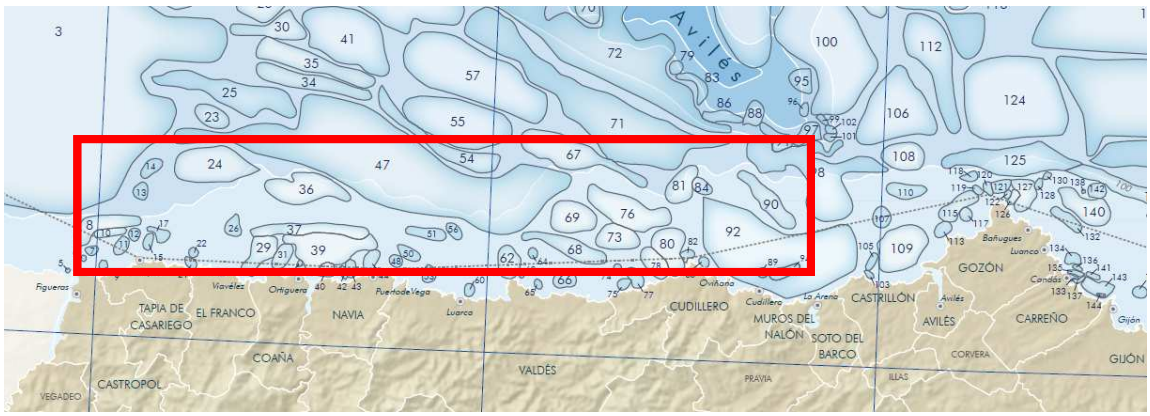

Figure 3 Detail of the fishing area where the fleet under assessment operates within the fishing grounds of the Cantabrian Sea. The red rectangul is the fishing area for the UoA. Data Source: DGPM, Asturias Goverment

The MP applies to all the vessels included in minor methods census, characterized by a multipurpose fleet, since they are able to use seine nets, hook and tackle or traps. Moreover, they need to have the authorization from the Regional Ministry of Rural Development and Natural Resources (*Consejería de Agroganadería y Recursos Autóctonos*) for the modality

"octopus trap". Management in the west of Asturias has been carried out as a co-management experience since 2001. It includes the establishment of a closed season, a minimum capture weight of 1000 g and the limitation of traps as the only authorized fishing gear. The MP also includes the establishment of the way for biologists and fishing managers to monitor octopus landings during the fishing season. Annually the MP is reviewed and published in the Official Gazette of the Principality of Asturias (BOPA).

3.3 Principle One: Target Species Background

Biology and distribution

Phylum: Mollusca
Subphylum: Cephalopoda
Clase: Cephalopoda
Subclase: Coleoidea
Orden: Octopoda
Suborden: Incirrata
Familia: Octopodidae

Nombre científico: *Octopus vulgaris*
Nombres comunes: pulpo (español), poulpe de roche (francés), common octopus (inglés).

Octopuses are amazing animals. They can change color, texture and shape. They have three hearts pumping blue copper-based blood and are jet powered and are considered the most intelligent of invertebrates. They have also, sometimes, the ability to get into fishermen's traps, eat the crabs and get out again, dismantle the aquariums they are kept in, and escape, and also, even grow a new arm when one is bitten off (Mather et al., 2010).

The diagnostic characters of the Family Octopodidae, which include *Octopus vulgaris*, share the following features: body short, muscular, sac-like, without lateral fins. Eight arms around the mouth, but no tentacles with suckers in one or two rows and not cirri on arms; the suckers have not chitinous rings and are setting on arms without stalks. One of the third arms modified in males (hectocotylus), as an open sperm groove (running along ventral edge of the arm) and a modified terminal tip (ligula), typically spoon-like. Hectocotylus not detachable. Internal shell reduced to a pair of stylets or lost. Stomach and caecum posterior to digestive gland. Lateral radula teeth (if present) simple, with single cusp. The size of the animals belonging to this Family ranges from pygmy species mature at under one gram to the giant Pacific Octopus of the North Pacific reaching weights in excess of 150 kilograms with an arm span of over 5 m (Guerra et al., 2014).

Regarding the species subjected to this assessment, the common octopus *Octopus vulgaris* has a maximum total length of about 140 cm. This species is especially abundant in the eastern Atlantic and the Mediterranean Sea. Although *O. vulgaris* was reported to be a cosmopolitan species from tropical, subtropical and temperate waters, its distribution is currently being redefined to conform to modern biogeographical boundaries. A recent paper showed that the phylogenetic and genetic divergence estimates indicate that the octopuses from the Indian Ocean (South Amsterdam and Saint Paul Islands) belong to *O. vulgaris* s. str. and confirm that COI and COIII are useful for inferring evolutionary relationships and distinguishing among closely related octopuses (Söller et al., 2000; Warnke et al., 2004; Guzik et al., 2005). The maximum likelihood trees performed by Guerra et al. (2010) showed that the specimens from the Indian Ocean area clustered with *O. vulgaris* from the Mediterranean Sea, France, Galicia (NW Iberian Peninsula), Senegal, Tristan da Cunha,

and South Africa. All these regions are within the typical geographic range of *O. vulgaris* s. str. (Mangold, 1998). All specimens then clustered with *O. vulgaris* from Japan and Taiwan, south Brazil, Rio de Janeiro, and Venezuela, which are also areas where *O. vulgaris* s. str. has been recorded (Warnke et al., 2004). This results confirm the complexity and adaptability of the common octopus worldwide. One of the reasons that would explain the plasticity of its geographical range would be the capacity of dispersion during the larval planktonic phase, subjected to the prevailing currents.

The common octopus, *Octopus vulgaris* Cuvier 1797, is a truly coastal species living between the surface and a depth of about 100 to 150 m. On a world-wide basis, *O. vulgaris* encounters temperatures between 6 and 33ºC, but it is more often found in waters warmer than 10ºC and cooler than 30ºC. The salinity ranges from about 32 to 40 in the areas where the species in known to occur. (Magold, 1987). It is one of the most important harvested cephalopod in the world, and it has great social and economic impact in several small–scale fisheries, such as the ones of Asturias and Galicia.

Reproduction

Compared with most benthic octopods, the majority of the available biological data concern the common octopus *Octopus vulgaris*. Segregation by sex depends on the área studied. Thus, no segregation between sexes was observed in the central-eastern Atlantic population (Guerra et al., 2014), although these relationship could have different results depending on the local population studied and season. The potential fecundity of the mature females ranges from 100 000 to 500 000 oocytes (Mangold, 1987). The eggs are small of about 2.5x1 mm. Females attach the eggs to several substrates, mainly rocks, and take care of the eggs until the hatching. The spawning season extends throughout the year with two peaks in spring and autumn in the Atlantic populations. The egg stage duration depends on the temperature (20-25 days at 25º C and 125 days at 13º C). The hatchlings have about 1-2 mm mantle length and stay in the water column (planktonic stage) from two to about five months, depending on the season. *O. vulgaris* populations, being simultaneous terminal spawners, are typically unstable and respond rapidly to changes in environmental conditions.

Reproduction in *O. vulgaris* implies the mobilization of resources from somatic to gametic tissues, noting that final maturation seems to be partially reached at the expense of the body muscles and the digestive gland (O'Dor and Wells, 1978; Tait, 1986). However, those former studies contrast with recent ones standing that for egg production this species use energy directly from food, rather than from stored products (Rosa et al., 2002; 2004).

Similar to most other works on *O. vulgaris* (e.g. Gonçalves, 1993; Silva et al., 2002; Oosthuizen and Smale, 2003) males from Galician waters reach sexual maturity at a smaller size than females. Size-at-maturity of females from this area (903 and 1788 for males and females, respectively) was similar to that recorded for animals collected off the Gulf of Cádiz and South Africa, whereas corresponding figures for males were generally greater than previous estimates (Silva et al., 2002; Oosthuizen and Smale, 2003). This results contrast with previous estimations made by Mangold and Boletzky (1973), Guerra (1975) or Smale and Buchan (1981), who reported size at first maturity ranging from 800 and 1000g. These differences could be explained by the different methodologies used by the authors since some of them consider the animals caught during the season previous to the spawining, other considera ll octopus samples during the whiole year, which could lead to an overestimation of the weight at maturity (Fernández-Nuñez et al., 1996).

Age and growth

Growth is very fast and temperature dependent. The life span of *Octopus vulgaris* was estimated in two years for males and females. The natural mortality of cephalopods in general and the common octopus in particular during the paralarval and settlement stages is very high and is associated with environmental factors, which ultimately control the abundance of food for the paralarvae (zooplankton). Information on age is critical for managing fish resources, especially species experiencing heavy fishing pressure. In the absence of accurate age information, our understanding of octopus growth, recruitment, and productivity relies on methods using morphological and catch data. Such methods are considered inaccurate in estimating growth rates and longevities (Jackson, 1994; Boyle and Boletzky, 1996) owing to the high intrinsic variability of cephalopod growth, the mixture of different age microcohorts at the same size, and the absence of a validated technique to estimate age and growth in these species (Doubleday et al., 2006; Leporati et al., 2008a). Age and growth of *O. vulgaris* has been determined at an individual and a population level in the laboratory or in the wild using different methods. However, those studies did not achieve consensus in the growth models and age estimates (Hermosilla et al., 2010).

Hermosilla et al. (2010) validated the daily periodicity of growth increments in stylets of northeastern Atlantic wild-caught *Octopus vulgaris* maintained under controlled conditions (Fig. 12. It was corroborated by staining the stylets either with oxytetracycline (OTC) or tetracycline (TC), and comparing the number of rings produced with the number of days elapsed. Figure 4.

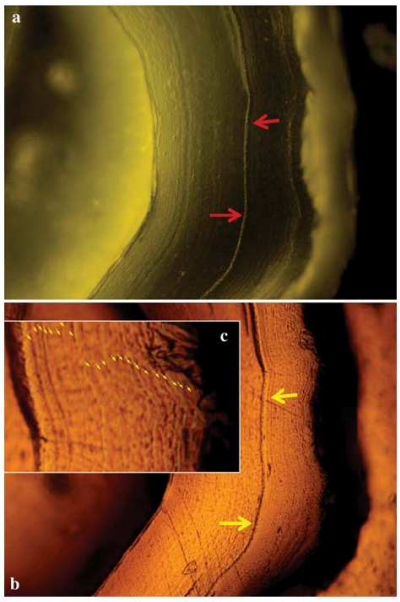

Figure 2. (a) Section of a stylet showing the fluorescent OTC mark in a female of 1140 g (injected 124 mg kg^{-1}). A second mark close to the border is also clear; this mark is an artefact caused by heating during the preparation procedure. (b) The same section in transmitted light. Arrows indicate the location of OTC marks. (c) Detail of the increments counted indicated by arrows.

Figure 4 Section of a stylet showing the fluorescence OTC mark in a female of 1140 g. Data Source: Hermosilla et al. (2010)

Environment & climate change

The biological cycle of the common octopus (*Octopus vulgaris*) is characterised by a pelagic larval stage, rapid growth, a short life cycle of approximately 2 years and high fecundity.

Consequently, specimens caught during a fishing season are the fishery's recruitment from the previous year. Because of these determinants, in a cycle ranging from 1 to 2 years for this species the population is completely renewed, such that recruitment success will depend primarily on favourable oceanographic conditions during the period in which the larvae are found in the water column, and also on settlement occurring in nearby areas with sufficient abundance to replace the previous population. The high fecundity (more than 200 000 eggs) helps to ensure this replacement occurs. However, survival rates during the larval phase also depend on there being adequate food for the newly hatched octopuses, as well as on climate conditions that favour the presence of abundant zooplankton biomass. This correlation with climate parameters explains a large part of the interannual variability in biomass for this population, which will affect catches.

There is high variability in the annual abundance of many cephalopod populations, which suggests that environmental effects on populations tend to be both pronounced and transient. This reflects the short life, rapid and labile growth and maturation patterns, and the lack of overlap between generations. Physiological features that allow squid to have fast life histories include very efficient digestion, sustained growth, with both increase in muscle fibre size and continual recruitment of new muscle fibres, efficient oxygen use, and low levels of antioxidative defence (Pecl and Jackson, 2008; Rosa and Seibel, 2008). Metabolic and life-history parameters are sensitive to environmental variation, and there is no reservoir of old adults to buffer the population against fluctuations in spawning and recruitment success. Nevertheless, populations apparently recover relatively quickly after periods of low abundance. Thus, cephalopods are both sensitive (in terms of rapid response) and resilient (in terms of recovery) to perturbations, including overfishing and, potentially, climate change. It may, therefore, be difficult to distinguish between the effects of directional climate change and local climate variation, and indeed (as is the case for all exploited species) between these effects and the effects of fishing (Pierce et al., 2010).

Impacts of environmental change and variation may occur at all stages of the life cycle, from egg to mature adult. However, the planktonic early life stages (paralarvae) are thought to be particularly sensitive to both physical and chemical oceanographic factors (e.g. temperature and acidity) and to the biotic environment (e.g. phytoplankton productivity and abundance of zooplankton – prey for the paralarvae – and fish (including prey, predator, and competitor species). Environmental effects on eggs and paralarvae are probably the least well understood. Growth and mortality rates during the paralarval phase of the life cycle are high and potentially highly variable (see Pierce et al., 2008b, for a recent review).

As a consequence of high metabolic rate, rapid growth, and short life cycles, cephalopod abundance can be very sensitive to environmental change, with fishing mortality being a less important component of population dynamics than in longlived species. This is probably the key point in favour of using cephalopods as climate-change indicators.

In upwelling systems, fish production appears to be determined by enrichment, concentration, and retention processes, which, in turn, are controlled by climatic factors. An increase in temperature should intensify upwelling, causing a reduction in the concentration and retention processes and therefore resulting in a decline in local fish production (Walther et al., 2002). The reproductive cycle of the common octopus (*Octopus vulgaris*), an important resource species in northwest Spain, is coupled to the coastal wind-driven upwelling, so that females spawn prior to spring months before the upwelling season, and hatching takes place from late summer to early autumn (Otero et al., 2007). This ensures that the newly hatched paralarvae are present in the water column when the ecosystem is still productive. Coastal wind patterns appear to explain up to 82 % of the interannual

variation in octopus catches in the Galician artisanal fishery (Otero et al., 2008). Analysis rates of change in abundance and biomass of the *O. vulgaris* early larval phase in the northwest Iberian coast, where upwelling events occur with a frequency of 10 – 20 d from April to September, indicates that the increase in larval abundance and biomass is significantly correlated with the simultaneous decrease in water-column-integrated nitrate, ammonium, and chlorophyll levels. These conditions occur during the early stage of the relaxation phase of coastal upwelling events, when nutrient salts are consumed to produce biogenic matter, which is retained in the system and transferred through the foodweb (Otero et al., 2009). In the northwest African upwelling areas, *O. vulgaris* recruitment depends on the retention processes when paralarvae are present in the plankton (Faure et al., 2000).

More intensive precipitation events and flash floods will result in increased run-off from land. Sobrino et al. (2002) demonstrated a negative correlation between rainfall and *O. vulgaris* abundance in the Gulf of Cadiz. All the climate effects described above, singly or in combination, may ultimately affect the movements, distribution, and abundance of cephalopods. Therefore, changes in distribution of some cephalopod species are likely in response to climate change (Pierce et al., 2010).

Various recorded changes in marine communities over the last few decades have been attributed to climate change. Thus, Southward et al. (1995) described changes in the plankton community in the English Channel over 70 years and noted the increase in warm-water species during warm periods, and vice versa. They predicted that global warming would lead to species from the Bay of Biscay becoming common in the English Channel (Pierce et al., 2010).

Numerous studies reviewed here and elsewhere (see Pierce et al., 2008b) have underlined the high sensitivity of cephalopod species to local, regional, and largescale environmental conditions and changes. Cephalopods have the intrinsic flexibility to adapt to climate change; their life history and physiological traits allow them to be opportunists in variable environments (Rodhouse and Nigmatullin, 1996). Additionally, we will not have to wait decades to determine these effects. For species where we have established good baseline data, changes will be immediately obvious. In contrast, for longer-lived predators, it will probably take decades to establish cause and effect on their life histories, populations, and abundance (Pecl and Jackson, 2008).

Environmental effects on early life stages of cephalopods can affect life-history characteristics (growth and maturation rates) as well as distribution. Oceanographic conditions are of particular significance for mobile pelagic species such as the ommastrephid squid (Pierce et al., 2008a, 2008b). This suggests that recruitment success of pelagic species or of species with pelagic early life stages could be a possible indicator of variations in the oceanographic environment. Understanding climatic effects depends on knowledge of ecology and natural history. Thus, *O. vulgaris* females apparently migrate towards the coast before spawning, presumably in search of rocky substrata with caves and holes that facilitate the protection of the eggs. Nevertheless, it is not known whether or not this behaviour is related to other factors, such as temperature, which, by affecting the rate of embryonic development, can determine hatching time and hence the environmental conditions experienced by the hatchlings.

The lack of long-term dataseries, even on basic fishery parameters like CPUE, is one of the major constraints on improving our understanding of cephalopod population trends. Long-term dataseries will be imperative to the success of any management strategy to cope with climate variability. It will also be critical to consider interactions between different stressors, such as overfishing, habitat destruction, and climate change (Root et al., 2003).

Although life-cycle plasticity has been demonstrated in a range of cephalopods, the ways in which life-history parameters are linked to environmental conditions are not well understood. There is a need to develop integrated population models that consider both life-cycle parameters and environmental drivers, potentially allowingboth a better understanding of the mechanisms linking life history and environment, and a way of evaluating the relative importance of different drivers (e.g. global change vs. overfishing). Such models would be facilitated by availability of accurate estimates of age and mortality. It is also necessary to find ways to introduce environmental information into cephalopod stock assessment and fishery management (Pierce et al., 2010).

Octopus populations, status of stocks &stock assessment

With regard to studies focusing on the state of cephalopod populations in general and of octopods in particular, it is important to mention ICES (the International Council for the Exploration of the Sea), whose objective is to verify whether catch trends in commercial fisheries can be considered as a good indicator of the abundance of the population, based on CPUE and surveys. This organisation recognises that constant monitoring of *O. Vulgaris* landings (weight distribution and sex ratios) could be useful in providing an indicator enabling the detection of changes in spawning periods and larval survival, so that administrators can set closed periods at the most appropriate times in order to protect the next recruitment.

Octopus vulgaris undertakes limited seasonal migrations. In Asturias, migration of mature animals seem to be coastward, becoming those individuals more available to the fishery. Throughout the scientific literature there is an extensive array of terms used to define a biological population. However, all definitions imply that there is a cohesive process that groups individuals together, and these cohesive processes can be broadly lumped into genetic (reproductive) and demographic (social and behavioural) categories (Waples & Gaggiotti, 2006). A key difference between genetic and demographic populations is the level of spatial and temporal integrity by which they are defined. Compared to a demographic population, a genetic population has a high level of integrity, because a very low rate of exchange between individuals is sufficient to maintain genetic homogeneity (Carvalho & Hauser 1994). However, regardless of whether a population is defined as demographic or genetic they are rarely simple and commonly consist of a complex composite of subdivisions.

Intra-specific population differentiation can occur at varying levels, and is determined by the level of connectivity or exchange between individuals. It can be difficult to apply the concept of structural subdivisions within marine populations as many marine ecosystems lack obvious barriers to dispersal (Waples 1998); however, marine populations often consist of localised sub-populations that are relatively independent and have distinct biological and genetic properties (Gaffney 2000). Metapopulation concepts have been increasingly used to define the range of population structures, as the case of the common octopus, which consist of partially closed networks of sub-populations, where connectivity occurs across a range of spatial scales (Kritzer & Sale 2004). Recognising such complex population systems is important for improving our understanding of spatial patterns in marine species and thus managing them more effectively.

Assessing and preserving structural complexity is crucial for maintaining healthy marine populations, and has been described as one of the ‘ten commandments’ for sustainable ecosystem-based fisheries management (Ryman et al. 1995; Francis et al. 2007). Population structure determines the spatial scale at which individuals operate within a

population and to what extent they are connected. If a group of individuals form a relatively independent self-recruiting sub-population, for instance, it is logical that it should represent the management unit or scale for assessing population characteristics such as growth rate, age structure, mortality and productivity (Kassahn et al. 2003). Furthermore, understanding connectivity and dispersal is a critical component for designing effective management tools, such as no-take fisheries reserves, which can provide a buffer against overexploitation (Sale et al. 2005). Disregarding population complexity in an exploited population may lead to a decline in stock abundance and the number of localised sub-populations, and thus genetic diversity, which is crucial for maintaining a species' ability to evolve and adapt to environmental change (Carvalho & Hauser 1994; Stephenson 1999). This will not only have negative effects on fishery productivity, but will have large-scale repercussions for respective predator-prey populations and, ultimately, ecosystem stability (Bradbury et al. 2008). Currently, traditional management practices typically assume, without prior knowledge, that populations are simple and singular entities (Stephenson 1999). In the case of cephalopods in general, and the coomon octopus in particular, it is vital, therefore, that the structure of commercially harvested marine populations are characterised (Doubleday, 2009).

Despite the biology of *O. vulgaris* was largely afforded in other areas of its distribution range, there is not many biological studies undertaken in waters of Asturias or the Bay of Biscay that can be applied in the fishery subjected of this evaluation. Since the paralarvae of this species is pelagic, there is a high chance that the early stages of development are subjected to the influence of oceanographic conditions, especially those related with physical parameters, such as upweling events, mesoscale eddyes or fronts. Upwelling conditions are related to strong recruitment from Mauritanian to NW Spanish waters. *O. vulgaris* is the most abundant and ubiquitous cephalopod species occurring in the Saharan Bank (NW Africa from 21º N to 26º N). In this area, there are probably two stocks, one off Dakhla (26ºN-23ºN) and the other off Cape Blanc (21ºN-19ºN). The first is overexploited while the second is relatively underexploited. The common octopus of the Nouakchott area probably constitutes a third stock. *O. vulgaris* is taken throughout the year as target species in bottom trawls and in the creel artisanal coastal fishery in depths between 20 and 200 m in the Mediterranean, off West Africa and the north-eastern Atlantic. The estimated landings for this species are around 149000 mt in the eastern-central Atlantic, most of them being captured in Moroccan-Mauritanian waters. Most of the catches in the ECA were reported as octopus nei, but the majority corresponded to *O. vulgaris* (Guerra *et al.,* 2014). Some experiences of culture have been undertaken mainly in Spain and Japan.

In Asturias, Cabranes et al. (2007) indicated the existence of a fine spatial substructure in *O. vulgaris* populations in the Atlantic which is a function of geographical distance. Significant Mantel tests showed a population model of isolation-by-distance for the Atlantic populations. However, it has to be consider that the comparisons excluded a large part of the fishery along the Portuguese coasts (from the Algarve to Galician waters). Although this study is very clarfying and shed light over the population structure of the common octopus in these Atlantic and Mediterranean waters, the absence of these data between the south and the north part of the Iberian Penisula could bias the results obtained. Thus, conversely, previous studies of the genetic structure of *O. vulgaris* from the Mediterranean Sea using allozymes (Maltagliati et al., 2002) and microsatellite loci (Casu et al., 2002) excluded isolation by-distance in O. vulgaris Mediterranean populations. Maltagliati et al. (2002) suggested that O. vulgaris in the Mediterranean followed a basic island model in a background of high gene flow. One explanation for the different results could be the difference in geographical area studied.

On the other hand, the studies of Guerra et al. (2010) and those of Warnke et al. (2004) showed that *O. vulgaris* s. str. is monophyletic. The analyses performed by Guzik et al. (2005) go further, however, suggesting that the O. vulgaris species group, including O. oculifer from Galapagos, O. cf. tetricus from Western Australia, O. tetricus from New South Wales, and O.vulgaris s. str. from Port Elizabeth in South Africa, which were the species used by those authors, is also monophyletic. However, because that species group may contain other species such as *O. insularis* (Leite et al., 2008), further study is needed to test whether the *O. vulgaris* species group will hold its monophyletic status when all species are analysed together.

Finally, Guerra et al. (2010) indicated that phylogenetic trees also showed that the genus Octopus is polyphyletic. This agrees with the results of Guzik et al. (2005), who demonstrated that the genus contains a number of distinct and divergent clades and that the systematics of the subfamily Octopodinae require major revision.

On the whole, what it is shared among the above cited authors is the necessity of more studies to clarify the status of the species and interconections between subpopulations. Besides, it is necessary to include environmental factors in the models because the local poipulations could be influeneces by the particular atmosphreric-oceanographic factors prevailing.

It is almost inevitable that, as more European fishers move into cephalopod fishing, some management measures will need to be introduced. Arguably, the best-anaged cephalopod.

It is almost inevitable that, as more European fishers move into cephalopod fishing, some management measures will need to be introduced. Arguably, the best-anaged cephalopod fishery in the world, for the squid *Illex argentinus* in Falkland Islands waters, has been run using restricted entry, real-time assessment, and the option of early closure to ensure sufficient escapement. Despite the evident and demonstrable success of this approach, the fishery is to move to an individual transferable quota (ITQ) system. In general, however, quota management is not thought appropriate to such short-lived species, and the shift in EU fishery policy towards an ecosystem approach to fishery management means that all participants in the fishing industry, from ICES, national governments, and regulatory authorities to fishery scientists and fishers, are currently more receptive to alternative approaches than ever before (Pierce et al., 2010).

Research employing molecular genetic methods conducted during previous EU and allied projects on European cephalopods uncovered two fundamentally different patterns of distribution of genetic diversity: (i) genetic homogeneity of populations of loliginid and ommastrephid squid across large geographical scales; and (ii) distinct genetic population substructuring over relatively small geographical scales (hundreds of kilometres) in cuttlefish and octopus species (Pérez- Losada et al., 2007; Cabranes et al., 2008). These data indicate that, whereas highly migratory squid species may be safely considered to represent single stocks at large geographical scales (certainly at infranational scales), more sedentary species, such as octopus, mostly comprise highly localized genetic stocks. As distinct genetic stocks suggest very low levels of gene flow (i.e. effective migration) within a species, the observation of locally structured genetic diversity within some cephalopod species indicates that such species should be managed on a corresponding local scale (Pierce et al., 2010).

Population genetic studies, utilizing a combined approach with microsatellite DNA and mtDNA markers, of *Sepia officinalis, Octopus vulgaris*, and *Loligo vulgaris* should be conducted in European waters. The primary aim O. vulgaris would be to determine the geographical scale of subpopulation structuring and the relation of such structuring to geographical distance (i.e. isolation-by-distance determinants of species dispersal) and/or to oceanographic features (i.e. distinct physical barriers to dispersal). To achieve these aims for O. vulgaris, a hierarchical sampling scheme incorporating different spatial scales and relevance to oceanographic features would be required. An ideal combination would be to study both species simultaneously as a comparative study of the influence of species biology on stock structuring.

History of fishing and management

In Spain, *O. vulgaris* is caught mainly by artisanal and trawler fleet. In Cantabrian Sea, Division VIIIc and Galicia waters, Subdivision IXa north, the artisanal fleet account for most of the *O. vulgaris* by traps comprising more than 98% of octopus landings. For the whole area here considered, Div. VIIIc and IXa, in 2013 Portugal comprises around 65 %. Landings are mostly concentrated in Division IXa from which Portugal participates in 69 % and Spain 31 %.Total catches of *O. vulgaris* in Division VIIIc and IXa were 18 850 tonnes, being lesser than 0,5% the catches belonging to discard. Subdivision IXa-centre (Portuguese waters) and IXa south provide the highest values with 12882 and 3785 tonnes, respectively, followed by the landing in Subdivision IXa north and Division VIIIc, with 1434 and 715 tonnes. The most of landing was provide by artisanal fleet in all area.

As an overview of the fishing activity in waters of Asturias, fleet decreased continuously from 1992, following the European guidelines to limit the fishing effort and to sustain the resources under sustainable levels. The Figure 5 shows the distribution of the gears employed by the fleet of Asturias in 2007, showing the importance of the small scale fisheries (*Consejería de Medio Rural y Pesca de Asturias*, 2007). Thus, the 69,75% of the vessels belong to the former category.

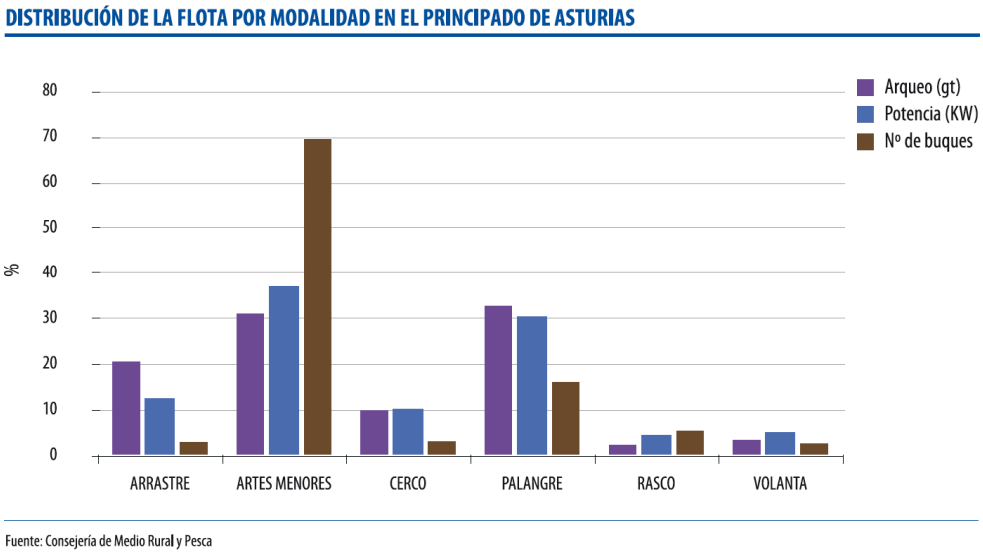

Figure 5 Distribution of the gears used by the fleet of Asturias in 2007. Data Soruce: Consejería de Medio Rural y Pesca de Asturias, 2007

Because of the coastal nature of common octopuses and the artisanal fishery that sustains them, data regarding this species in Spanish waters is largely administered by the successive regional governments, which are responsible for establishing management

measures. In both Asturias and Galicia, fisheries information collected by the fleet is transmitted and analysed by government scientific departments with the aim of monitoring the MP (MP).

At present, the situations in Asturias and Galicia are relatively similar. The Galician community was a pioneer in the implementation of management measures in this area of northern Spain. In the case of the octopus MP in Galicia, for example, it was stipulated that during the effective period of the plan, technicians from the Regional Ministry can conduct sampling on any participating vessels for the inspection, monitoring and assessment of the plan; shipowners must cooperate in order to meet the objectives proposed. A lack of cooperation in this field will result in permanent removal from the plan.

In one of the meetings of the ICES Working Group on Cephalopods, in this case at IEO (Spanish Institute of Oceanography) in Cadiz, Spain, from 27 to 30 March 2012, emphasis was placed on the need for ICES to call upon all European countries fishing in ICES areas to send their data. Data was provided by the major countries that catch cephalopods. However, this was not the first time that ICES had stressed the need to compile reliable data on catches and efforts, since as early as 1992, during a meeting of this working group in Kiel (Germany), the lack of data from many European countries was noted.

Thanks to the insistence of this regulatory board and its successive warnings, data from the last few years has been provided. However, the catch matrix could present inconsistencies due to the lack of updated landing data from all European countries for years prior to 2008. Nevertheless, there is evidence that octopus catch trends have progressively decreased over the last 10 years in northern Spanish waters. In the case of areas affected by seasonal upwelling, as in Galician waters, it has been observed that the intensity of north winds has fallen over the last 20 years, which means that the upwelling of nutrient rich waters, fuel for the entire marine food web in this zone, will be limited. Consequently, the abundance of phytoplankton and zooplankton will be low, and the smaller quantities of live prey (mesozooplankton) available to common octopus paralarvae will result in lower larval survival rates (Otero et al., 2008, 2009).

It should be noted that catch statistics for octopods in ICES waters do not always distinguish between the two major species, *Octopus vulgaris* and Eledone cirrhosa. As stated in the WGCEPH report of 2014, 98% of catches in Galician and Asturian areas are made by artisanal fisheries. Overall, monitored data exists for efforts in zones IXa and VIIc (from the Gulf of Cadiz to Asturias). Figure 6 shows very different trends in the time series analysed for the northern parts of these areas and the south, possibly connected with climate factors, as noted by Otero et al (2008, 2009) and Sobrino et al (2001).

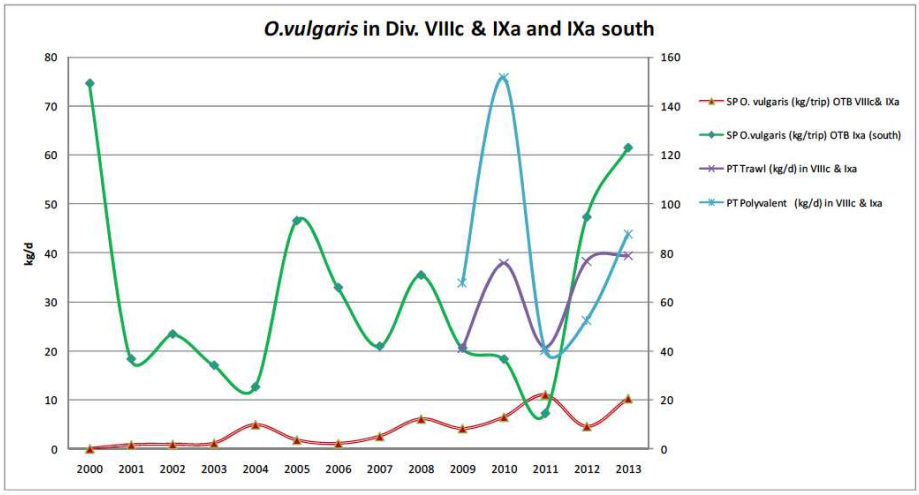

Figure 6 Commercial landings per unit effort (LPUE) trends of the Spanish (kg/trip) and Portuguese (kg/d) fleets in Div. VIIIc&IXa. Data Source: Otero et al. (2008, 2009) y Sobrino et al. (2001).

As pointed out above, monitoring of cephalopod resources requires precise data on catches and efforts. However, the characteristics of cephalopods mean that the traditional models applied to fish species are ineffective, mainly due to the influence of atmospheric-oceanographic parameters, in particular on the first stages of development, but also on juvenile and adult phases.

At the global level, there are two emblematic fisheries in terms of comprehensive inspections of cephalopod catches: Illex argentinus in Falkland Islands waters and Todarodes pacificus in the Pacific. These regulate two types of short-finned squid fisheries. In the case of the Falkland Islands, catches and efforts are recorded daily in localisation cells. The management system is based on an escape model, closing the fishery when it is estimated that the population fraction is about to reach a minimum. Although this system has existed for more than 25 years, in some years catches fall sharply due to the influence of climate factors (González et al., 1997). The example of the Japanese Humboldt squid fishery is similar, and has also seen years of significant decline followed by subsequent recovery. On a closer scale, there is evidence of the possibility of predicting catches based on wind indicators, as shown in Galician waters (Otero et al., 2008).

The current low level of data collection on European cephalopod fishing in relation to the requirements of the high demand for data as a result of their short life cycles meant that there was no analytical assessment of cephalopods in 2011. However, the ICES cephalopod group was able to obtain data on cephalopods prior to the meeting. A preliminary analysis of the data on abundance trends was presented, based on CPUE and abundance indexes from surveys, laying the foundations for ongoing work and calls for future data. In 2014, this working group presented a fisheries management model based on an estimation between biomass models and taking into account environmental factors. This was carried out in the Gulf of Cadiz octopus fishery (ICES 2014). This type of model, which takes into account environmental conditions, would be very suitable for the case in question in Asturias. The first prerequisites have been met, such as the existence of long time series for catches and efforts. Now this type of model needs to be taken further in order to establish the minimum levels of resource abundance from which exhaustive fishery inspections should be conducted. At present, we believe that information on knowledge of octopus populations can be improved. However, catch levels in Asturian waters since the beginning of the MP have

enabled responsible fishing, despite the interannual variations in abundance resulting from factors other than fishing.

In the context of the Asturias MP (NW Spain) supports a fishery ranging from 50 to 300 tonnes per year for the period 2001-2014 (Fernández-Rueda, 2014). The bait most frequently used in this area is artificial and ecological cointaining, among other components, flour and gelatin. It is more expensive but rather more efficient since the bait (in blocks) does not need any care on land during long periods of time. However, despite of its importance in this area, to date, it was not afforded intensive elementary biological and ecological studies in this fishing ground (Cabranes et al., 2007). Whereas, *O. vulgaris* has been studied in detail in other areas (see Gonçalves, 1993 for reviews) and many papers have afforded different issues of the population biology and ecology of this species (i.e. Caverivière et al., 2002; Hernández–García et al., 2002; Silva et al., 2002; Oosthuizen and Smale, 2003; Rodríguez–Rúa et al., 2005).

key Low Trophic Level Species

The common octopus *O. vulgaris* is not considered as a key Low Trophic Level species. Thus, the common octopus is not one of the species types listed in Box SA1 (mictophids, euphausiids, clupeids, etc), and in its adult life cycle phase does not meet at least two of the sub criteria in SA2.2.9a.i–iii (a: a large proportion of the trophic connections in the ecosystem involve this stock, leading to significant predator dependency; b: A large volume of energy passing between lower and higher trophic levels passes through this stock; c) There are few other species at this trophic level through which energy can be transmitted from lower to higher trophic levels, such that a high proportion of the total energy passing between lower and higher trophic levels passes through this stock (i.e., the ecosystem is 'wasp-waisted'). Additionally, did not feeds predominantly on plankton. Finally, although is characterised by early maturity, high fecundity and short life span, it does not forms dense schools and could reach 120 cm total length, indicating that it is not a small size species. On the other hand, a recent publication by Lourenço et al. (2015) using nitrogen istopoes estimated that the trophic level of this species ranged from 4.40 and 4.66, in two Atlantic populations of the Iberian Peninsula.

3.4 Principle Two: Ecosystem Background

Previously, beginning with the ecosystem background, Principle 2 was explained along with the different components comprising it.

Principle 2 considers the impact of the fishery on a range of ecosystem components. The fishery is scored against each of the components even if it has no impact on that component. To determined the list of Primary and Secondary species the team verified the following criteria are met:

Primary species: the species are not covered under P1; Species are within scope (not amphibians, reptiles, birds and mamals); and species where management tools and measures are in place, intended to achieve stock management objectives reflected in either limit or target reference points.

Secondary species: species in the catch that are within scope of the MSC program but are not covered under P1; species are not considered 'primary'; or species that are out of scope of the program, but where the definition of ETP species is not applicable.

ETP (Endangered, Threatened or Protected) Species: species that are recognised by national ETP legislation; species listed in the binding international agreements (CITES, CMS); species classified as 'out-of scope' (amphibians, reptiles, birds and mammals) that are listed in the IUCN Redlist as vulnerable (VU), endangered (EN) or critically endangered (CE).

Designating a species as 'main' determines whether it shall be scored at the SG 60 and 80 levels for primary and secondary species. The default thresholds to determine if a species is main:

- The catch is ≥5% of the total catch by weight
- When 'less resilient', a catch of ≥2% designates main species.
- If a species is out-of-scope then it is automatically main and also secondary.
- ETP PIs have no main designation, all impact is always considered.

Having clarified the previous concepts, we described the components making up the UoA.

The bibliography used for the fishery evaluation of species caught in traps was based on a study conducted in Galicia (Xunta de Galicia, 2007). The faunistic analysis of trap fisheries in Galicia records 86 different species, with common octopus accounting for 86.7% of total catch weight. The remaining 13.3% was made up of the other 85 species. Crustaceans, primarily velvet crabs, represent 5.8% of total weight, and fish 6.3%, chiefly wrasse, blenny and cod. These species include commercial and non-commercial species. In just a few cases, one species amounts to 5% of the total octopus catch, according to information collected between fishermen.

In Asturias the situation is very similar, since it appears that velvet crabs, slipper lobsters and conger eels are the most common species, although the percentage is considerably lower than in Galician data. In addition to these species, teleosts and invertebrates, including bivalve molluscs, have been observed. The presence of bivalve molluscs in Asturian nets could be due to the fact that they are possibly taken into the traps by octopus carrying them for consumption before abandoning them in favour of more easily accessible food (bait in the trap).

After consulting the bibliography existing prior to the site visit, no information was found on specific bycatch species observed in traps in the fishery zone of the certification and management units. However, direct information was available from the CEP and people related to the fishery, indicating during the site visit and previously during the pre-assessment that the species that could affect traps and would be treated as a bycatch was primarily the velvet crab. Slipper lobsters and conger eels along with triton snails and other lesser species were also mentioned..

The specific nature and characteristics of commercial fisheries mean that there are no primary species related to the octopus trap fishery, since none of the species caught are covered by specific management regulations including catch limits, etc., beyond the establishment of minimum sizes or closed periods. In this report, velvet crabs only have been defined as the main secondary species, not because their numbers exceed 5% in relation to catches of the principal species by the UoA, but to apply a conservation criterion, since on the most eastern Galician coast, slipper lobster catches approach this percentage.

The **velvet crab** (***Necora Puber***) is a decapod crustacean belonging to the Brachyura class. It is a demersal species typical of shallow waters, found up to a depth of around 70 m, with the smallest individuals found along rocky shorelines. Its primary habitat is rocky, muddy seabeds such as mussel rafts, and gravelly sand. These crabs are nocturnal and spend the day hidden in rock crevices, although they can also bury themselves in the sand. They are voracious, combative, and omnivorous, eating algae and fish, and may even demonstrate cannibalistic behaviour, eating other velvet crabs. This crustacean is subject to closed periods, with fishing prohibited during the first six months of the year, or from May to October, depending on the coastline.

Traps are the most commonly used fishing gear, especially “velvet crab traps” and “shrimp traps”, used especially at night when there is most activity. Artisanal trawl nets such as the “bou de vara” are also used, although to a lesser extent. The information collected indicates that birds and other cetacean species are not caught by this fishing gear. However, other non-target species, such as hermit crabs and starfish, may be caught in the traps.

The previous information indicates that the traps are a selective type of gear and that no species of mammals, turtles or amphibians, for example, are ever caught in the traps. However, ***Charonia lampas*** is an **ETP species** for which very little bioecological information exists for Asturian waters. Information existing in the management area indicates that *Charonia lampas* could be affected by the gear used to catch common octopus. This species is found in temperate seas throughout the world. Various subspecies exist, including *Charonia lampas lampas*, which is found in our waters. This subspecies is present throughout the Western Mediterranean and the Eastern Atlantic. The decline of its population has produced considerable ecological imbalances along the coast, since its prey, starfish, have multiplied, affecting other species. However, the recovery of newts could serve to restore the natural conditions of the infralittoral seabed. In the Cantabrian Sea and the Atlantic Ocean, it is relatively scarce and dispersed. Its populations could have declined, but its trend has not been studied and no data is available, given that it is a non-target species.

In Asturias, it is often found in trawler discards and appears in all ports. There are very few published reports of this, although it is known to be landed in Gijón, Avilés, Cudillero, and Oviñana, etc. It is probable that it is found all along the Asturian coast.

This species is classified as being of special interest, in an uncertain situation at the autonomous level, vulnerable at the state level and included in the Bern Convention, Annex II, at the international level (Anadón et al., 2007). More specifically, a national legislation declares it to be an ETP species, and there are “national requirements for protection and rebuilding”. Article 53 of Ley 42/2007 sets out the List of Wildlife Species under Special Protection and the Spanish Catalogue of Endangered Species. Real Decreto 139-2011 lists the species in both the List of Wildlife Species under Special Protection (LESRPE) and the Spanish Catalogue of Endangered Species (CEEA). *Charonia lampas lampas* appears on the LESRPE list and also on the CEEA, in the Vulnerable category (there are only two categories: 1- in danger of extinction; and 2- vulnerable). In accordance with Article 54 of Ley 42/2007, this means that it is forbidden to catch, kill, harm, possess or sell this species, etc, with the goal of preserving and protecting its habitats. In addition, because the species is vulnerable, a conservation plan must be adopted within five years (but a recovery plan is not required, being compulsory only for species in danger of extinction).

Habitat

The map of Asturian fishing grounds includes waters off the Principality of Asturias, from the coastline to a distance of 46 nautical miles, covering all waters situated between 43º 23' and 44º 15' and 7º 33' West, in which the Asturian fishing fleet is the main operator. The map of these fishing grounds is published and can be consulted at:

http://tematico.asturias.es/dgpesca/din/divulgacion.php?tipo=caladeros

Octopus habitats are usually rocky seabeds. The highly mimetic behaviour of this species enables it to protect itself from enemies, going as far as camouflaging itself against the rocks surrounding it. In the map provided by the Regional Ministry of Rural Affairs and Fisheries (Figure 7), Asturian fishing grounds are identified based on data provided by the fisheries sector. Information has been collected on depths, the types of seabed, the main categories of fishing gear used and the species caught.

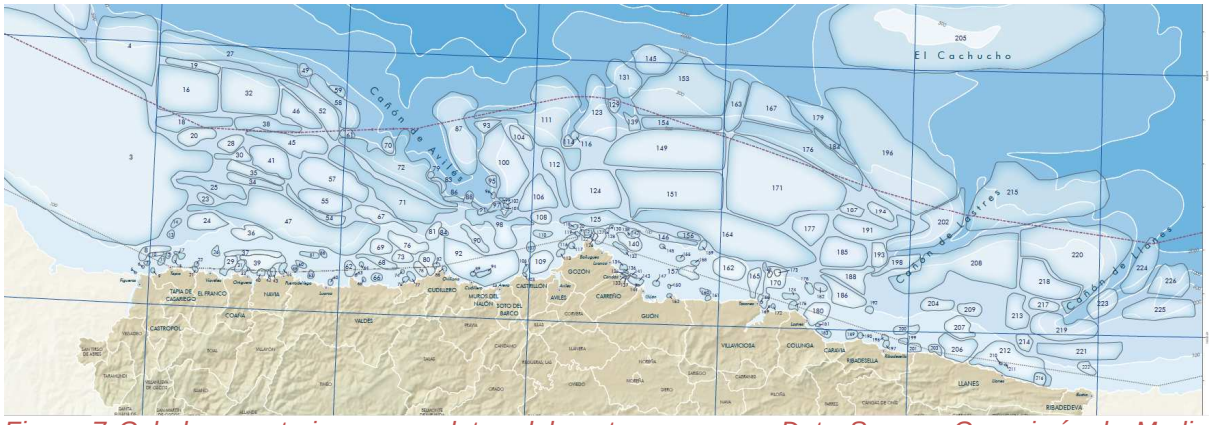

Figure 7 Caladeros asturianos con datos del sector pesquero. Data Source: Consejería de Medio Rural y Pesca (Principality of Asturias).

Having identified the zone and given that the seabed is classified in the map, we mainly have (http://www.sigmarinoasturias.es) Figure 8:

- Rock: compact rocky substrate
- *Petón*: a high rocky zone that never emerges above the surface
- Sand: substrate composed of sands of varying grains
- Mud: substrate formed of very small particles.

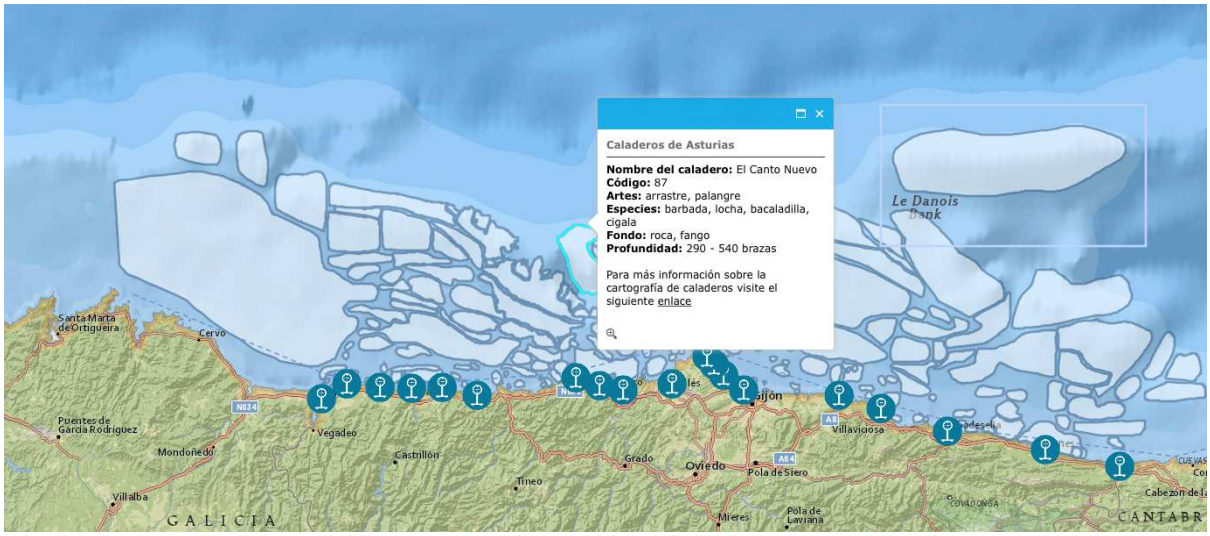

Figure 8 Asturian fishing grounds with fisheries sector data. Data source: http://www.sigmarinoasturias.es.

Specific constrains

A problem associated with many fishing gears is their ability to continue to capture animals after the gears have been lost, a process called “ghost fishing” (Hubert, 1996). When traditional clay pots are lost, they not only become a refuge for the octopus but also provide a substrate for a variety of other organisms. Thus, they are one of the most “environmentally friendly” fishing gears. Even broken, they continue to serve as substrata for the establishment of a variety of organisms, thus playing an important role in the local trophic chain, especially in an area such as the Eastern Algarve, which lacks natural hard bottoms. More recently, however, the traditional clay pot has been replaced by plastic pots of different forms. Studies are being carried out to determine the environmental effects of plastic pots, as well as their economic feasibility (Pierce et al., 2010).

Traps of different designs (Figure 9) constitute the dominant gear for the octopus fishery in Portugal and northwest Spain. This métier operates in depths of less than 50 m. A seasonal trend has been observed in effort, yield, and median depth of fishing — all of which decrease in summer and increase in winter (Bañón et al., 2007). Along the Galician coast, where an inshore fishing fleet of 1561 vessels operates (data from 2004), 89 % of common octopus landings derive from octopus traps, whereas 4 % comes from traps for small edible crab, 4 % from gillnets, and 1% from hook gears. In Portugal, until the 1970s, catches of octopus were traditionally concentrated in the Algarve region, which yielded 70 – 80 % of the total national octopus landings. In recent years, the Algarve region has contributed no more tan 40 % of the national octopus landings, reflecting changes in the distribution of catches along the Portuguese coast.

The bait that they use with the nasars is a artificial bait makes just with biodegrable materials. The company which comercialice this product is *arombait* and the charactheristics os this bait could be consulted on this website cited herein; http://www.arombait.com/arombait_fish_bait.pdf.

Figure 9 Octopus traps used by the fishers. Data Source: Client

Trophic ecology of the common octopus

Fish, marine mammals, birds, and other cephalopods prey on *O. vulgaris* (Hanlon and Messenger, 1998). Marine mammals include common dolphin (*Delphinus delphis*; López, 2002; Santos et al., 2004b), bottlenose dolphin (*Tursiops truncatus*; Blanco et al., 2001), Risso's dolphin (*Grampus griseus*), long□finned pilot whale (Globicephala melas; López, 2002), and Mediterranean monk seal (*Monachus monachus*). Fish predators of adults and juveniles include conger eel (*Conger conger*) and Mediterranean moray eel (*Muraena helena*), whereas Mediterranean dusky grouper (*Epinephelus marginatus*), serranid fish (*Serranus* sp.) and the sand smelt (*Atherina presbyter*) prey on hatchlings (Villanueva and Norman, 2008).

All cephalopods actively catch and eat live prey. Dietary analysis in these marine molluks is hampered by several problems that arise from the anatomy, physiology and mode of ingestion (Rodhouse and Nigmatullin 1996) of these organisms (Roura et al., 2012). The oesophagus diameter is limited physically as it passes through the brain, so the cephalopod beak bites small pieces of tissue to swallow. Rapid digestion rates in the stomach shorten the residence time (two to six hours) making the prey remains visually unidentifiable. The mode of ingestion can be internal, biting with the beak, or external, where salivary enzymes paralyse and digest the flesh followed by the ingestion of the liquefied content (Nixon 1984; Guerra and Nixon 1987). This specialised feeding strategy, that largely avoid ingestion of hard skeletal material, together with external digestion, tend to bias data on prey species and size when morphological analysis are used.

The common octopus *O. vulgaris* is not considered as a key Low Trophic Level species (LTL). Thus, a recent publication by Lourenço et al. (2015) using nitrogen istopoes estimated that the trophic level of this species ranged from 4.40 and 4.66, in two Atlantic poulations of the Bierian Peninsula.

The diet of *Octopus vulgaris* evidenced that it is a generalist predator as an adult or juvenile, feeding upon a variety of organisms mainly within the class Crustacea, but also Gastropoda, Lamellibranchiata, Osteichthyes, Ophiuroidea, Polychaeta and Cephalopoda (Roura et al., 2012). Its diet was mainly composed by bony fishes, crustaceans, cephalopods, bivalves and polychaeta. The species has many predators, sharks, bony-fishes, sea birds and marine mammals. Cannibalism has been observed.

The industrial rearing of this species is hampered by the high mortality during the pelagic stage, in spite of the broad range of experimental diets assayed throughout the past sixty years (reviewed in Iglesias et al. 2007). Although some authors have hypothesised that *O. vulgaris* prey upon crustaceans during its planktonic stage (Mangold and Boletzky 1973; Nixon 1985; Rodhouse and Nigmatullin 1996; Villanueva and Norman 2008), the feeding habits of wild *O. vulgaris*, until recently, paralarvae were still unsolved. However, the study of Roura et al. (2012) evedenced that while previous work on cephalopod paralarvae diet found that paralarvae are generalist predators, prey species detected in early hatchlings of *Octopus vulgaris* suggest that they are actually specialist predators according. Among the crustaceans, the group that primarily contribute to the total abundance of zooplankton are krill. By contrast, all the paralarvae analysed ate some Decapoda, which include crabs, shrimps, hermit crabs and mud shrimps. In fact, the trophic selection is quite evident for shrimps, which were the most abundant prey present in 14 out of 18 *O. vulgaris* paralarvae, but whose contribution to the total zooplankton abundance was only 0.28% (Roura et al. 2012). The specialist trophic strategy during the first days in the pelagic ecosystem could be a consequence of a lack of skills to capture fast moving and more abundant prey, as proved in paralarvae of Loligo opalescens (Chen et al. 1996). As it occurs in the former species, an ontogenic switch into a generalist predation strategy would be expected as the *Octopus vulgaris* paralarvae grow and gain experience, but further research is needed to test this hypothesis. On the other hand, if paralarvae were truly specialists throughout the planktonic phase, this might explain the high mortality of *O. vulgaris* hatchlings both under culture and in the wild, due to prolonged starvation periods (Vecchione 1991).

Juvenile and adult octopuses are carnivorous predators and prefer to feed on a variety of live prey species (Fiorito and Gherardi 1999). Although octopuses cannot see colors, they are able to identify their prey by movement, shape, features, and scent (Fiorito and Gherardi 1999). One method they use during hunting is known as ‘groping’ in which they use their arms to feel along rocks, sediment, and in holes for potential food (Fiorito and Gherardi 1999). In another method they use their web for covering prey when pouncing on top of them (Hanlon and Messenger 1996). A third tactic involves the siphon in which they blast sediment with water to reveal buried prey (Hanlon and Messenger 1996). A number of other hunting modes are ambushing, stalking, and luring (Hanlon and Messenger 1996). There are varying studies which report on the amount of time dedicated to feeding by octopuses. In Bermuda specifically, Mather and O’Dor (1991) found that *O. vulgaris* spent a relatively short amount of time doing this, on average twelve percent of their day. This is a sharp contrast to what is normally seen in octopuses, who are generally known to spend up to sixty five percent of the day foraging (Hanlon and Messenger 1996). They are known to feed particularly on crabs, bivalves, and gastropods (Fiorito and Gherardi 1999). *O. vulgaris* have also been found to feast on polychaetes, other crustaceans, cephalopods, and various species of bony fishes (Hanlon and Messenger 1996). Their radulas are extremely efficient tools for aiding eating of these organisms, especially for penetrating a thick mollusk shell or arthropod skeleton. The octopus will grasp the organism and drill a tiny hole with their radula and using their salivary papilla insert a paralyzing toxin which relaxes the organism allowing their shell or exoskeleton to be penetrated (Fiorito and Gherardi 1999). Bivalve mollusks are pried apart using the octopus’s arms and suckers, but can also be drilled if this fails.

However, pulling open bivalves has a much higher energy cost than drilling alone. Once they are done feeding, the mollusk shells. are scattered around their den area in piles known as 'middens' (Fiorito and Cherardi 1999).

It is interesting that *O. vulgaris* are diurnal and nocturnal since shallow water cephalopods are largely influenced by light cues (Miesel et al. 2006). However, even this can be debated as they are more often day and night active in the Atlantic and Caribbean, while *O. vulgaris* in the Mediterranean have been speculated to be exclusively nocturnal. However, Meisel et al. (2006) disproved this speculation when they found that even Mediterranean O. vulgaris species showed a preference to daytime activity. In addition, the common octopus does have the ability to switch its activity profile if necessary depending on the changing needs of the organism. It is theorized that one reason for a flexible activity period is as an adaptation to fish predation (Pierce & Wood, 2015).

Despite their ferocity as invertebrate predators of the oceans, numerous dominant carnivores prey upon octopuses. Pinnipeds in oceans around the world feed on cephalopods; with thirty-one of the thirty three species present including them in their diets (Klages 1996). Seals are a threat to the octopus because they are fast swimmers and easily tire octopuses who cannot keep up fast swimming speeds for an extended period of time (Klages 1996). Large predatory fish, such as the Barracuda, are also a threat to O. vulgaris. Eels are also especially dangerous to Octopuses, and are thought to use developed smell senses to locate them (Hanlon and Messenger 1996).

Octopuses have two types of defense against their predators, primary and secondary (Hanlon and Messenger 1996). Primary defense includes using 'crypsis,' also known mainly as camouflage or color changing to match their environment (Hanlon and Messenger 1996). Secondary defenses are only used when the primary response fails, and the octopus is seen by its predator (Hanlon and Messenger 1996). These responses include flight and inking, deimatic behavior, defensive postures, and deflective markings (Hanlon and Messenger 1996).

The Octopus's ability to camouflage is nothing short of astounding. It is theorized that this ability was developed as an adaptation for protection from predation due to the evolutionary loss of an external shell (Ferguson and Messenger 1991). Octopuses achieve color change in part by chromatophores, iridophores, and leucophores; all structures of the skin in increasing depth (Froesch and Messenger 1978). Chromatophores are generally known as elastic pigment sacs with muscle fibers attached letting them expand and contract (Ferguson and Messenger 1991). The leucophores are important because they allow for the reflection of white light and consequently allow the skin to reflect wavelengths of light which are prevalent in their habitat and produce disruptive patterns (Froesch and Messenger 1978). The other aspect to cephalopod camouflage is the brain which contains nerves coated in chromatophore fibers, controlling coloration patterning (Froesch 1973).

Deimatic behavior includes threatening or bluffing actions in order to cause the predator to hesitate (Hanlon and Messenger 1996). Sometimes this behavior will scare away the predator or give the octopus enough time to flee in a jet of ink. Specific deimatic coloration patterns and body postures in O. vulgaris are a paling of the skin, darkening of suckers and area around eyes, arms and web spread widely, and a jetting of water (Hanlon and Messenger 1996). They are also known to threaten the predator by throwing out their arms towards the attacker (Hanlon and Messenger 1996).

3.5 Principle Three: Management System Background

Area of operation of the fishery

The UoA operates in waters of the Cantabrian Sea off the coast of the Principality of Asturias (ICES sub area VIIIc), from the Eo estuary to the San Esteban de Pravia estuary, in accordance with the scope of application of the MP for the common octopus (*Octopus vulgaris*) (Resolution of 26 November 2014), and from the coastline to a depth of around 50 m (although legally there is no maximum depth limiting the activity of this fleet, it operates to a depth of 100 m). Figure 10

Fishing is carried out both in the internal waters of the Principality of Asturias and outside of these waters, in Spanish territorial waters (<12 nautical miles). The fleet operates in numerous fishing grounds within these waters, including: El Cantu de Tapia (11), Mar Bello (12), El Coitelo y Dondel (15), Las Furadas (17), El Petón de Viavélez (22), Las Conchas (29), Llamosa y Valladón (31), Petón de Ortiguera (33), Playa de Navia (39), Andes (40), Canto Fabal (42), Playa de Frexulfe (43), Canto Sobreisla (44), Petón del Castaño (53), Bajo La Mina (60), Cabo Busto (62), La Conchona y Vidio (80), El Llozano (82), Piedra del Cantu (89), La Playa de Cudillero (92) and La Carretera de Cudillero (94).

The ports of landing and Fishermen's Associations, within the territorial scope of the MP, are: Cudillero, Oviñana, Luarca, Puerto de Vega, Ortiguera, Viavélez, Tapia de Casariego and Figueras.

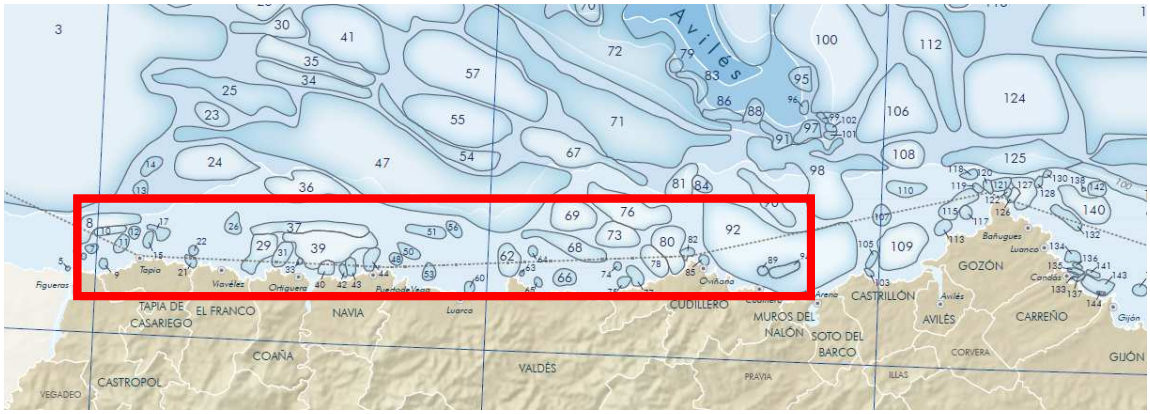

Figure 10. The red rectangle is the fishing area for the UoA. Data Source: Dirección General de Pesca, Gobierno de Asturias

Jurisdiction of the fishery

Competence for octopus fishing in these waters lies with the Principality of Asturias, since Article 148.1.11.a of the Spanish Constitution provides for the exclusive competence of the Autonomous Communities for fisheries in internal waters, shellfish harvesting and aquaculture. In accordance with the Constitution, Article10.1.13 of the Statute of Autonomy of the Principality of Asturias confers exclusive competence to the Principality of Asturias for fisheries in internal waters and shellfish harvesting.

The Principality of Asturias is an autonomous community of Spain, an EU member country since January 1986. Consequently, fisheries policy in Asturias must be governed by the broader legal framework for political management of Spain and the EU. The Ministry of Agriculture, Food, and the Environment (MAGRAMA, Spanish acronym) is responsible for managing fishing activity in Spain. The General Secretariat for Fishing (SGP, Spanish

acronym) is part of this ministry and is responsible for carrying out this task. At the national level, Ley 3/2001, of 26 March, on National Sea Fisheries, establishes the legal parameters for fishing activities, essentially covering the contents of European regulation. The EU fish management system is governed by the European Commission (EC) and, after Treaty of Lisbon, Parliament and Council are also involved in government with more powerful. The Commission, through the Directorate-General for Maritime Affairs and Fisheries (DGMARE) is responsible for proposing, approving, and applying EU fishing regulations throughout the European Union (EU). The Common Fisheries Policy (CFP) is the current EU management framework, which was recently reformed and took effect through Regulation (EU) n° 1380/2013 of the European Parliament and of the Council of 11 December 2013.

In accordance with the Spanish Constitution and the Statute of Autonomy of the Principality of Asturias, the scope of competence of Asturias for fisheries focuses on the internal waters of the Asturian coast and on all activities defined as “shellfish harvesting” taking place in both internal waters and Spanish territorial waters (up to 12 nautical miles). Exercising that power, Asturias adopted Ley 2/93 of 29 October (slightly amended by Law 15/2002) on sea fisheries in internal waters and the use of marine resources, which provides that competence for matters governed by this law lies with the Regional Ministry of Rural Affairs and Fisheries of the Principality of Asturias, now called the Regional Ministry of Rural Development and Natural Resources. The Asturian fisheries law covers all functions, instruments and mechanisms for the development of the management system, and is structured around 10 headings: heading I, general provisions governing the spatial scope of the law, mentions the specific activities covered by this law and establishes the basic principles of fishing activities; heading II, marine fish farming; heading III, shellfish harvesting by hand; heading IV, eel fishing; heading V, seaweed harvesting and extraction: heading VI, recreational sea fishing; heading VII, marketing of fishery products; heading VIII, inspection and monitoring; heading IX, violations and sanctions; and heading X, advice, information and professional training.

The current Ley 2/93 on Asturian Fisheries only defines “shellfish harvesting by hand” in the shoreline area as an extractive activity aimed at gathering molluscs, crustaceans and shellfish in general, when carried out in the intertidal zone. However, it does not define shellfish harvesting from boats in the maritime zone. Nor does Ley 3/2001 of 26 March on National Sea Fisheries give any definition of shellfish harvesting. In the European Fisheries Fund National Strategic Plan update 2007-2013, shellfish harvesting is defined as fishing consisting in extractive activities aimed at gathering invertebrate animals. According to the Resolution of 10 March 2004 of the Regional Ministry of Rural Affairs and Fisheries of the Principality of Asturias approving the Shellfish Exploitation Plan, the capture of decapod crustaceans (spider crabs, brown crabs, velvet crabs, homarus, lobsters, carideans and slipper lobsters) using traps is considered to be a shellfish harvesting activity. In spite of the lack of legal clarity for octopuses, we believe that octopus fishing in Asturias using traps is an activity that can be classified as “shellfish harvesting”.

Article 7 of Ley 2/93 on Asturian Fisheries establishes the possibility of producing yearly plans that would set the extractive capacity according to the evolution of resources, after consulting with professionals through their representatives. On the basis of this article, the DGPM as part of the Regional Ministry of Rural Affairs and Fisheries works in collaboration with the Fishermen’s Associations of Cudillero, Oviñana, Luarca, Puerto de Vega, Ortiguera, Viavélez, Tapia de Casariego and Figueras to produce a yearly MP for the common octopus (*Octopus vulgaris*), which extends from the Eo estuary to the San Esteban de Pravia estuary.

The MP for the 2014-2015 fishing season is set out in the Resolution of 26 November 2014 of the Regional Ministry of Rural Development and Natural Resources regulating common octopus (*Octopus vulgaris*) fishing during the 2014-2015 season (from 15 December 2014 to

14 July 2015). In addition, every year the DGPM approves a number of standards that govern octopus fishing outside the scope of application of the MP, although these regulations do not affect the UoA subject to certification.

On the other hand, recreational sea fishing in Asturias is regulated by Decreto 25/2006 of 15 March. This decree sets out the fishing gear authorised and the quantities of octopus that can be caught according to the different fishing permits, both by hand and from boats, with underwater octopus fishing being forbidden.

Particulars of the recognised groups with interests in the UoA

The groups recognised as having direct interests in the fishery fit into the classification of groups belonging to the Regional Government, the National Administration and private groups and natural persons with economic and social interests in the fishery. All of the organisations, institutions and individuals participating in the fishery are easily identifiable and are explicitly defined.

- Regional Government: Principality of Asturias

The DGPM from the Regional Ministry of Rural Development and Natural Resources has two departments: 1) The Fisheries Structures Department that performs duties pertaining to sectoral infrastructure provision programmes, the renovation, modernisation and restructuring of the fishing fleet, industries and aquaculture, and the improvement of marketing and enhancement of quality and of markets; and 2) the Fisheries Management Department, which is responsible for the management of fisheries, shellfish harvesting and marine fish farming, the protection of marine resources, inspection and monitoring of extraction (Fisheries Inspection and Monitoring), transport, marketing and centres of consumption, non-university maritime training and education, and fisheries research and experimentation.

One branch of the Servicio de Fisheries Management Department is the Fisheries Experimentation Centre (CEP Spanish acronym), which was set up in 1980 under the name Centro de Investigaciones Acuáticas de Asturias (Asturian Aquatic Research Centre). In 1987, the name was changed and the centre was tasked with “developing the different plans pertaining to the enhancement of fishery resources and conducting appropriate research to use scientific criteria to regulate closed seasons, minimum landing sizes, closed areas or prohibited species, and the most suitable fishing methods in each case”. The CEP is also responsible for providing technical expertise to the DGPM on issues relating to the biology of marine species and their exploitation, and to the monitoring of management plans. In particular, in the case of octopuses, it publishes an annual report on monitoring of the fishing season.

Another branch of the Fisheries Management Department is the Resource Protection Division, whose Fisheries Inspection and Monitoring Unit is aimed at ensuring compliance with measures relating to the activities regulated by Law 2/93 on Asturian Fisheries

- National Administration: the Government of Spain

At the national level, several organisations are responsible for supplementing efforts made by the Principality of Asturias. Maritime Rescue from the Ministry of Public Works is responsible for search and rescue services, and the prevention and control of marine pollution. The Maritime Captanies from the General for Merchant Shipping, Ministry of Public Works are in charge of safety at sea, the prevention and control of marine pollution, maritime inspections and the clearance and registration of marine traffic. Another state organisation that contributes to monitoring in terms of food safety, poaching and coastal and marine

environmental impacts is SEPRONA (Nature Protection Service), which is part of the Civil Guard (Ministry of the Interior).

In addition, other institutions and public organisations exist, especially those connected with research, for example the University of Oviedo and a state centre for marine research, such as the Oceanographic Centre of Gijón belonging to the IEO.

- Fisheries sector

The sectoral part identifies Fishermen's Associations, the coastguards responsible for monitoring, and fishermen themselves.

The Fishermen's Associations included in the octopus MP are: Cudillero, Oviñana, Luarca, Puerto de Vega, Ortiguera, Viavélez, Tapia de Casariego and Figueras. One of the duties of these associations is to look after their members and also to ensure the sustainability of the fishery, with the goal of creating decent jobs. The associations manage the first sale of fishery products through the fish markets. In turn, they are represented at the Fishermen's Associations of the Principality of Asturias, with autonomous jurisdiction, which is itself represented at the Federación Nacional de Cofradías (National Federation of Associations). In this sense, the associations, through their different representations, watch over the interests of the fisheries sector at the local, provincial, autonomous and national levels.

Fishing boat skippers (fishing permits are issued in the name of the vessel) and the crew members serving on board are the productive and social part of the fishery. The skippers are linked to the respective associations included in the MP.

The coastguards (Decree 23/1995) are employed by the associations, and this position was created with the development of the Fishery Resources Exploitation Plans. Duties include: a) ensuring compliance with the regulations governing the activities of existing management plans in their association; b) collaborating with the Internal Waters Monitoring body of the Principality of Asturias to monitor compliance with fisheries legislation in the internal waters; and c) reporting regularly on the state of fishery resources. Although this organisation is fundamentally geared towards monitoring, it also carries out a wide range of other duties that vary from one fish market to another (administrative tasks, weighing, stowing, etc.). Its efforts are divided between all of the association's exploitation plans, concentrating mainly on the goose barnacle Exploitation Plan, and to a lesser extent on the Octopus MP.

Consultations, decision-making process or processes and recognised participants

The need for the government to consult the fisheries sector on standards pertaining to the management of fishery activities is set out in Law 2/1993 on Asturian Fisheries. In accordance with Article 7 of this law, the Regional Ministry of Rural Affairs and Fisheries can draw up yearly plans according to the evolution of resources, as well as of the socio-economic conditions of the sector. This article also provides that the government must consult with fisheries professionals through their different representatives, in order to subsequently set the extractive capacity by category and by zone, and must also develop experimental plans to improve the development of the sector. Article 8 of this law also provides that the Regional Ministry of Rural Affairs and Fisheries must consult with fishery professionals in order to regulate the characteristics, usage and working zones for gear used for fishing and extractive activities.

In this context, the DGPM works in collaboration with the Fishermen's Associations to draw up a yearly common octopus (*Octopus vulgaris*) MP that extends from the Eo estuary to the

San Esteban de Pravia estuary. The MP for the 2014-2015 season is defined in the Resolution of 26 November 2014, of the Regional Ministry of Agriculture, Livestock and Indigenous Resources, the preamble of which emphasises that it has been produced in collaboration with the Fishermen's Associations of Cudillero, Oviñana, Luarca, Puerto de Vega, Ortiguera, Viavélez, Tapia de Casariego and Figueras, with the goal of protecting resources and improving their marketing in the geographical area of these associations.

Although it is officially known as the MP, this document of barely two pages is renewed every year, and is limited to establishing a series of measures regulating octopus fishing in the forthcoming season. The MP takes an in-depth look at cooperation between the sector and the government, setting out in section III additional standards that the Fishermen's Associations are obliged to refer to the DGPM, specific information about the weighing of common octopus catches, on a monthly basis. In addition, it also provides that during the effective period of the plan, the vessels included in the plan must cooperate with technicians working for the DGPM, which will carry out fishery inspection and monitoring duties, with the goal of producing a study on the viability and evolution of the plan. These technicians referred to in the MP are biologists from the Centro de Experimentación Pesquera (CEP) and from the consultancy firm SIGMA S.L., who are working together on an on-board sampling project, GPS tracking of vessels and in situ octopus tagging.

Of all the groups recognised in other sections as having direct interests in the fishery, the only ones involved in the consultation process for the drafting of the MP are the Fisheries Management Department, CEP and Monitoring and Inspection divisions and the eight Fishermen's Associations included in the MP (Cudillero, Oviñana, Luarca, Puerto de Vega, Ortiguera, Viavélez, Tapia de Casariego and Figueras).

The basic information used to determine the state of the octopus fishery is the annual report produced by the CEP. This report is intended for internal use by the DGPM and is not available to the public. Nevertheless, some of the findings of this report are presented to fishermen in the coordination meetings for the MP. The CEP report contains data from the previous fishing year and also provides a historical overview of the fishery. This includes dates of sales, fishing efforts (vessels, days), catches, catches per unit of effort (kg/day), weight distribution, and price (€/kg), per monthly and yearly periods and per association (with regard to the previous fishing year).

Details of other non-MSC fishery users or activities, which could affect the UoA, and arrangements for liaison and co-ordination

There are two groups (trawling and recreational fishing) which, although their octopus fishing zones do not coincide with those of the octopus trap fishery, nevertheless fish from the same octopus stocks.

Recreational fishing: the right to recreational octopus fishing from boats or by hand (intertidal zone) is legally recognised in Asturias (Decree 25/2006 of 15 March, regulating recreational sea fishing in the Principality of Asturias). Although thousands of recreational fishing permits have been issued, surveys have shown octopus catches in the intertidal zone by recreational fishermen to be very small (0.23 kg per fisherman per day), while from boats they are considered to be negligible (report by Apilánez y Morteram 2010, 2011 for DGPM). Fishermen's Associations are consulted by the DGPM when recreational fishing groups (such as Volver al Pedrero) make a proposal regarding recreational fishing regulations.

Trawling: on the continental shelf off the coast of Asturias and at depths of more than 100 m, octopuses are occasionally caught by trawling. Given that this fishing activity takes place

outside internal waters, the fishery is regulated by the Secretaría General de Pesca del MAGRAMA. The Asturian trap fishing sector complains that trawling makes substantial octopus catches, is not obliged to comply with the closed period they themselves must observe, and sporadically operates in prohibited waters of <100 m. A CEP study of 2015 (Impacto de la pesca de arrastre en la captura de pulpo común *Octopus vulgaris* en Asturias) nevertheless indicates that trawler catches do not represent a substantial quantity (between 2002 and 2014, an average of 11% of all octopus sold in Asturian fish markets, fluctuating between 3 and 21%) compared to catches made with traps (85%, fluctuating between 70 and 95%). However, this study is incomplete, since it gives no information on catches by Galician trawlers in Asturian waters.

In its first additional provision, Law 3/2001 of 26 March on National Sea Fisheries provides for the creation of two coordination and consultation bodies between the Spanish Government, the Autonomous Communities and the fisheries sector, to address issues of common interest. The National Fisheries Council is the coordinating body between the MAGRAMA and the Autonomous Communities, and represents the SGP, the Directors-General of the General Secretariat for Sea Fisheries and one representative of each of the Autonomous Communities. The other body is the Advisory Committee for Fisheries, which provide expertise and consultancy services, and includes representatives of key organisations and associations from the fisheries sector, including the National Federation of Fishermen's Associations or Guilds.

Objectives for the fishery: Resource, Environmental, Biodiversity and ecological, Technological, Social and Economic

The octopus MP does not explicitly set out specific goals for the fishery in either the short or long term, but it does set the general objective of protecting resources and improving their marketing in the geographical area of the participating Fishermen's Associations (Resolution of 26 November 2014). Although the MP gives no details of more specific goals in terms of environmental issues, biodiversity or technological and socio-economic aspects, these are nevertheless examined in the autonomous legislation.

In its Preamble, Ley 2/1993 on Fisheries stipulates that it is the responsibility of the Principality of Asturias to protect the ecosystems in which fishing activities take place, and also sets out the powers of the managing body, the Regional Ministry of Rural Affairs and Fisheries, in all matters concerning action to protect the marine environment and the species living in it. Octopus fishing with traps has a very low environmental impact, since it involves highly selective fishing gear that has no impact on the physical environment. In addition, the species caught, the bycatch and ETP species, are alive and unharmed and have demonstrated high rates of survival when returned to the sea (CEP report).

Article 9 of Ley 2/1995 on Fisheries stipulates that the Government of the Principality of Asturias shall improve the productive structures of the fisheries sector and, in particular, boost the renovation and modernisation of fishing vessels in order to increase productivity, safety and hygiene at work and to ensure higher quality of products handled, taking into account the necessary adaptation of fishing efforts to the state of resources and gear selectivity.

In order to achieve these objectives, especially those concerned with resources and improving the fishery, the DGPM has a division, the CEP, that carries out studies geared towards increasing the scientific knowledge applied to the fishery with the goal of improving significant aspects of this fishery. The good relationship between the CEP and the fisheries sector acts as a positive incentive that can contribute to improving the fishery's sustainability

goals. During the site visit, we noted that the Fishermen's Guilds are satisfied with the CEP's role in the fishery, and that the DGPM is also commissioning studies by local consultancy firms in order to address other aspects, generally in cooperation with the CEP.

Outline the fleet types or fishing categories participating in the fishery

The fleet corresponding to the UoC is very homogenous and comprises 27 vessels with 2-3 crew members, all belonging to the Fishermen's Guilds of Puerto de la Vega, Ortiguera, Viavélez and Tapia de Casariego. The length of boats varies between 5.7 and 12.6 m, and they have either wooden or polyester hulls. The typical octopus trap fishing boat has a wooden hull of 9.2 m in length, with a mechanical hauler on the bow, a gutter on one side along which the traps are moved, and a very high guard rail at the stern, which serves to fasten the stowed traps. Fishing consists in three basic operations: baiting, setting out and boarding the net, the last two forming what is known as a "haul".

The number of boats included in the octopus MP fell from 90 to 40 between 2001 and 2009, and has remained relatively stable since then (CEP report, *Seguimiento Campaña del Pulpo*). Boat ownership is predominantly individual and the owner usually participates directly in the fishing activity. The shipowner generally employs one or two additional crew members to assist in fishing activities.

The fishing gear used is octopus traps, a semi-passive type of gear that remains static on the seabed while attracting species using bait. Octopus traps, like other traps, basically consist in a frame or skeleton (metal, plastic or wood), an outer layer and other secondary structures, such as a funnel and a bait holder.

Individuals or groups granted rights of access to the fishery and particulars of the nature of those rights.

Rights of access to the fishery are explicit and legally reinforced by the legal codification system (indefinite permits and permits that are renewed on a yearly basis), and regulate formal access to the fishery. Being an activity in which rights of access to the fishery have been regulated since the creation of the official census of the fishing fleet of the Principality of Asturias (Resolution of 18 June 1998) by a well-defined legal framework, there are no customary rights for other potential users requesting access to the fishery. Conflicts of this kind do not exist for the fishery in question.

The DGPM sets criteria for the issuance of permits. The octopus MP includes all recorded small-scale fishing boats that have authorisation from the Regional Ministry of Rural Development and Natural Resources to fish using "octopus traps".

There is no limit to the number of vessels included in the MP, as any other Asturian vessel requesting this permit and changing its home port to that of one of the eight Fishermen's Associations included in the plan will be authorised to fish for octopus within the MP. However, such a request is unlikely, since all octopus fishing boats in Asturias have already been recorded as belonging to one of these eight associations. Ultimately, Article 4 of Ley 2/1993 on Asturian Fisheries provides that the competent Regional Ministry can limit the number of fishing vessels operating in a given zone for each category of activity, for which purpose the corresponding censuses were produced according to fishing gear and speciality.

Fishing permits are issued in the name of the vessel and can only be transferred via the sale of the vessel. Annual catch quotas for the vessel are non-transferable, and cannot therefore be assigned to other vessels.

Description of the measures agreed upon for the regulation of fishing in order to meet the objectives within a specified period

The octopus MP sets out measures relating to numerous aspects regulating the fishery: the management area (from the Eo estuary to the San Esteban de Pravia estuary); the closed period (from 15 July to 14 December 2015); the minimum catch weights (1 000g); fishing hours (during daylight hours, with the activity prohibited between 00.00 hours on Saturday and 24.00 hours on Sunday, although baited traps can remain in place during the rest period); the fishing gear (the only gear authorised for octopus fishing is traps); the number of traps (125 traps par crew member employed and on board, up to a maximum of 350 per vessel for vessels of three or more crew members); the annual catch quota (10 000 kg per vessel, non-transferable); inspection and weighing of catches (weighing of daily catches must always be carried out within the territorial scope of the MP and in the Fishermen's Association of the port of landing; this association must provide a document that certifies weighing and covers transportation and holding as far as the fish market, where the first sale will take place); the ports of landing and weighing Guilds (Cudillero, Oviñana, Luarca, Puerto de Vega, Ortiguera, Viavélez, Tapia de Casariego and Figueras); and the census of fishing vessels (included in the MP are all recorded small-scale fishing boats that have authorisation from the Regional Ministry of Rural Development and Natural Resources to fish using "octopus traps").

Particulars of arrangements and responsibilities for monitoring, control and surveillance and enforcement

Within the DGPM the Fisheries Inspection and Monitoring Body bears primary responsibility for ensuring compliance with the measures regulating this activity. The monitoring and inspection system along with violations and sanctions are set out in Ley 2/1993 on Asturian Fisheries. The Fisheries Inspection and Monitoring Body has four teams (one for the east coast, two for the central coast and one for the west coast) with three or four agents per team who supervise all fishing activities, from catch to sale. This body also coordinates the coastguards who are directly employed by the Fishermen's Associations. There is a good relationship between these two bodies, which work together. The DGPM has the capacity to carry out inspections and monitoring at sea. In addition, the DGPM cooperates with the SGP as part of the MAGRAMA on monitoring issues.

The Fishermen's Associations are obliged to provide the DGPM with specific information on the weighing of octopus catches on a monthly basis. Inspection of this weighing is carried out by the Coastguards in their own associations, when fishermen take their catches to fish markets, noting the quantity landed and weighing samples to verify the minimum size. This body does not carry out inspections or monitoring of catches at sea. The coastguards have never imposed any sanctions for any violation on any vessels/fishermen included in the octopus MP. They have, however, imposed sanctions on recreational fishermen, for which they often request assistance from the Civil Guard (SEPRONA) because of their proximity and rapid response.

Because there are no conflicts within this fishery, the Fisheries Inspection and Monitoring Body has hardly ever imposed sanctions on professional vessels and/or fishermen: nine sanctions issued in the last five years, with five concentrated in 2010 and only one in 2014.

Moreover, in accordance with the Resolution of 26 November 2014, those vessels included in the MP must cooperate with CEP technicians carrying out fishery monitoring research, with the aim of producing a study on the viability and evolution of the plan.

Skippers of vessels fill in fishing logbooks manually, which are then sent to the organisations responsible for data processing. Finally, through the Coastguards, the Fishermen's Associations inspect landings from vessels in the associations included in the MP.

Planned education and training for interest groups

There are a number of training courses instigated by the DGPM aimed primarily at fishermen. Some of these courses are compulsory for those wishing to carry out fishing activities. The subjects covered include rescue, fires on board and first aid, among others, These courses are free of charge for fishermen.

Date of next review and audit of the MP

The fishery has regular opportunities and/or forums for decision-makers to receive internal feedback on the management system, and there are also exchanges of information between the fishing community and the management institution. The MP is revised every year between the DGPM and the Fishermen's Guilds a few months before the start of the fishing season. The next meetings will take place in autumn 2015 to prepare the 2015- 2016 season, which begins in December 2015.

Only occasionally the fishery-specific management system is subject to external review like the Coordination Cantabrian Comite and other forums with regional fishing agencies. In 2014 a forum with fishers, scientists and managers from Galicia, Asturias, Cataluña, Islas Canarias y Portugal around common octopus fisheries was held in Santiago de Compostela organized by WWF.

4 Evaluation Procedure

4.1 Harmonised Fishery Assessment

Considering the definition of overlapping fisheries from the MSC "*Two or more fisheries which require assessment of some, or all, of the same aspects of MSC Principles 1, 2 and/or 3 within their respective units of certification*", the Octopus fishery does not overlap with other MSC Fishery assessment or fishery certified. Indeed, this fishery is the first MSC cephalopod fishery in the world.

4.2 Previous assessments

This is the first MSC assessment for this fishery.

4.3 Assessment Methodologies

The fishery was assessed using version FCR versión 2.0. The MSC Full Assessment Reporting Template v2.0 was used to present the assessment.

For the evaluation of the Performance Indicatiors, the Default Assessment Tree was used without adjustments.

4.4 Evaluation Processes and Techniques

4.4.1 Site Visits

On-site consultation with the stakeholders took place in February 2015. This is a critical stage for collecting the necessary information in order to carry out a robust assessment of the fishery. In the fisheries certification process, stakeholder is any person, group, or organisation who:

a) may affect, or be affected by a certification decision, or
b) has expressed an interest in the fishery being considered for certification assessment, and/or in other potentially affected resources;
c) or has information relevant to the assessment of the fishery for MSC certification.

The members of the assessment team visited different sites in the Asturias (Spain) during the week during the week of the 2th of February 2015. The site visit was announced on the MSC website in December 2014.

Initial contact via email explained the procedure for the assessment according to MSC standard. Stakeholders were informed about the stages process and were invited to participate. The stakeholders contacted are listed below:

The list of the major stakeholders in the fishery and the nature of their interest:

- Directorate General of Maritime Fisheries (DGPM) from the Regional Ministry of Rural Development and Natural Resources. Principality of Asturias.
- CEP: Fisheries Experimentation Centre
- MAGRAMA: Ministry of Agriculture, Food, and the Environment
- Consellería de Pesca e Asuntos Marítimos. Subdirección Xeral de Investigación e Apoio Científico-Técnico.Dirección Xeral de Desenvolvemento Pesqueiro. Galicia
- ICES: International Council for the Exploration of the Sea.

- IEO: Spanish Institute of Oceanography (Gijón, Vigo, Santander, Canarias)
- Oviedo University: INDUROT y Departamento de Ecología.
- NGOs: WWF, OCEANA, CEPESMA, Greenpeace, Seo-Birdlife, Seo-Birdlife, Ecologistas en Acción,
- CEDER Navia-Porcía: Coastal Action Group Navia-Porcia
- Other guilds from Asturias: Cudillero, Oviñana, Luarca and Figueras.
- Galician trawl fleet.
- Federación Gallega de Cofradías de Pescadores.
- Federación Asturiana de Cofradías de Pescadores.
- Federación de Asociaciones de Puertos, Pesca y Náutica Deportiva del Principality of Asturias
- Federación de Actividades subacuáticas del Principality of Asturias
- Asociación "Volver al pedreru"
- Federación de pescadores deportivos.
- Guild of Avilés (flota de arrastre)
- Guild of Gijón

On agreeing to take part, they were emailed about the proposed visit to their facilities (date and location) and the information that would be required. On confirming the date, time, and location, they received an official letter about the visit from the Bureau Veritas audit team, stating their participation as stakeholders in the fishery. The letter included a request for more detailed information based on the specific agency and respondent role. A scheduled programme of consultations took place with key stakeholders in the fishery – including skippers, scientists, fishery protection officers, NGOs, fishery managers and technical support staff.

Tuesday, 2 February 2015	
Interview with stakeholders and RBF Workshop	Team members Maria del Pino Fernández Rueda (CEP) Maria del Carmen Rodríguez Rodriguez (Biologist of the CEP) Lucía García (Responsible of the CEP) Jose Francisco (Technician of the CEP) Carmen Rodriguez (Biologist of the CEP) Ángel Muñoz (Technician of SIGMA) Mercedes Elola (Technician of the CEDER Navia-Porcia) German Campal (Responsible of the CEDER Navia-Porcia) Laura García de la Fuente (Professor Universidad de Oviedo) Jose Luis Acuña (Professor Universidad de Oviedo) Dimas García (Federación de Cofradías de Pescadores del Principality of Asturias) Beti Nieto (WWF Spain) Salvador Fernandez (Cofradía de Cudillero) Fishers and fish guard (See Appendix 3) Place: Navia. Asturias
Wednesday, 3 February 2015	
DGPM	Team members Jose Luis Menendez (Head of the DGPM) Rafael Fernández (Head of the section Protección Recursos from the DGPM) Jose Maria Alonso Cangas (DGPM)

	Alberto Vizcacino (DG Pesca Maritima) Maria del Pino Fernández Rueda (CEP) Maria del Carmen Rodríguez Rodriguez (CEP) Gijón, Asturias
IEO Gijón	Team members Eva Maria Velasco (Researcher) Place: Gijón, Asturias
ICES	Team members Marina Santurtun (Researcher) Conference call
SIGMA	Team members Ángel Muñoz Place: Gijón, Asturias
Cofradía de Gijón	Team members Javier Puebla (Manager of the guild) Place: Gijón, Asturias
Asociación pescadores deportivos "Volver al pedreru"	Team members Xanxose Sanchez Vicente (member of the Asociation) Aquilino Menéndez (member of the Asociation) Place: Gijón, Asturias
CEPESMA	Team members Luis Saria Place: Luarca, Asturias
Thrusday, 4 February 2015	
Coastguards from the guilds	Team members Coastguards (See Appendix 3) Place: Viavelez, Asturias

4.4.2 Consultations

The information obtained from people interviewed during the meetings with stakeholders was significantly wide-ranging and variable. Macarena García Silva, as team leader, introduced the MSC and the assessment process on the fishery at the start of each meeting. The assistants then presented themselves and the meeting got under way.

After the presentation, the MSC Principles experts asked pertinent questions about the queries arising after assessing the initial information and requested any other information or documentation that may help when scoring the fishery.

All the relevant information on stock status, ecosystem interactions, and fishery management practices was collected. The following main issues were discussed:

CLIENT	• Detail on the fishing methods, bycatch species and rates and practice • Details of VMS systems in use, logbook reporting requirements • Species retained by the fishery including bait species • Traceability
ADMINISTRATION: DGPM & CEP	• Fishery management overall framework and Plan. • Species retained by the fishery i • Other management tools. • Details of monitoring systems in use, reporting requirements. • Scientific campaigns on the resources (CEP) • Harbour opperations. • Control and surveillance system. • Sanction system and types of sanctions. • The current regulation. • Registry of vessels. • Poaching control and monitoring actions • Studies on biomass, stock status • The profitability of the activity • Collection of sales notes to send to Madrid. • Inspection service. Fish market inspections checking the landing volumes do not exceed the individual boat levels and size controls.
ICES, SIGMA, University, NGOs	• Scientific data on the stock. • Species retained by the fishery • Design and communication process behind the regulations • Technical assistance tasks • Monitoring of compliance and poaching • Fishery assessment in terms of sustainability • Levels of by-catch or retained species • Data Collection and Statistics • Details of monitoring systems in use, logbook reporting requirements • Information in ecosystem and habitat

Figure 11 Photo during the RBF meeting. Navia (Asturias). Data Source: Assessment Team

4.4.3 Evaluation Techniques

Email was used for all assessment process communications to all fishery stakeholders, along with the public announcements via the MSC website. The team member's were encouraged to take the initiative in contacting as much stakeholders as they were able. However most stakeholders contacted had no specific cause for concern about the impact of the fishery given due to selection of the gear and the artisanal way to fish.
After compiling and analysing all the relevant technical, written, and anecdotal information, the team scored the fishery regarding to "Performance Indicators and Scoring Guideposts" in the final tree. The assessment team held three scoring meetings by conference call.

The MSC Principles and Criteria provide the overall requirements necessary for certification of a sustainably managed fishery. Altogether, assessment of this fishery against the MSC standard is achieved through measurement of 31 Performance Indicators (See Appendix 1). In order for the fishery to achieve certification, none of the Performance Indicators can be scored under 60. In order to achieve a score of 80, all of the 60 scoring issues and every one of the 80 issues must be compliant, with each scoring issue supported with justification.

In addition, the fishery must obtain a score of 80 or more in each of the MSC's three Principles, which are based on the weighted average score for all Criteria and Sub-criteria under each Principle.

Table 3 Scoring elements

Component	Scoring elements	Main/Not main	Data-deficient or not
Principle 1	*Octopus vulgaris*	Main, target species	Data-deficient
Seconday Species	*Necora Puber*	Main	Data-deficient
ETP	*Charonia lampas*	Main	Data deficient
Habitat	Coast-coastal margin-large rocky banks-large		Data deficient

Habitat	Shelf-Inner shelf-large rocky banks-large		Data deficient
Habitat	Coast-coastal margin-sediment terraces-fine		Data deficient
Habitat	Shelf-Inner shelf-sediment plains-fine		Data deficient

MSC Risk-Based Framework (RBF)

The MSC Risk-Based Framework (RBF) is a precautionary assessment tools for scoring 'outcome' PIs where insufficient information is available to score a fishery using the default SGs. Moreover, assess the risk that a fishery is having a unsustainable impact on target, primary, secondary & ETP species, and habitats and ecosystems.

The team used the criteria in Table 4.1 to make a decision on whether the fishery was data definicient or not with respect to the PI.

Table 4-1 Criteria for triggering the use of the RBF. Source: Fishery Certification Requirements

Performance Indicator	Criteria	Consideration	Notes
1.1.1 Stock status	Stock status reference points are available, derived either from analytical stock assessment or using empirical approaches	Yes	Use default PISGs within Annex SA for this PI
		No	Use Annex PF (RBF) for this PI
2.1.1 Primary species outcome & 2.2.1 Secondary species outcome	Stock status reference points are available, derived either from analytical stock assessment or using empirical approaches	Yes	Use default PISGs within Annex SA for this PI
		No	Use Annex PF (RBF) for this PI
2.3.1 ETP species outcome (where there are no national requirements for protection and rebuilding)	Can the impact of the fishery in assessment on ETP species be analytically determined?	Yes	Use default PISGs within Annex SA for this PI
		No	Use Annex PF (RBF) for this PI
2.4.1 Habitats outcome	Are both of the following applicable: 1 Information on habitats encountered is available 2 Information of impact of fishery on habitats encountered is available	Yes	Use default PISGs within Annex SA for this PI
		No	Use Annex PF (RBF) for this PI
2.5.1 Ecosystem outcome	Is information available to support an analysis of the impact of the fishery on the ecosystem?	Yes	Use default PISGs within Annex SA for this PI
		No	Use Annex PF(RBF) for this PI

As it is set in the FCR, the CAB announced the fishery assessment by using the MSC Fishery Announcement template. In the announment the CAB proposed the use of the RBF, moreover an email to stakeholders was sent with the link below and the MSC Use of the RBF form V2.0:

http://www.msc.org/about-us/standards/fisheries-standard/risk-based-framework/msc-risk-basedframework.

The following steps were followed:

- Describe and justify the use of the RBF using the form “Use of the RBF in a fishery assessment”
- Send the form to the MSC for publication on its website.
- Using the form, notify stakeholders of the proposal to the use of the RBF.
- Allow at leastr 30 days for comment. Consider all stakeholders comments.
- Review the decision to use the RBF (in light of that comments).

A stakeholder-driven, qualitative analysis was performed during the site visit. To achieve a robust outcome from this consultative approach, we rely heavily on participation of a broad range of stakeholders with a balance of knowledge of the fishery. We encouraged the stakeholders with experience or knowledge of the fishery to participate in the meeting.

In what follows we explain the PIs that have been evaluated through the RBF, the justification for their use according to Table 4-1 and the information obtained by stakeholders. However, Appendix 1.2 contains the specific CA, PSA, CSA, and SICA tables.

PI 1.1.1 Stock status

No biomass estimations or other indicators such as MSY are made since they are very difficult to produce for cephalopods in general and common octopus (*Octopus vulgaris*) in particular. This is basically due to the life strategy of these animals: a single ovarian cycle (they reproduce once and then die), a short life expectancy (two years) and rapid growth. In addition, as meroplanktonic organisms, their larval phase in the first stages of growth is planktonic and affected by ocean currents. Populations are therefore renewed annually and are subject to variable climate conditions, which condition their survival (especially in the larval stages) and their subsequent abundance in the juvenile and adult phases. This climate influence is supported by analysis of the study by Otero et al. (2008), who found that the wind regime in spring-summer (prior to the peak of hatching for the common octopus), and in autumn-winter (during the planktonic phase) explains 85% of the interannual variability of subsequent adult catches. However, despite this bottom-up modulation, these authors have demonstrated density-dependent interaction, probably caused by cannibalism and competition for habitats, in addition to a downward trend produced by fishing.

This environmental influence is reflected in catch variations since the 2000-2001 season, for the area regulated by the MP (Figure 1), despite the fact that management methods have remained constant, with slight changes to the opening of fishing and other parameters, across the whole management area. Data concerning sales in fish markets for all Asturian Fishermen’s Associations have evolved in parallel with the resource abundance variable (Figure 2). The evolution of this data shows a high interannual variability, in line with the biology of the species, its short life cycle and larval recruitment that is highly affected by environmental variables (such as the winds that determine upwellings, according to different studies).

It is also important to stress that for octopods, it is impossible to estimate the age of the animals (a critical parameter used in many biomass estimation models) by means of conventional methods used for other cephalopods, such as statoliths. Age estimations using

stylets have recently been validated, although this is a new technique that has not yet been widely used.

Justification to table 3: Stock status reference points are not available, derived either from analytical stock assessment or using empirical approaches. Indeed, dynamics of these stocks are peculiar due to their short lifespan and high variability in recruitment, which fluctuate interanually due to climate and fishing parameters. Therefore, reference indicators such as BMSY or FMSY are not generally the most accurate methods to evaluate the status of the cephalopod stocks due to the specific characteristics of cephalopods. On the other hand, atmospheric oceanographic changes or fishing effort changes could lead to important variations in the stock biomass in subsequent years. The assessment team decided that it would be appropriate to use the RBF tool for the stock status outcome of the target species.

PI 2.1.1 Primary species & PI 2.2.1 Secondary species

In order to determine which species were Primary and Secondary and the triggering of the use if the RBF following Table 4-1, the assessment team carried out the analysis of the information gathered before the assessment started. See Table 4-2.

Table 4-2 Triggering of Primary and Secondary species and triggering the use of the RBF. Data Source: Assessment Team

Datos del trabajo UTPB_2006_Pesqueria Pulpo Octopus vulgaris Galicia		Galicia		ZONAS VIII-IX (Arco Cantábrico)		Acoording to FCR Figure GSA3 (page 403): Decision tree to assist teams in the designation of P2 species components							
		nº (%)	peso (%)	nº (%)	peso (%)	ETP?	Out of Scope?	Managed with Rerefence points?	Primary /Secondary	Less resilient?	>5% Catch	Main/Minor	Species Category
Pulpo	Octopus vulgaris	35,89	86,74	53,13	88,22	-	-	No	-			-	P1_Target stock (PI 1.1.1 with RBF)
Cuernos	Charonia spp.	1,51	1,15	3,58	2,01	Yes	-	-	-			-	ETP
Otras (nº especies)		0,057	0,008(17)	0,01	0,001(3)								
Total Moluscos		37,46	87,9	56,72	90,23								
Nécora	Necora puber	19,21	4,69	24,9	5,48	No	No	No?	Secondary	No	Sí	Main	Secondary Main
Santiaguiño	Scyllarus arctus	3,01	0,26	2,96	0,23	No	No	No?	Secondary	No	No	Minor	Secondary Minor
Camarones	Palaemon spp.	22,23	0,26	1,02	0,007	No	No	No?	Secondary	No	No	Minor	Secondary Minor
Buey	Cancer pagurus	0,38	0,2	0,1	0,05	No	No	No?	Secondary	No	No	Minor	Secondary Minor
Centolla	Maja squinado	0,5	0,2	0,55	0,2	No	No	No?	Secondary	No	No	Minor	Secondary Minor
Bogavante	Homarus gammarus	0,25	0,17	0,26	0,14	No	No	No?	Secondary	No	No	Minor	Secondary Minor
Otras (nº especies)		0,61	0,044(6)	0,01	0,001(1)								
Total Crustáceos		46,19	5,82	29,8	6,11								
Congrio	Conger conger	0,97	3,21	0,63	1,77	No	No	No?	Secondary	No	No	Minor	Secondary Minor
Cabrilla	Serranus cabrilla	4,74	0,91	8,02	1,1	No	No	No?	Secondary	No	No	Minor	Secondary Minor
Faneca	Trisopterus luscus	3,32	0,59	0,07	0,013	No	No	No?	Secondary	No	No	Minor	Secondary Minor
Barbada común	Gaidropsarus vulgaris	1,6	0,62	1,12	0,26	No	No	No?	Secondary	No	No	Minor	Secondary Minor
Julia	Coris julis	1,5	0,27	1,67	0,2	No	No	No?	Secondary	No	No	Minor	Secondary Minor
Cabruza/rabosa	Parablennius gattorugine	1,18	0,15	0,18	0,022	No	No	No?	Secondary	No	No	Minor	Secondary Minor
Otras (nº especies)		3,03	0,524(49)	1,78	0,31(22)								
Total Peces		16,35	6,28	13,48	3,66								

Finally the RBF tool was used for secondary species outcome because for the main species (*Necora Puber*) the stock status reference points are not available, neither from analytical stock assessment or using empirical approaches.

PI 2.3.1 The ETP species

Charonia lampas may appear occasionally in the octopus traps. The questions to triggered the use of the RBF were:

Is there national requirements for protection and rebuilding"? Yes for protection but No for rebulding. As the Impact of the fishery can't be analytically determined the Team decided to use the RBF for the species *Charonia lampas*.

PI 2.4.1 Habitat Outcome

Although there is general information about the impact in the habitat from the trap gears, it is necessary to verify the specific seabed where the fishery operates (See 3.4). The information of impact of fishery on habitats encountered is not available. Therefore the RBF was necessary.

PI 2.5.1 Ecosystem Outcome

The information to support an analysis of the impact of the fishery on the ecosystem is not available. Therefore the RBF was necessary.

5 TRACEABILITY

5.1 Eligibility Date

The Eligibility Date for this fishery is the date of the certification of the fishery. This means that any fish caught by the certified fleet following that date will be eligible to enter the chain of custody as certified product.

The measures taken by the client to account for risks within the traceability of the fishery – and therefore generating confidence in the use of this date for target eligibility – are detailed in the rest of this section.

5.2 Traceability within the Fishery

The fleet being assessed usually fishes in the morning. The fishermen reach the landing points in the afternoon. The MP established for the octopus activity included HCR related with the management area (from the Eo estuary to the San Esteban de Pravia estuary) a closed period (from 15 July to 14 December 2015) and fishing hours (during daylight hours, with the activity prohibited between 00.00 hours on Saturday and 24.00 hours on Sunday), and the traps as the only fishing gear authorised for octopus. Fishing consists in three basic operations: baiting, setting out and boarding the trap.

The fishermen offload the catches daily at the auction points included in the UoC. The Fishermen's Guilds are obliged to provide the DGPM with specific information on the weighing of octopus catches on a monthly basis. Inspection of this weighing is carried out by the each guild coastguards, before fishermen sell their catches they have to record the quantity landed and weighing samples to verify the minimum size.

The market staff (normally the coastguards) entered the catches as lots into the computer system. The lots are traced from their origin. The traceability sytem in each guild generates a label with all the information needed to trace the octopus offload from the fishers till the first step after the point of sell. See Figure 12.

Figure 12 Example of two labels from the action points (Viavelez and Puerto de Vega)

Moreover the Fisheries Inspection and Monitoring Body has four teams (one for the east coast, two for the central coast and one for the west coast) with three or four agents per

team who supervise all fishing activities, from catch to sale. This body also coordinates the coastguards figure.

The CEP report contains data from the previous fishing year and also provides a historical overview of the fishery. This includes dates of sales, fishing efforts (vessels, days), catches, catches per unit of effort (kg/day), weight distribution, and price (€/kg), per monthly and yearly periods and per association (with regard to the previous fishing year).

To conclude, the tracking, tracing and segregation systems within the fishery allow any products sold as MSC certified to be traced back to the UoC.The traceability system is robust. See Table 4 for further explanation.

Table 4 Traceability Factors within the Fishery:

Traceability Factor	The description of the traceability system is describe in point 5.2. No risk is present. Regarding management controls, the MP takes an in-depth look at cooperation between the sector and the government, additional measures that the Fishermen's Guilds are obliged to refer to the DGPM, specific information about the weighing of common octopus catches, on a monthly basis. The are responsible of managing the first sale of fishery products through the fish auction points. Moreover in each guild there is the coastguards figure employed by the associations who weights and report regularly the volume of octopus catched by the fishers within the MP.
Potential for non-certified gear/s to be used within the fishery	No risk because: - HCR of the MP: the only fishing gear authorised for octopus fishing is traps (UoC). - The DGPM sets criteria for the issuance of permits. The octopus MP includes all recorded small-scale fishing boats that have authorisation from the Regional Ministry of Rural Development and Natural Resources to fish using "octopus traps".
Potential for vessels from the UoC to fish outside the UoC or in different geographical areas (on the same trips or different trips)	All fishermen operate within the 12nm. Moreover is a daily fishery therefore everyday they off-load the catches at the harbour. The fishing gear used is octopus traps, a semi-passive type of gear that remains static on the seabed while attracting species using bait. Inspection and weighing of catches must always be carried out within the territorial area of the MP and in the Fishermen's Association of the port of landing; this association must provide a document that certifies weighing and covers transportation and holding as far as the fish auction, where the first sale will take place; the ports of landing and weighing guilds (Cudillero, Oviñana, Luarca, Puerto de Vega,

	Ortiguera, Viavélez, Tapia de Casariego and Figueras).
Potential for vessels outside of the UoC or client group fishing the same stock	There is a census of fishing vessels (Resolution of 18 June 1998) included in the MP and are all recorded small-scale fishing boats that have authorisation from the Regional Ministry of Rural Development and Natural Resources to fish using "octopus traps". Fishing boat skippers (fishing permits are issued in the name of the vessel) and the crew members serving on board are the productive and social part of the fishery. The skippers are linked to the respective guilds included in the MP. Rights of access to the fishery are explicit and legally reinforced by the legal codification system (renewed on a yearly basis).
Risks of mixing between certified and non-certified catch during storage, transport, or handling activities (including transport at sea and on land, points of landing, and sales at auction)	The traceback system is guarantee in the auction fish points. The label generated by the acution point indicates the name of the vessel and other details that ensures the owner of the product.
Risks of mixing between certified and non-certified catch during processing activities (at-sea and/or before subsequent Chain of Custody)	Not processing at sea. All the catches are landed whole and fresh.
Risks of mixing between certified and non-certified catch during transhipment	Fishing permits are issued in the name of the vessel and can only be transferred via the sale of the vessel. Annual catch quotas for the vessel are non-transferable, and cannot therefore be assigned to other vessels. No transshipment occurs.
Any other risks of substitution between fish from the UoC (certified catch) and fish from outside this unit (non-certified catch) before subsequent Chain of Custody is required	Any other risk was identified during the assessment.

5.3 Eligibility to Enter Further Chains of Custody

CAB used the previous information to establish the systems are appropriate, and as such, the fish and fish products from the fishery may enter into further certified chains of custody. As such is eligible to be sold as MSC certified or carry the MSC ecolabel.

The scope of the cetificate includes the UoC describe in point 3.1.1 including the list of vessels and the following fish auction points and landing points: Tapia de Casariego, Viavélez, Ortiguera, Puerto de Vega.

The change of ownership will start after the first sale at one of the four auction points covered by the certificate. That is, after the guilds issues the sales note before the next user,

i.e. the company that purchases the fish, they will be required to have a valid chain of custody certificate whenever they want to market the product bought with an MSC certificate

6 Evaluation Results

6.1 Principle Level Scores

Table 5: Final Principle Scores

Final Principle Scores	
Principle	**Score**
Principle 1 – Target Species	82,5
Principle 2 – Ecosystem	85
Principle 3 – Management System	86,7

6.2 Summary of PI Level Scores

Principle	Component	Performance Indicator (PI)		Score
One	Outcome	1.1.1	Stock status	85
		1.1.2	Stock rebuilding	
	Management	1.2.1	Harvest strategy	90
		1.2.2	Harvest control rules & tools	75
		1.2.3	Information & monitoring	80
		1.2.4	Assessment of stock status	80
Two	Primary species	2.1.1	Outcome	100
		2.1.2	Management strategy	80
		2.1.3	Information/Monitoring	85
	Secondary species	2.2.1	Outcome	100
		2.2.2	Management strategy	80
		2.2.3	Information/Monitoring	85
	ETP species	2.3.1	Outcome	85
		2.3.2	Management strategy	80
		2.3.3	Information strategy	80
	Habitats	2.4.1	Outcome	95
		2.4.2	Management strategy	80
		2.4.3	Information	80
	Ecosystem	2.5.1	Outcome	80
		2.5.2	Management	80
		2.5.3	Information	80
Three	Governance and policy	3.1.1	Legal &/or customary framework	100
		3.1.2	Consultation, roles & responsibilities	95
		3.1.3	Long term objectives	100
	Fishery specific management system	3.2.1	Fishery specific objectives	60
		3.2.2	Decision making processes	85
		3.2.3	Compliance & enforcement	75
		3.2.4	Monitoring & management performance evaluation	80

6.3 Summary of Conditions

Table 6: Summary of Conditions

Condition number	Condition	Performance Indicator	Related to previously raised condition? (Y/N/NA)
1	The client is required to work actively to promote and support well-defined HCRs consistent with the harvest strategy that is responsive to the state of the octopus stock in the coast of Asturias. Management tools and measures should ensure that the exploitation rate is adequate to the octopus population status and are expected to keep the stock fluctuating around a sustainable long-term highly productive level and above an acceptable risk range.	**1.2.2**	**N**
2	The client is required to work actively to achieve short and long-term specific objectives, consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, that direct policy together with a functioning operational framework (measures and strategies). These objectives need to be transparent and explicitly incorporated in the management system. There should also be a clear means of assessing performance relative to these objectives.	**3.2.1**	**N**
3	The client is required to work actively to promote and support that all guilds understand and respect the roles and responsibilities of the Coastguard figure (specified in the Decreto 23/1995) and that those roles are clarified in detail for the octopus MP. Promoting those actions the monitoring, control and surveillance system might be better implemented in the fishery and should demonstrate good enforcement to the relevant management measures, strategies and/or rules.	**3.2.3**	**N**

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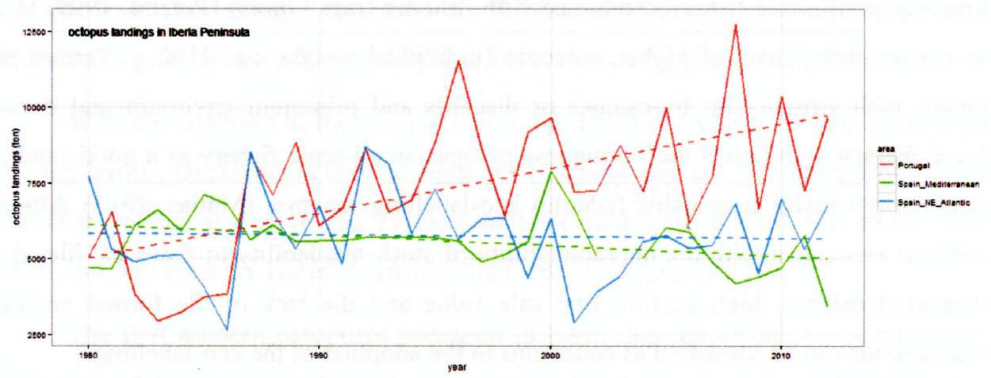
8 Appendix 1. Scoring and Rationales

Appendix 1.1 Performance Indicator Scores and Rationale

Evaluation Table for PI 1.1.1 – Stock status

PI 1.1.1		The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing		
Scoring Issue		SG 60	SG 80	SG 100
a	Stock status relative to recruitment impairment			
	Guide post	It is **likely** that the stock is above the point where recruitment would be impaired (PRI).	It is **highly likely** that the stock is above the PRI.	There is a **high degree of certainty** that the stock is above the PRI.
	Met?	NA (RBF)	NA (RBF)	NA (RBF)
	Justification	No biomass estimations or other indicators such as MSY are made since they are very difficult to produce for cephalopods in general and common octopus (*Octopus vulgaris*) in particular. This is basically due to the life strategy of these animals: a single ovarian cycle (they reproduce once and then die), a short life expectancy (two years) and rapid growth. In addition, as meroplanktonic organisms, their larval phase in the first stages of growth is planktonic and affected by ocean currents. Populations are therefore renewed annually and are subject to variable climate conditions, which condition their survival (especially in the larval stages) and their subsequent abundance in the juvenile and adult phases. This climate influence is supported by analysis of the study by Otero et al. (2008), who found that the wind regime in spring-summer (prior to the peak of hatching for the common octopus), and in autumn-winter (during the planktonic phase) explains 85% of the interannual variability of subsequent adult catches. However, despite this bottom-up modulation, these authors have demonstrated density-dependent interaction, probably caused by cannibalism and competition for habitats, in addition to a downward trend produced by fishing. It is also important to stress that for octopods, it is impossible to estimate the age of the animals (a critical parameter used in many biomass estimation models) by means of conventional methods used for other cephalopods, such as statoliths. The information described above was checked during the site visit with the interviews carried out with the CEP and the DGPM. Considering the above constraints and the complexity of determining benchmarks in common octopus fishery in Asturias, the assessment team decided that it would be appropriate to use the RBF tool for the stock status outcome of the target species. In the Appendix 1.2 can be find the Consequence Analysis (CA) Table 1.2.1.a. undertaken by the assessment team and stakeholders during the RBF meeting. According to data from reports and interviews with all the stakeholders involved in the fishery, the **most vulnerable subcomponent** would be the **size of the population**, since none of the other three subcomponents (reproductive capacity, age/size/sex structure and geographic range) seems to be subject to significant changes. With regard to the population size, despite the inherent variability resulting from changes in atmospheric/oceanographic parameters, the trend over the last ten years shows a slight drop in the size of the population. The graph below (Lourenço, 2015) shows the trend of catches in different areas of the Iberian Peninsula.		

PI 1.1.1		The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing		
Scoring Issue		SG 60	SG 80	SG 100
		 During the series analysed, a gradual decrease in the size of the population was detected, but there is minimum impact on the variation of the structure of the sizes and no evident changes in the dynamics of the resource have been observed, reaching a SG of 80, but not a SG of 100, as the stakeholders related to the fisheries in the management unit agree on stating that they observed a slight fall in the size of the population, that is to say, it is appreciable. Therefore the CA score was 80. The team conducted the Productivity Susceptibility Analysis (PSA) during the RBF meeting. The information was completed by using the "MSC PSA worksheet for RBF" and the rational can be checked in Table 1.2.2a in Appendix 2.1. The PSA derived score for PI 1.1.1 was 86. The overall score for the scoring element Octopus was assigned according to the rules in Table PF7 of the FCR. Considering CA scores 80 and PSA scores ≥ 80 the final score for this element is 85.		
b	Stock status in relation to achievement of MSY			
	Guide post		The stock is at or fluctuating around a level consistent with MSY.	There is a **high degree of certainty** that the stock has been fluctuating around a level consistent with MSY or has been above this level over recent years.
	Met?		NA (RBF)	NA (RBF)
	Justification	See Scoring Guidepost a).		
References		Lourenço, 2015 Otero et al. (2008) RBF meeting		

Stock Status relative to Reference Points

	Type of reference point	Value of reference point	Current stock status relative to reference point
Reference point used in scoring stock	NA	NA	NA

PI 1.1.1	The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing		
Scoring Issue	SG 60	SG 80	SG 100
relative to PRI (SIa)			
Reference point used in scoring stock relative to MSY (SIb)	NA	NA	NA
OVERALL PERFORMANCE INDICATOR SCORE:			**85**
CONDITION NUMBER (if relevant):			**NA**

Evaluation Table for PI 1.1.2 – Stock rebuilding

PI 1.1.2		**Where the stock is reduced, there is evidence of stock rebuilding within a specified timeframe**		
Scoring Issue		SG 60	SG 80	SG 100
a	**Rebuilding timeframes**			
	Guide post	A rebuilding timeframe is specified for the stock that is **the shorter of 20 years or 2 times its generation time**. For cases where 2 generations is less than 5 years, the rebuilding timeframe is up to 5 years.		The shortest practicable rebuilding timeframe is specified which does not exceed **one generation time** for the stock.
	Met?	NA		NA
	Justification	According to the Annex PF: Risk-Based Framework-Normative, if the RBF is used to score PI 1.1.1, this PI is not scored.		
b	Rebuilding evaluation			
	Guide post	Monitoring is in place to determine whether the rebuilding strategies are effective in rebuilding the stock within the specified timeframe.	There is evidence that the rebuilding strategies are rebuilding stocks, **or it is likely** based on simulation modelling, exploitation rates or previous performance that they will be able to rebuild the stock within the specified timeframe.	There is **strong** evidence that the rebuilding strategies are rebuilding stocks, **or it is highly likely** based on simulation modelling, exploitation rates or previous performance that they will be able to rebuild the stock within the specified timeframe.
	Met?	NA	NA	NA
	Justification	According to the Annex PF: Risk-Based Framework-Normative, if the RBF is used to score PI 1.1.1, this PI is not scored.		
References				
OVERALL PERFORMANCE INDICATOR SCORE:				**NA**
CONDITION NUMBER (if relevant):				**NA**

Evaluation Table for PI 1.2.1 – Harvest strategy

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
Scoring Issue		**SG 60**	**SG 80**	**SG 100**
a	Harvest strategy design			
	GP	The harvest strategy is **expected** to achieve stock management objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy **work together** towards achieving stock management objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and is **designed** to achieve stock management objectives reflected in PI 1.1.1 SG80.
	Met?	Y	Y	N
	Justification	MSC definition of harvest strategy "The combination of monitoring, stock assessment, HCR and management actions, which may include and MP or be tested by MSE". Despite the biology of *O. vulgaris* was largely afforded in other areas of its distribution range, there is not many biological studies undertaken in waters of Asturias or the Bay of Biscay that can be applied in the fishery subjected of this evaluation. Since the paralarvae of this species is pelagic, there is a high chance that the early stages of development are subjected to the influence of oceanographic conditions, especially those related with physical parameters, such as upweling events, mesoscale eddyes or fronts. The rapid growth, its short life cycle, high fecundity level and dependence on atmospheric and oceanographic factors during the planktonic larval stage of *Octopus vulgaris* makes it particularly complicated to assess and manage the species. However, the existence of mature animals throughout the year shows the existence of several overlapping microcohorts throughout the year. For some time now, the MSY based on establishing reference points has been used to assess the stocks of many teleost fish species, such as tunas and related species. However, for a mollusc such as the octopus, with a life expectancy of two years and recruitment that is highly sensitive to environmental fluctuations, this is not applicable. The fishing effort has dropped over recent years, which makes it harder to explain variability in catches. However, in Asturias, where a co-management system has been in place since 2001, a plausible approximation can be made based on the correlation between the biomass of the population, capture numbers and captures by unit of effort. This co-management system helps to establish an appropriate capture strategy based on developing annual MPs that are agreed between fishermen and the authorities, i.e. on fishing activity data, mainly on effort and captures, and their structure. Because MSY and BMSY points of reference cannot be established, as explained in previous PIs, for most molluscs, it is essential to define what approximation and limits of reference should be used to assess the stock. In this regard, the study by P. Fernández-Rueda and L. García-Flórez (Fisheries Research, 2007) on the suitability of the minimum size of capture as a means of management is a clear example. The applicable elements governing the fishing of the common octopus (*Octopus vulgaris*) in the 2012/2013 season in the waters of the Principality of Asturias include the following management elements: i) limited rights of access through licences; ii) three-month closed season; iii) minimum capture size for specimens of 1000 g; iv) maximum quota per boat; v) fishing gear restrictions. The aim of these		

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
		measures is to ensure the protection of octopus recruitment and the survival of a suitable number of reproductive adults at the end of each fishing season. The MP also includes establishing how to monitor landings of octopus during the fishing season for biologists and managers, where coastguards are also in charge of registering the weights of specimens when they reach the fish markets. On the other hand, in the area of study, as occurs in other areas where traps are used in artisanal fisheries, fishermen have the flexibility to change their target species depending on the abundance of stocks. Thus, when octopus capture numbers fall, fishermen can inform the authorities of the change in target species. The above indicates that SG 60 and SG 80 is being reached, as the fishing strategy is responsible with regard to stock status and the elements of the harvest strategy work together with the aimed of establishing a plausible objective reflected in the stock status. However, the Ley 2/1993 and the MP do not include mechanisms to limit licences for other boats that might wish to take up octopus fishing, as there is no limit to the number of gears per boat, so any request would receive a positive response, implying that it is not designed specifically to achieve suitable and structured stock management, and SG 100 is not therefore reached.		
b	Harvest strategy evaluation			
	Guide post	The harvest strategy is **likely** to work based on prior experience or plausible argument.	The harvest strategy may not have been fully **tested** but evidence exists that it is achieving its objectives.	The performance of the harvest strategy has been **fully evaluated** and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels.
	Met?	Y	Y	N
	Justification	As presented in the section on characteristics of the common octopus throughout its range of distribution and in the definition of the UoC, in this case we are dealing with a species that is widely distributed, made up of local sub-populations, and the assessment should take into consideration the possibility of the study area as a source of export and reception of resources due to the pelagic nature of their larvae. Therefore, despite the fact that we can consider the management area as independent, it is important to consider stock management of the same species in adjacent areas, as is the case of Galicia, where planning measures such as closed seasons have been in place since 1992. Also, an important factor that has been taken into consideration to improve management is the prior experience of octopus fishery planning in Galicia, which is the result of several years of work on the design of management measures for this species. This process therefore began with a recovery plan and has continued in the current MPs. The Land and Sea Environment Ministry of the regional government of Galicia approved the Octopus MP with traps for the 2013-2014 period, which set the closed season for octopus captures and established a series of technical measures aimed at reducing overfishing and controlling market supply. This experience has served to establish similar strategies in Asturias, ensuring the local fishing industry remains in sustainable conditions (appreciable from the relatively stable catch per unit of effort for more than a decade), representing a relative standardisation of capture strategies in a wide area of distribution. Taking into account the information developed previously, the capture strategy can be considered to be robust and precautionary despite the fact that it does not reflect fishing objectives as limit reference points or targets (not applicable for this species). Both strategies are revised on an annual basis, their effectiveness is		

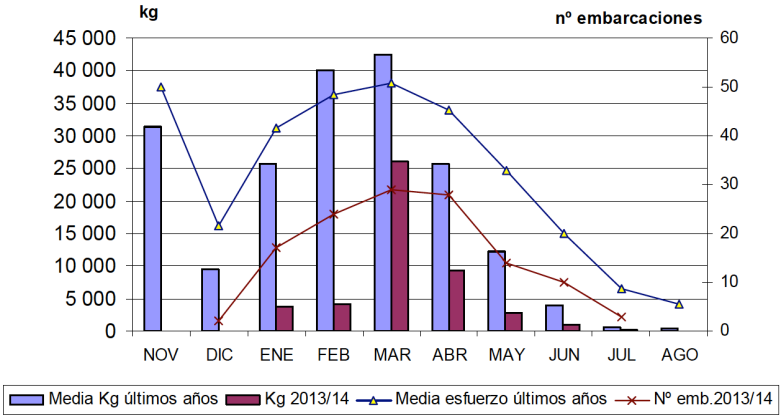
<table>
<tr><td colspan="2">PI 1.2.1</td><td colspan="3">There is a robust and precautionary harvest strategy in place</td></tr>
<tr><td></td><td></td><td colspan="3">checked and monitoring and control tasks are carried out. This is supported by the fact that the CPUE has remained the same over the past 15 years, showing that, although the fishing strategy has not been completely tested, the above suggests that the objectives are being met. This means that the requirements of SG 80 are met. However, SG 100 levels are not reached, because the fishing strategy has not been completely tested.</td></tr>
<tr><td rowspan="4">C</td><td colspan="4">Harvest strategy monitoring</td></tr>
<tr><td>Guide post</td><td>Monitoring is in place that is expected to determine whether the harvest strategy is working.</td><td></td><td></td></tr>
<tr><td>Met?</td><td>Y</td><td></td><td></td></tr>
<tr><td>Justification</td><td colspan="3">In the area analysed, catches have been monitored and controlled since 2001. Since then, the number of boats working in octopus fishing inside the scope of the MP fell by half during the first nine years, remaining relatively constant over the past six years. Thus, the number of boats fell from around 90 to the 38 boats that worked the 2013-2014 seasons (CEP 2014). This strategy is revised each year and small modifications are made in certain years that tend to affect the beginning of the fishing season. These modifications can come from the cofradías, and they are then analysed by the technical officers from the regional ministry, who give their approval or otherwise according to biological and feasibility criteria. Figure 13 shows monthly landing data and fishing effort breakdowns and the comparison with the average for previous seasons (CEP, 2014).
 

Figure 13 monthly landing data and fishing effort breakdowns and comparison with the average for previous season. Data Source: CEP, 2014.

However, monitoring has enabled major variations in catches to have been detected since 2001. As has been verified, the CPUE has remained relatively constant since the MP was established, monitoring would suggest that it is effective for identifying and determining whether or not the strategy is right and handling any potential changes. SG 60 is therefore met.</td></tr>
<tr><td rowspan="4">d</td><td colspan="4">Harvest strategy review</td></tr>
<tr><td>Guide post</td><td></td><td></td><td>The harvest strategy is periodically reviewed and improved as necessary.</td></tr>
<tr><td>Met?</td><td></td><td></td><td>Y</td></tr>
<tr><td>Justification</td><td colspan="3">The harvest strategy is reviewed on an annual basis and discussed with the technical officers responsible for the fishery, and taking into consideration the suggestions of the different stakeholders, which makes it possible to consider relevant aspects to take into account in subsequent years. The effect that of fishing</td></tr>
</table>

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
		by other fleets has on catches of common octopus is also analysed, both before and during the season (CEP, 2014). SG 100 is therefore met.		
f	**Review of alternative measures**			
	Guide post	There has been a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock.	There is a **regular** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock and they are implemented as appropriate.	There is a **biannual** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock, and they are implemented, as appropriate.
	Met?	Y	Y	Y
	Justification	Despite the fact that unwanted catch of the target stock occasionally appear, the traps allows the vast majority to be returned to the sea alive, with a very high survival rate (96.88%). Some undersized octopus are also catch sometimes, but they are released during the fishing operation alive back to the sea. In any case, a monitory plan has begun to be implemented to gather comprehensive data on unwanted catch of the target stock and unwanted catch that is hoped to be revised once a year, with the aim of controlling these dataunwanted catches in the octopus traps, which would enable possible alternative to be revised and implemented if unwanted catches of *O. vulgaris* increase to a substantial extent. SG 100 is therefore met.		
References				
OVERALL PERFORMANCE INDICATOR SCORE:				**90**
CONDITION NUMBER (if relevant):				**NA**

Evaluation Table for PI 1.2.2 – Harvest control rules and tools

<table>
<tr><td colspan="2">PI 1.2.2</td><td colspan="3">There are well defined and effective harvest control rules (HCRs) in place</td></tr>
<tr><td colspan="2">Scoring Issue</td><td>SG 60</td><td>SG 80</td><td>SG 100</td></tr>
<tr><td rowspan="4">a</td><td colspan="4">HCRs design and application</td></tr>
<tr><td>Guide post</td><td>Generally understood HCRs are in place or available that are expected to reduce the exploitation rate as the point of recruitment impairment (PRI) is approached.</td><td>Well defined HCRs are in place that ensure that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock fluctuating around a target level consistent with (or above) MSY, or for key LTL species a level consistent with ecosystem needs.</td><td>The HCRs are expected to keep the stock fluctuating at or above a target level consistent with MSY, or another more appropriate level taking into account the ecological role of the stock, most of the time.</td></tr>
<tr><td>Met?</td><td>Y</td><td>N</td><td>N</td></tr>
<tr><td>Justification</td><td colspan="3">In fisheries where little data are obtained and cannot be managed with objective and specific maximum permitted catches, e.g. management measures are limited to minimum sizes, closed season periods, maximum catches, etc. These fishing strategies and plans apply to long seasonal periods and tend to be equivalent to harvest control rules (HCRs).

HCRs are relatively well defined and seem to consist of the harvest strategy for octopus management in Asturias. In the 2002-2003 season the MP set quotas in the regulated area for the first time, randomly established (due to the lack of biomass estimates) at a quota of 10 000 kg per boat and season, and this has remained in place to this day. According to the meetings held previously with fishery managers, this is a high limit that is rarely reached. Given the high variability in octopus biomass from one year to another, the decision was made to manage the resource by means of a minimum capture weight that is mindful of size at first maturity and a fairly long closed season (15 July to 14 December) that controls effort and protects the growth of the young.
Since 2002 in the waters of Asturias a total of 2929 octopus females have been analysed at market throughout the fishing seasons. By years and months, the number of specimens analysed is shown in the following tables:

Table Appendix 8-1-1 Weight Distribution of females. Data Source: CEP

<table>
<tr><th>Rango de pesos</th><th>N</th><th></th><th>Rango de pesos</th><th>N</th><th></th><th>Rango de pesos</th><th>N</th></tr>
<tr><td>500</td><td>1</td><td></td><td>2100</td><td>65</td><td></td><td>3700</td><td>10</td></tr>
<tr><td>600</td><td>1</td><td></td><td>2200</td><td>61</td><td></td><td>3800</td><td>10</td></tr>
<tr><td>700</td><td>9</td><td></td><td>2300</td><td>71</td><td></td><td>3900</td><td>8</td></tr>
<tr><td>800</td><td>48</td><td></td><td>2400</td><td>56</td><td></td><td>4000</td><td>6</td></tr>
<tr><td>900</td><td>163</td><td></td><td>2500</td><td>50</td><td></td><td>4100</td><td>5</td></tr>
<tr><td>1000</td><td>322</td><td></td><td>2600</td><td>30</td><td></td><td>4200</td><td>4</td></tr>
<tr><td>1100</td><td>345</td><td></td><td>2700</td><td>23</td><td></td><td>4300</td><td>4</td></tr>
<tr><td>1200</td><td>291</td><td></td><td>2800</td><td>31</td><td></td><td>4400</td><td>3</td></tr>
<tr><td>1300</td><td>248</td><td></td><td>2900</td><td>27</td><td></td><td>4500</td><td>4</td></tr>
<tr><td>1400</td><td>194</td><td></td><td>3000</td><td>17</td><td></td><td>4600</td><td>1</td></tr>
<tr><td>1500</td><td>178</td><td></td><td>3100</td><td>15</td><td></td><td>4700</td><td>2</td></tr>
<tr><td>1600</td><td>161</td><td></td><td>3200</td><td>16</td><td></td><td>4800</td><td>3</td></tr>
<tr><td>1700</td><td>118</td><td></td><td>3300</td><td>9</td><td></td><td>4900</td><td>1</td></tr>
<tr><td>1800</td><td>101</td><td></td><td>3400</td><td>9</td><td></td><td>5000</td><td>2</td></tr>
<tr><td>1900</td><td>90</td><td></td><td>3500</td><td>10</td><td></td><td>5300</td><td>2</td></tr>
<tr><td>2000</td><td>92</td><td></td><td>3600</td><td>11</td><td></td><td>5500</td><td>1</td></tr>
</table>

Table Appendix 1-8-2 Using the above data, the percentage of mature females was also calculated</td></tr>
</table>

Rango de pesos	% de hembras maduras		Rango de pesos	% de hembras maduras
500	100,00%		2900	96,30%
600	0,00%		3000	88,24%
700	33,33%		3100	100,00%
800	70,83%		3200	100,00%
900	67,48%		3300	100,00%
1000	65,22%		3400	100,00%
1100	66,09%		3500	100,00%
1200	73,54%		3600	100,00%
1300	75,81%		3700	100,00%
1400	76,29%		3800	100,00%
1500	80,90%		3900	100,00%
1600	83,85%		4000	100,00%
1700	85,59%		4100	100,00%
1800	93,07%		4200	100,00%
1900	92,22%		4300	100,00%
2000	94,57%		4400	100,00%
2100	90,77%		4500	100,00%
2200	98,36%		4600	100,00%
2300	98,59%		4700	100,00%
2400	96,43%		4800	100,00%
2500	100,00%		4900	100,00%
2600	96,67%		5000	100,00%
2700	100,00%		5300	100,00%
2800	100,00%		5500	100,00%

The last table shows that a clear bias exists, as no specimens are included weighing less than 500 g. To calculate the first capture size for the common octopus belonging to different populations, as indicated in the introductory section to the biological cycle of the species, significant variations have been shown in the size at first sexual maturity, depending on the methodology. These estimates depend on whether specimens caught throughout the year are considered, or only those caught during the reproduction season, as occurs in this case. The estimate of size at first sexual maturity was 640 g, which may be an underestimate. However, from the data for the fishing period, it is clear that this size is quite realistic for this parameter.

In the light of the data gathered, the minimum capture size of 1 000g seems to be appropriate for this species, although analyses will have to increase the specimens caught in other times of the year apart from the months in the MP, and including animals weighing less than 500 g. This minimum capture weight is also considered to be suitable for managing the resource based on results of the study titled "*Octopus vulgaris* (Mollusca: Cephalopoda) fishery management assessment in Asturias (north-west Spain)". On the other hand, these measures are complemented by monitoring the annual effort (number of boats fishing for this species within the plan and number of days at sea), which mean other types of measures can be established if considered necessary; as indicated previously, to date, effort shows a clear downward trend.

Once octopus captures reach the fish auction, it is the coastguards' job to weight the specimens, and these data are recorded on a daily basis. As the CEP technicians are aware at all times of the amounts of octopus landed, information on the applied fishing effort on the resource is subject to a high degree of monitoring, so actions can be taken depending on the circumstances. The measures are well understood and there is evidence that they are appropriate.

The patchy distribution of the common octopus population makes that the neighbouring areas should be regulated with a similar approach thatin Asturias

		waters. Thus, iThis closing season almost overlapps with the end of the fishing season in Asturias duereduction in the catches from May-June onwards and the closing season from 15 July. According to the former in Galicia. The absence of modelling and yield estimation avoids the certainty of the approximation of reaching a minimum harvest point to bring an end to fishing. The experience to date, however, seems to keep CPUE within acceptable limits, although the downward trend in the fishery will need to be monitored in the future. Data from this year point to a recovery in the resource, including an increase in the capture per unit of effort. Of the four HCRs that exist: 1.closed season; 2.TAC; 3. minimum weight; 4. no. traps. 1 and 3 are well established. However, 2 and 4 seem to be very high and have not been modified in the past 15 years. The fishery has the distinctive feature of the boats leaving octopus to fish another resource when the yield is low. But this is not an HCR; it is part of the fishing law of Asturias, which allows for this flexibility to alternate the gear used The CPUE (kg/day of fishing) is stable, but it does not reflect the state of the fishery, as the measure of effort is not suitable. The CEP itself admits as much: "It has to be taken into account that when catch numbers fall, many boats change to another gear, so landing data per day of fishing do not always properly represent the abundance of the resource." In the case of octopus in Asturias, SG 60 is met because this HCRs available are generally understood, but SG 80 score would not be met, as they are not well defined, at least in part, for stock to fluctuate above acceptable levels. On the other hand, it is clear that the minimum capture weight also plays its part in keeping the fishery at acceptable levels. However, establishing such high maximum permitted levels does not ensure that stocks remain at acceptable levels in the future.		
b	HCRs robustness to uncertainty			
	Guide post		The HCRs are likely to be robust to the main uncertainties.	The HCRs take account of a **wide** range of uncertainties including the ecological role of the stock, and there is **evidence** that the HCRs are robust to the main uncertainties.
	Met?		Y	N
	Justification	In any kind of marine resource, fishery management must be related to measurable parameters, and these include the fishing effort. In the case of octopus, this yield or CPUE is variable and depends on different factor such as the number of boats, fishing hours, type of gear, minimum capture size, etc. Studies carried out to date indicate that, despite the high variability in octopus abundance, the average annual yield per boat between 2001 and 2014 remains relatively within certain stable parameters (Figure 14). Although the fishing effort has dropped, planning measures have remained constant. As a result, the existing variability in captures from one year to another should depend on external factors, of which climate variations were clearly among the most significant (ICES, 2014).		

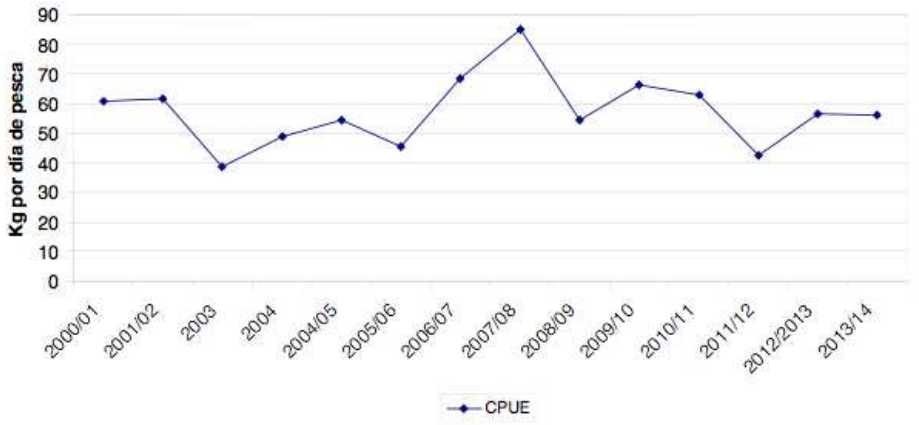


Figure 14 Yield per vessel between 2001 and 2014. Data source: CEP

This dependence on weather conditions is included in the Resolution of 14 May 2013, approving the Plan, which states that although recent scientific studies indicate that the abundance of this species depends to large extent on the environmental conditions, the plan implemented the year before had an inefficient result insofar as around 800 tons less were fished. The MP seeks to include new technical measures that will provide fleet planning and improve the profitability of the fishing activity. (Source: Neomaris).

To score these PI we must take into account that there are control measures that are consistent with the harvest strategy, as well as being suitable for controlling the harvest and taking uncertainties into account. Following analysis, the evolution of the regulations and subsequent MP of the Principality of Asturias and even that of Galicia has progressed according to captures and the fishing effort to ensure resource sustainability. However, octopus management must consider other aspects beyond strict fishery elements. Thus, Otero et al. (2008) found a high correlation between captures and the reigning wind during the critical stages of the larva stage in preceding years, conferring the possibility of resource predictability. On the other hand, Sobrino et al. (2001) correlated the influence of rainfall and runoffs, and octopus abundance in the Gulf of Cádiz. These and other trophic ecology studies indicate the importance of ecosystem planning to take different, mainly climatic parameters, into account. This potential predictability would make it possible to anticipate and reduce the impact of uncertainties in the fishery and be able to establish objective levels, which do not currently exist.
As a whole, fishery control measures take into account the potential uncertainties, but the HCRs are not robust enough to predict certain (chiefly climatic) uncertainties. SG 80 is therefore met, but not SG 100.

c	**HCRs evaluation**			
	Guide post	There is **some evidence** that tools used **or available** to implement HCRs are appropriate and effective in controlling exploitation.	**Available evidence indicates** that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs.	**Evidence clearly shows** that the tools in use are effective in achieving the exploitation levels required under the HCRs.
	Met?	Y	Y	N
	Justification	As presented previously, the measures applied to the octopus fishery in the waters of the Principality of Asturias are appropriate to maintain acceptable CPUE levels, thus meeting SG 80. However, the slow but steady drop of capture levels during unfavourable yearsmaybe due to the alteration of climate factors, as proved in reighbouring areas (Otero et al., 2008), make it important to include these		

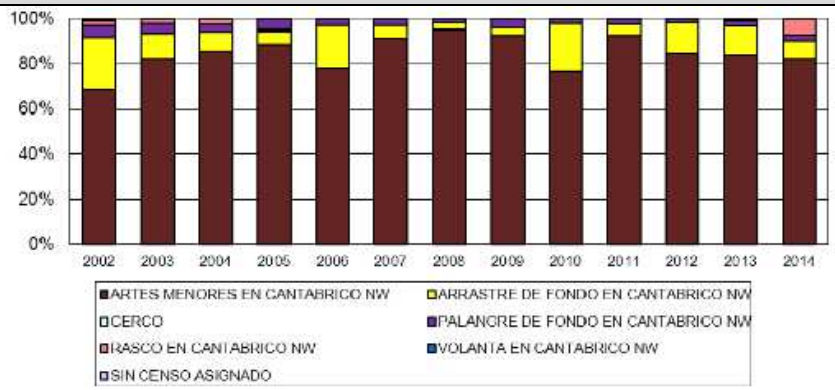
		parameters to anticipate the level of abundance and be able to improve the planning measures year on year, and suggest that the measures adopted do not full guarantee that the harvest levels required to guarantee the amounts required by capture control measures can be reached, by which although the SG 80 level is met, the requirements are not met for am SG 100 level.
References		
OVERALL PERFORMANCE INDICATOR SCORE:		**75**
CONDITION NUMBER (if relevant):		**1**

Evaluation Table for PI 1.2.3 – Information and monitoring

PI 1.2.3		**Relevant information is collected to support the harvest strategy**		
Scoring Issue		**SG 60**	**SG 80**	**SG 100**
a	Range of information			
	Guide post	**Some** relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.	**Sufficient** relevant information related to stock structure, stock productivity, fleet composition and other data is available to support the harvest strategy.	A **comprehensive range** of information (on stock structure, stock productivity, fleet composition, stock abundance, UoA removals and other information such as environmental information), including some that may not be directly related to the current harvest strategy, is available.
	Met?	Y	Y	N
	Justification	According to the regulations on common octopus fishing in Asturias, the fishing guilds are obliged to provide the Directorate-General for Maritime Fisheries of the Regional Ministry of Livestock, Farming and Autochthonous Resources with relative information on the weights of common octopus captures on a monthly basis. Similarly and while the Plan is in force, the vessels included in it must collaborate with the technical officers of the Directorate-General for Maritime Fisheries of the Regional Ministry of Livestock, Farming and Autochthonous Resources, who will carry out fishery control and monitoring activities in order to draw up a feasibility and evolution study for the plan. All the above information is managed and assessed by the CEP, which provides technical advice to DGPM in matters relating to the biology of marine species and the appropriate harvest measures. They also participate and collaborate with other public administrations and agencies in research projects, as well as universities, the Spanish Institute of Oceanography, etc. According to Fernández-Rueda and García-Flórez (2007), close monitoring of octopus landings throughout the fishing season has been highly useful to find indicators that enable significant variations to be detected at the start of the spawning period, which enables administrators to vary the closed season, if necessary, with the aim of protecting the recruitment of a new generation. Information on the weighing of catches carried out by the boats in the plan is gathered by the coastguard by recording daily landings. The information is sent to the CEP, and the technical officers from the centre take samples by size, sex and state of maturity, normally twice a month for the duration of the whole season (22 specimens per month). On the case of the octopus MP, there is a section on the		

PI 1.2.3		Relevant information is collected to support the harvest strategy		
		monitoring and control programme. The Subdirectorate-General for the coastguard co-ordinates the specific control activities for the MP collaboration with the cofradía guards and services contracted specifically for this purpose. The Coastguard Service will appoint a co-ordinator for the plan to manage octopus trap fishing. The monitoring commission for the octopus MP has also been created, and will meet at least every three months. As explained in previous sections, stock structure, the make-up of each catch, the state of maturity of specimens taken from monthly sampling that records this information, and the weight of the animals, are quantified and monitored. The only parameters not taken into consideration are climatic elements, so the maximum level could not be given for this SG. Despite not having too much information when scoring this indicator, we feel that the daily information reported by the boats and the information gathered by the points of sales (markets) is sufficient to provide support for the harvest strategy. Furthermore, having consulted the bibliography it has been verified that many of these harvest strategy modifications have been the result of the data collected by the fleet. Therefore, the score here would reach a minimum of SG80. However, there is not a broad range of information on key factors (e.g. environmental) or a measure that provides a good representation of the resource status and evolution of the fishing season, which means SG 100 cannot be met.		
b	Monitoring			
	Guide post	Stock abundance and UoA removals are monitored and at least one indicator is available and monitored with sufficient frequency to support the harvest control rule.	Stock abundance and UoA removals are **regularly monitored at a level of accuracy and coverage consistent with the harvest control rule**, and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule.	**All information** required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of inherent **uncertainties** in the information [data] and the robustness of assessment and management to this uncertainty.
	Met?	Y	Y	N
	Justification	With regard to stock abundance, as explained on numerous occasions, there are no direct estimations of the size of the population or other relevant fishing parameters, such as maximum sustainable yield. This is due to the particular short life cycle of cephalopods, with numerous cohorts superimposing themselves in a single fishing station and because the whole population is replaced each year. This means that the stock is replaced entirely from one year to the next. The positive aspect of the measures adopted since 2001 in the waters of Asturias, and even previously in adjacent waters, as is the case with Galicia, is that the planning measures have remained constant. There are also estimates of fishing effort per boat, which allows for a high level of accuracy when monitoring captures of this species. However, the most important factor against the sustainability of this fishery is the inherent lack of knowledge of information on uncertainties which can be summed up by the failure to include climate-related factors in the planning measures. Captures in the UoC are regularly monitored and with the guarantee provided by the HCR, and there is more than one parameter that is monitored with sufficient regularity so that SG 80 is met. However, there is not a high certainty of understanding of the uncertainties, which means that SG 100 is not met.		
c	Comprehensiveness of information			
	Guide		There is good information	

PI 1.2.3		Relevant information is collected to support the harvest strategy		
	post		on all other fishery removals from the stock.	
	Met?		Y	
	Justification	There is general knowledge of the catches made by other fisheries in the stock. Firstly, mention should be made of the fishermen's concern relating to artisanal fishing in the MP for Asturias, mainly with trawl fishing, and, to a lesser extent, with recreational fishing. In 2008, a proposal was made for characterising recreational sea fishing (Apilánez and Mortera, 2008). This document considered an integral study that would cover, among other proposals, the need to initiate works with a survey to estimate the pressure that recreational sea fishing from boats has on the resource, as the impact of this type of fishing in Asturias is not currently known. Experiences in other Spanish regions and in other nations have concluded that recreational fishing implies a high level of impact on fishing resources, so it would therefore be necessary to determine whether such a situation is occurring in Asturias. Octopus fishing from boats is no more than a token activity, with a percentage of 0.4% and 0.002 kg per fisherman and day. With regard to rock fishing (recreational fishery), there are 80 000 permits to fish from land, but these are being reviewed, as there is no detailed and exhaustive control of these permits. The information provided is highly interesting, as veteran rock fishermen set the recruitment of animals to coastal areas at 100 to 200 g, from May to June (Xoan Xosé per. com.). The average is 0.87 people fishing for seafood per rock site and day. Nevertheless, this figure reflects major variation, as in 76.9% of the rock sites visited there were no seafood gatherers, and in 90.8% of the sites no more than two fishermen were present. There are no statistically significant differences in the number of seafood gatherers per site and day between working days and holidays. In contrast, there was a relationship with the season of the year: in January, February and March, the number of gatherers per site was higher than in the rest of the year. Statistically significant differences were observed in the number of recreational fishers per site and day depending on the different locations visited, but due to the lack of data, these locations cannot be identified. There is also a relationship with the level of the tide at low tide: the lower the tide at low tide, the higher the number of people fishing for seafood per site and per day, specifically for every metre that the tide receded by at low tide, the number of people increased by 2.85 people per site and per day.. Of the seafood-gatherers interviewed fishing for octopus, only 14.3% of them succeeded in catching a specimen. The fished yield of octopus is 0.23 kg per person and per day (Regional Government of Asturias, 2010). Finally, trawl fishing would also interact with trap fishing, but as above it does not account for a relevant fraction of the whole. Firstly, common octopus is not the target species in trawl fishing, although every year specimens are caught in beach areas close to rocky sites, which the preferred habitat of the common octopus. It can be seen that trawl fishing is the second most important fleet for catching octopus, with fluctuations from one year to the next, and accounting for an average of 10.9% of the total sales of the species. These figures coincide with the variability found in the data for trap-caught octopus. As shown, detailed information is available on the extraction of a fraction of the stock with methods other than those used in the MP (Figure 15).		

PI 1.2.3		Relevant information is collected to support the harvest strategy
		 *Figure 15 Detailed information on the extraction of a fraction of the stock with methods other than those used in the MP* The data present above confirm that there is sufficient information on all other fishery removals, and SG 80 is therefore met.
References		
OVERALL PERFORMANCE INDICATOR SCORE:		**80**
CONDITION NUMBER (if relevant):		**NA**

Evaluation Table for PI 1.2.4 – Assessment of stock status

PI 1.2.4		There is an adequate assessment of the stock status		
Scoring Issue		SG 60	SG 80	SG 100
a	Appropriateness of assessment to stock under consideration			
	Guide post		The assessment is appropriate for the stock and for the harvest control rule.	The assessment takes into account the major features relevant to the biology of the species and the nature of the UoA.
	Met?		NA (RBF)	NA (RBF)
	Justification	According to Annex PF: Risk-Based Framework (RBF) of the FCR, if the RBF is used to asses the PI 1.1.1., a score of 80 is given by default.		
b	Assessment approach			
	Guide post	The assessment estimates stock status relative to generic reference points appropriate to the species category.	The assessment estimates stock status relative to reference points that are appropriate to the stock and can be estimated.	
	Met?	NA (RBF)	NA (RBF)	
	Justification	See SGa)		
c	Uncertainty in the assessment			
	Guide post	The assessment **identifies major sources** of uncertainty.	The assessment takes uncertainty into account.	The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a **probabilistic** way.
	Met?	NA (RBF)	NA (RBF)	NA (RBF)
	Justification	See SGa)		
d	Evaluation of assessment			
	Guide post			The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.
	Met?			NA (RBF)
	Justification	See SGa)		
e	Peer review of assessment			
	Guide post		The assessment of stock status is subject to peer review.	The assessment has been **internally and externally** peer reviewed.
	Met?		(Y)	(N)
	Justifi	See SGa)		

PI 1.2.4		**There is an adequate assessment of the stock status**
	cation	
References		
OVERALL PERFORMANCE INDICATOR SCORE:		**80**
CONDITION NUMBER (if relevant):		**NA**

Evaluation Table for PI 2.1.1 – Primary species outcome

PI 2.1.1		**The UoA aims to maintain primary species above the PRI and does not hinder recovery of primary species if they are below the PRI.**		
Scoring Issue		SG 60	SG 80	SG 100
a	Main primary species stock status			
	Guide post	Main primary species are **likely** to be above the PRI OR If the species is below the PRI, the UoA has measures in place that are **expected** to ensure that the UoA does not hinder recovery and rebuilding.	Main primary species are **highly likely** to be above the PRI OR If the species is below the PRI, there is either **evidence of recovery** or a demonstrably effective strategy in place **between all MSC UoAs which categorise this species as main**, to ensure that they collectively do not hinder recovery and rebuilding.	There is a **high degree of certainty** that main primary species are above the PRI **and are** fluctuating around a level consistent with MSY.
	Met?	Y	Y	Y
	Justification	The base information for assessing the primary species was the pre-assessment carried out by BV in February 2014. On the other hand, the existing literature was consulted, with no bycatch species found in the traps specifically in the area fished by the UoC. However, direct information was available provided by the CEP and people related to fishing, who indicated the species found in traps other than the target species. The bait most frequently used in this area is artificial and ecological cointaining, among other components, flour and gelatin. It is more expensive but rather more efficient since the bait (in blocks) does not need any care on land during long periods of time and lasts more time underneath the water surface. The absence of primary live or frozen species in the bait of the creel fishery in the UoA supported that we did not include any justification on this performance indicator. It is essential to clarify that none of the marketable bycatch species reached 5% in weight, and that none of these species had a management system based on permitted capture limits or TAC, among other resource management measures, meaning that any main primary species are identified. This situation is similar to that found in bordering areas such as the coasts of Galicia, where, as in the case of Asturias, species of commercial importance are managed under parameters of capture size, while on the other hand fishermen are liable to change their target species. According to the definition for **Primary species** as usually species of comercial value to either the UoA or fisheries outside the UoA, with management tools controlling explotation as well as known reference points in place. **For the fishery under assessment none of the species retained in the traps are susceptible for this definition.** Trap is a very selective fishing gear with low bycatch species retained. It couples the SG 100.		
b	Minor primary species stock status			
	Guide post			For minor species that are below the PRI, there is evidence that the UoA does not hinder the

PI 2.1.1		**The UoA aims to maintain primary species above the PRI and does not hinder recovery of primary species if they are below the PRI.**		
				recovery and rebuilding of minor primary species
	Met?			Y
	Justification	See 2.1.1.a justification.		
References		Bañón R, Campelos JM, García M, Quintero F, Ribó J, Lamas F, Gancedo A, Arnaiz R, Rodríguez ME, Garazo A. 2007 MSC Pre-assessment Octopus artisanal Fishery.		
OVERALL PERFORMANCE INDICATOR SCORE:				**100**
CONDITION NUMBER (if relevant):				**NA**

Evaluation Table for PI 2.1.2 – Primary species management strategy

PI 2.1.2		There is a strategy in place that is designed to maintain or to not hinder rebuilding of primary species, and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch.		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guide post	There are **measures** in place for the UoA, if necessary, that are expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are likely to above the point where recruitment would be impaired.	There is a **partial strategy** in place for the UoA, if necessary, that is expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are highly likely to be above the point where recruitment would be impaired.	There is a **strategy** in place for the UoA for managing main and minor primary species.
	Met?	Y	Y	N
	Justification	The HCR managing the fishing of the common octopus (*Octopus vulgaris*) in the waters of the Principality of Asturias include the following management elements: i) limited rights of access through licences; ii) five-month closed season (July – December); iii) minimum capture size for specimens of 1 000g; iv) maximum quota per boat; v) fishing gear restrictions. The aim of these measures is to ensure the protection of octopus recruitment and the survival of a suitable number of reproductive adults at the end of each fishing season. The MP cited throughout P1 tables in conjunction with monitoring landings of octopus during the fishing season by biologists and coastguards is considered a partial strategy for managing not just the target species but primary species as well. Therefore SG80 is met but not SG100 because there is not a full strategy for managing primary species.		
b	Management strategy evaluation			
	Guide post	The measures are considered **likely** to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is some **objective basis for confidence** that the measures/partial strategy will work, based on some information directly about the fishery and/or species involved.	**Testing** supports **high confidence** that the partial strategy/strategy will work, based on information directly about the fishery and/or species involved.
	Met?	Y	Y	N
	Justification	In terms of fishing practices relating to retained species, upon asking during the meeting with the parties involved, they explained that normally when these species are caught in their traps, they record this in their fishing log and unload them at port to be sold at market. To date, there is little information on the accidental capture of primary species, but the information that does exist is objective and indicates that it never reaches 5%, by which it would not need to be assessed. Despite this, the quantitative results gathered on all retained species caught in traps indicate that the specificity of this fishing method and the measure or trap size, etc. are appropriate, which means that SG 80 is met, but SG 100 is not met, as the recent implementation of the planning and estimates for the resource and non-target species have so far prevented checks from being made to support high confidence of the strategy in place.		
c	Management strategy implementation			
	Guide		There is **some evidence**	There is clear evidence

	post		that the measures/partial strategy is being **implemented successfully**.	that the partial strategy/strategy is being implemented successfully and is achieving its overall objective as set out in scoring issue (a).
	Met?		Y	N
	Justification	Esta estrategia de registros ha sido implementada recientemente, aunque los datos recogidos por los diferentes ámbitos relacionados con la pesca ha verificado que no existe problema con las species primarias o secundarias. De hecho, los estudios previos indicant que el 97.62% número de animals es devuelta al mar vivo, lo que verifica la especificidad del arte y la baja mortalidad de las species by-catch retenidas, tanto primarias como secundarias. Se cumple el SG 80, pero no el SG 100, tal y como se indica en el scoring issue a.		
e	Review of alternative measures			
	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species.	There is a **regular** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species and they are implemented as appropriate.	There is a **biennial** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of all primary species, and they are implemented, as appropriate.
	Met?	Y	Y	N
	Justification	En el año 2014 se ha comenzado una revision de las especies acompañantes y capturas de especies primarias. Sin embargo, a pesar de que ninguna de ellas alcanza el valor mínimo de un 5%, se continua con esta actividad para monitorizar la variación de las mismas desde 2014. A pesar ded esta monitorización y análisis sera annual, se asigna un scoring de 80 debido al estado incial de estas actividades de registro.		
References	[List any references here]			
OVERALL PERFORMANCE INDICATOR SCORE:				**80**
CONDITION NUMBER (if relevant):				

Evaluation Table for PI 2.1.3 – Primary species information

PI 2.1.3		**Information on the nature and extent of primary species is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage primary species**		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impact on main species			
	Guide post	Qualitative information is **adequate to estimate** the impact of the UoA on the main primary species with respect to status.	Some quantitative information is available and is **adequate to assess** the impact of the UoA on the main primary species with respect to status.	Quantitative information is available and is **adequate to assess with a high degree of certainty** the impact of the UoA on main primary species with respect to status.
	Met?	Y	Y	N
	Justification	Currently there is a record of non-target species in the traps and, on the other hand, on-board monitoring is now being carried out by the CEP and the company Sigma, in which all non-target species are monitored, together with their levels of incidence, mortality rates, etc. Therefore, some qualitative information is available and is adequate to assess the impact of the UoA. SG100 is not met because the quantitative information shall be improved.		
b	Information adequacy for assessment of impact on minor species			
	Guide post			Some quantitative information is adequate to estimate the impact of the UoA on minor primary species with respect to status.
	Met?			Y
	Justification	The historic records and the quantitative information gathered over several years in Galicia and available to date in Asturias indicate the scant relevance of the method in relation to planning for primary species. SG 100 is therefore met.		
c	Information adequacy for management strategy			
	Guide post	Information is adequate to support **measures** to manage **main** primary species.	Information is adequate to support a **partial strategy** to manage **main** Primary species.	Information is adequate to support a **strategy** to manage **all** primary species, and evaluate with a **high degree of certainty** whether the strategy is achieving its objective.
	Met?	Y	Y	N
	Justification	See sections 2.1.3. a and b. The results obtained on the abundance of primary species coincide with the fact that the information gathered would be sufficient to apply a different partial fishing strategy, which would maintain the low abundance of primary species obtained in traps in the event of a potential increase in bycatch in subsequent years. Thus SG 80 would be met, but not SG 1000, due to the lack of a high degree of certainty to meet the objective.		
References		[List any references here]		
OVERALL PERFORMANCE INDICATOR SCORE:				**85**
CONDITION NUMBER (if relevant):				**NA**

Evaluation Table for PI 2.2.1 – Secondary species outcome

PI 2.2.1		**The UoA aims to maintain secondary species above a biological based limit and does not hinder recovery of secondary species if they are below a biological based limit.**		
Scoring Issue		SG 60	SG 80	SG 100
a	Main secondary species stock status			
	Guide post	Main Secondary species are **likely** to be within biologically based limits.	Main secondary species are **highly likely** to be above biologically based limits	There is a **high degree of certainty** that main secondary species are within biologically based limits.
	Met?	NA (RBF)	NA (RBF)	NA (RBF)
	Justification	The bait most frequently used in this area is artificial and ecological cointaining, among other components, flour and gelatin. It is more expensive but rather more efficient since the bait (in blocks) does not need any care on land during long periods of time and lasts more time underneath the water surface. The absence of secondary live or frozen species in the bait of the creel fishery in the UoA supported that we did not include any justification on this performance indicator. The only main secondary species identified by the team was the *Necora puber*. These species was the only species close to a percentage of 5% in weight of the total octopus captures. See Table Appendix 1-3. The information described above was checked during the site visit with the interviews carried out with the CEP and the DGPM. Considering the above constraints and the absence of stock status reference points in the velvet crab, the assessment team decided that it would be appropriate to use the RBF tool for outcome of the main secondary species. In the Appendix 1.2 can be find the PSA Rational Table 1.2.2.b. undertaken by the assessment team and stakeholders during the RBF meeting. The final score for the PSA an therefore the overall score for the PI was 100.		
b	**Minor secondary species stock status**			
	Guide post			For minor species that are below biologically based limits', there is evidence that the UoA does not hinder the recovery and rebuilding of secondary species
	Met?			NA (RBF)
	Justification			
References		Table Appendix 1-3 from the report. RBF meeting.		
OVERALL PERFORMANCE INDICATOR SCORE:				**100**
CONDITION NUMBER (if relevant):				**NA**

Evaluation Table for PI 2.2.2 – Secondary species management strategy

PI 2.2.2		**There is a strategy in place for managing secondary species that is designed to maintain or to not hinder rebuilding of secondary species and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch.**		
Scoring Issue		SG 60	SG 80	SG 100
a	**Management strategy in place**			
	Guide post	There are **measures** in place, if necessary, which are expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be within biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a **partial strategy** in place, if necessary, for the UoA that is expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be within biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a **strategy** in place for the UoA for managing main and minor secondary species.
	Met?	Y	Y	N
	Justification	With regard to fishery management in terms of non-target species, the MP for octopus establishes the appropriate recommendations of returning bycatch to the sea and making a note of them. All the parties involved as stakeholders, particularly the public administration, fishermen and representatives from the cofradías in attendance at the work meetings, comment that the way of operating they have with bycatch is to remove them from the trap and return them to the sea. As the gear used is fixed, no harm is done to any species that might become trapped, and their rate of survival is very high. The following is a list of secondary bycatch species (not highlighted) in traps operating in the management unit:		

PI 2.2.2	There is a strategy in place for managing secondary species that is designed to maintain or to not hinder rebuilding of secondary species and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch.

Especie	Descarte		Retenido		Total	
	N	W	N	W	N	W
OCTOPUS VULGARIS	192	147.279	300	501.216	492	648.495
SERRANUS CABRILLA	137	7.101	0	0	137	7.101
MARTHASTERIA GLACIALIS	84	7.049	0	0	84	7.049
CONGER CONGER	5	2.835	0	0	5	2.835
LABRUS MIXTUS	12	683	0	0	12	683
SPHAERECHINUS GRANULARIS	3	488	0	0	3	488
PARABLENNUIS GATTORUGINE	12	478	0	0	12	478
GALATHEA STRIGOSA	18	428	0	0	18	428
CHARONIA LAMPAS	1	356	0	0	1	356
GAIDROPSARUS MEDITERRANEUS	9	343	0	0	9	343
PALAEMON SERRATUS	8	37	44	176	52	213
GAIDROPSARUS VULGARIS	2	197	0	0	2	197
HOMARUS GAMMARUS	1	190	0	0	1	190
INACHUS SP	42	190	0	0	42	190
HOLOTHURIA FORSKALI	2	115	0	0	2	115
CTENOLABRUS RUPESTRIS	7	113	0	0	7	113
OPHIODERMA LONGICAUDA	12	87	0	0	12	87
ATELECYCLUS UNDECIMDENTATUS	5	85	0	0	5	85
SCYLLARUS ARCTUS	2	85	0	0	2	85
NECORA PUBER	2	51	1	?	3	51
PARABLENNUIS sp.	4	44	0	0	4	44
RANICEPS RANINUS	1	38	0	0	1	38
GOBIUS COBITUS	1	23	0	0	1	23
PISA ARMATA	3	13	0	0	3	13
ECHINASTER SEPOSITUS	1	3	0	0	1	3
LIOCARCINUS VERNALIS	3	1	0	0	3	1
POLYBIUS HENSLOWII	20	0	0	0	20	0
Total general	**589**	**168.312**	**345**	**501.392**	**934**	**669.704**

On the other hand, in the analysis conducted in Asturias, it was observed that all the species previously referred to (comber, conger eel, shrimp, etc.) are **minor secondary species**, as they are not relevant from a quantitative point of view in the fishing of octopus using traps. As can be seen in the table, captures of the other species are insignificant in relation to the total catch, and moreover, with the exception of the common prawn (Palaemon serratus), all bycatch species were returned to the sea, which means they cannot be logged as bycatch but rather as live discards.

Despite the fact that none of the secondary species is close to a percentage of 5% in weight of the total octopus captures, as stated previously, a review of the managed data in Galicia on non-target species found in octopus traps indicated that the captures of velvet crab (*Necora Puber*) in the area closest to Asturias did reach this threshold of 5% (Table Appendix 1-3).

Table Appendix 1-8-3 Information from the UTPB_2006_ Galician octopus fishery.

PI 2.2.2		**There is a strategy in place for managing secondary species that is designed to maintain or to not hinder rebuilding of secondary species and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch.**

Datos del trabajo UTPB_2006_Pesqueria Pulpo Octopus vulgaris Galicia		Galicia		ZONAS I-V (Rías Baixas)		ZONAS VI-VII (Costa da Morte)		ZONAS VIII-IX (Arco Cantábrico)	
		nº (%)	peso (%)	nº (%)	peso (%)	nº (%)	peso (%)	nº (%)	peso (%)
Pulpo	Octopus vulgaris	35,89	86,74	31,25	87,16	38,77	84,93	53,13	88,22
Cuernos	Charonia spp.	1,51	1,15	0,87	0,75	2,07	1,44	3,58	2,01
Otras (nº especies)		0,057	0,008(17)	0,06	0,009(13)	0,08	0,012(6)	0,01	0,001(3)
Total Moluscos		37,46	87,9	32,18	87,92	40,92	86,38	56,72	90,23
Nécora	Necora puber	19,21	4,69	16,94	4,29	22,01	5,02	24,9	5,48
Santiaguiño	Scyllarus arctus	3,01	0,26	1,95	0,17	5,66	0,47	2,96	0,23
Camarones	Palaemon spp.	22,23	0,26	30,1	0,39	13,33	0,14	1,02	0,007
Buey	Cancer pagurus	0,38	0,2	0,33	0,2	0,65	0,31	0,1	0,05
Centolla	Maja squinado	0,5	0,2	0,49	0,22	0,49	0,15	0,55	0,2
Bogavante	Homarus gammarus	0,25	0,17	0,19	0,17	0,39	0,27	0,26	0,14
Otras (nº especies)		0,61	0,044(6)	0,81	0,075(4)	0,41	0,006(4)	0,01	0,001(1)
Total Crustáceos		46,19	5,82	50,81	5,51	42,94	6,37	29,8	6,11
Congrio	Conger conger	0,97	3,21	0,9	3,07	1,3	4,42	0,63	1,77
Cabrilla	Serranus cabrilla	4,74	0,91	3,24	0,74	6,81	1,15	8,02	1,1
Faneca	Trisopterus luscus	3,32	0,59	4,75	0,94	1,42	0,24	0,07	0,013
Barbada común	Gaidropsarus vulgaris	1,6	0,62	1,63	0,77	1,79	0,53	1,12	0,26
Julia	Coris julis	1,5	0,27	1,59	0,32	1,18	0,21	1,67	0,2
Cabruza/rabosa	Parablennius gattorugine	1,18	0,15	1,67	0,23	0,5	0,07	0,18	0,022
Otras (nº especies)		3,03	0,524(49)	3,24	0,54(42)	3,14	0,62(37)	1,78	0,31(22)
Total Peces		16,35	6,28	17,02	6,61	16,14	7,25	13,48	3,66

The species *Necora Puber* is protected by the Resolution of 10 March 2004 of the Regional Ministry for the Rural Environment and Fisheries, approving the Seafood MP. Since it came into force, it has limited the number of traps per boat, harvesting hours, etc. Certain minimum sizes have also been established and closed season for the velvet crab (*Necora Puber*) from 15 January to 15 March in seasons from 2003/2004, which means that most of the main octopus season does not overlap with that of the velvet crab.

Currently, in Asturias there is a record of non-target species in the traps and, on the other hand, on-board monitoring is now being carried out by the CEP and the company Sigma, in which all non-target species are recorded, together with their levels of incidence, mortality rates, etc. These figures indicate the beginning of the establishment of a partial strategy for controlling primary species. These studies validate the certainty that there is no risk for these species. SG 80 is therefore met. However, there is no strategy for the UoC to handle the main and minor secondary species directly. SG 100 is not therefore met.

b	Management strategy evaluation			
	Guide post	The measures are considered **likely** to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/species).	There is **some objective basis for confidence** that the measures/partial strategy will work, based on some information directly about the UoA and/or species involved.	**Testing** supports **high confidence** that the partial strategy/strategy will work, based on information directly about the UoA and/or species involved.
	Met?	Y	Y	Y
	Justification	In terms of management practices relating to bycatch species, upon asking them during the meeting with the parties involved, they explained that normally when bycatch of secondary species are caught in their traps, they record them in their fishing log, land them at port and register them to be sold at market. To date, there is little information on the accidental capture of secondary species, because the target sampling at sea to gather information about these species was not implemented many years ago and thus, a long term analyses cannor be		

PI 2.2.2		**There is a strategy in place for managing secondary species that is designed to maintain or to not hinder rebuilding of secondary species and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch.**		
		presented. However, the information that does exist so far is objective and indicates that the catches of secondary species never reaches 5%, by which it would not need to be assessed. The most relevant primary species (in terms of their commercial importance) would be the velvet crab (*Necora Puber*), common prawn (*Palaemon serratus*) and slipper lobster (*Scyllarus arctus*), which is similar to what occurs in the fishing industry in Galicia. However, captures of the most relevant species, the velvet crab, in direct field studies by biologists in the fishery, would not reach 0.008% in weight of common octopus catches. Similar data account for the other minor secondary species, so no secondary species could be considered primary. Despite this, as indicated previously, velvet crab incidence was assessed (see section 2.2.2.a.). The quantitative results gathered on all bycatch species caught in traps indicate that the specificity of this fishing method and the measure or net size, etc. are appropriate, which means that SG 80 is met, but SG 100 is not met, as the recent implementation of the planning and estimates for the resource and non-target species have so far prevented checks from being made to support a high degree of effectiveness of the planning measures in place.		
c	Management strategy implementation			
	Guide post		There is **some evidence** that the measures/partial strategy is being **implemented successfully**.	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a).
	Met?		Y	N
	Justification	The strategy of recording bycatch was only recently implemented, but the data collected by the different elements related to fishing have verified that there is no existing problem with secondary species. In fact, previous studies indicated that 97.62% of the animals caught are returned to the sea alive, which verification of the specificity of the method used and the low mortality rate of both primary and secondary bycatch species. SG 80 is therefore met, but not SG 100, as indicated in the scoring for issue SG100a.		
e	Review of alternative measures to minimise mortality of unwanted catch			
	Justification	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of **unwanted** catch of main secondary species.	There is a **regular** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of **unwanted** catch of main secondary species and they are implemented as appropriate.	There is a **biennial** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of **unwanted** catch of all secondary species, and they are implemented, as appropriate.
	Met?	Y	Y	N
	Guide post	In 2014, a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality started to deal with non-target species captured in traps. However, despite the fact that none of these reach the minimum value of 5%, the activity is ongoing to monitor variation in these aspects from 2014 onwards. Although this monitoring and analysis will be on an annual basis, a scoring of 80 is assigned due to the initial status of the activities being recorded. typographic		

PI 2.2.2	**There is a strategy in place for managing secondary species that is designed to maintain or to not hinder rebuilding of secondary species and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch.**
References	
OVERALL PERFORMANCE INDICATOR SCORE:	**80**
CONDITION NUMBER (if relevant):	**NA**

Evaluation Table for PI 2.2.3 – Secondary species information

PI 2.2.3		**Information on the nature and amount of secondary species taken is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage secondary species.**		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impacts on main secondary species			
	Guide post	**The RBF was used to score PI 2.2.1 for the UoA:** Qualitative information is adequate to estimate productivity and susceptibility attributes for main secondary species.	**The RBF was used to score PI 2.2.1 for the UoA:** Some quantitative information is adequate to assess productivity and susceptibility attributes for main secondary species.	Quantitative information is available and **adequate to assess with a high degree of certainty** the impact of the UoA on main secondary species with respect to status.
	Met?	Y	Y	N
	Justification	As has been reiterated, examining official statistics on trap fishing in the managed area. However, as the velvet crab has been identified as a main secondary species, the data on this species indicate that existing information verifies that the species is not affected. The same is true of the other species that are commercially significant but which do not have a MP based on planning measures which are in turn based on specific management limits, such as the common prawn or the slipper lobster, or teleost species such as the comber, although it should be stressed that these species do have minimum capture sizes and a particular fishing season. Catches of this species do not come to 5% in weight terms. The qualitative (and some quantitative) information gathered in the RBF is sufficient to assess productivity and susceptibility for secondary species. SG 80 is therefore met. However, a high degree of certainty of the impact caused does not exist, which means that SG 100 is not met.		
b	**Information adequacy for assessment of impacts on minor secondary species**			
	Guide post			Some quantitative information is adequate to estimate the impact of the UoA on minor secondary species with respect to status.
	Met?			Y
	Justification	The sampling conducted indicates that the minor secondary species that have been detected in octopus traps would be: comber, conger, cuckoo wrasse, sea urchin, threadfin rockling, common prawn, sea cucumber, slipper lobster and velvet crab, with percentage by weight of between 0.007 (velvet crab) and 1.1% (comber). As stated previously, these captures do not have any relevance in weight or in the number of secondary species. On the other hand, it is important to stress that the historic records and the quantitative information gathered over several years in Galicia and available to date in Asturias indicate the scant relevance of the method in relation to planning for secondary species. SG 100 is therefore met.		
c	Information adequacy for management strategy			
	Guide post	Information is adequate to support **measures** to manage **main** secondary species.	Information is adequate to support a **partial strategy** to manage **main** secondary species.	Information is adequate to support a **strategy** to manage **all** secondary species, and **evaluate** with a **high degree of**

PI 2.2.3		**Information on the nature and amount of secondary species taken is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage secondary species.**		
				certainty whether the strategy is **achieving its objective**.
	Met?	Y	Y	N
	Justification	See SGa and SGb. The results obtained on the abundance of secondary species coincide with the fact that the information gathered would be sufficient to apply a different partial fishing strategy, which would maintain the low abundance of secondary species obtained in traps in the event of a potential increase in bycatch in subsequent years. Thus SG 80 would be met, but not SG 1000, due to the lack of a high degree of certainty to reach the objective.		
References				
OVERALL PERFORMANCE INDICATOR SCORE:				**85**
CONDITION NUMBER (if relevant):				**NA**

Evaluation Table for PI 2.3.1 – ETP species outcome

PI 2.3.1		**The UoA meets national and international requirements for the protection of ETP species** **The UoA does not hinder recovery of ETP species**		
Scoring Issue		SG 60	SG 80	SG 100
a	Effects of the UoA on population/stock within national or international limits, where applicable			
	Guide post	Where national and/or international requirements set limits for ETP species, the effects of the UoA on the population/stock are known and **likely** to be within these limits.	Where national and/or international requirements set limits for ETP species, the **combined effects of the MSC UoAs** on the population/stock are known and **highly likely** to be within these limits.	Where national and/or international requirements set limits for ETP species, there is a **high degree of certainty** that the **combined effects of the MSC UoAs** are within these limits.
	Met?	NA (RBF)	NA (RBF)	NA (RBF)
	Justification	The previous information indicates that the traps are a selective type of gear and that no species of mammals, turtles or amphibians, for example, are ever caught in the traps. However, *Charonia lampas* is an ETP species for which very little bioecological information exists for Asturian waters. Information existing in the management area indicates that *Charonia lampas* could be affected by the gear used to catch common octopus. The decline of its population has produced considerable ecological imbalances along the coast, since its prey, starfish, have multiplied, affecting other species. This species is classified as being of special interest, in an uncertain situation at the autonomous level, vulnerable at the state level and included in the Bern Convention, Annex II, at the international level (Anadón et al., 2007). More specifically, a national legislation declares it to be an ETP species, and there are "national requirements for protection and rebuilding". Article 53 of Ley 42/2007 sets out the List of Wildlife Species under Special Protection and the Spanish Catalogue of Endangered Species. Real Decreto 139-2011 lists the species in both the List of Wildlife Species under Special Protection (LESRPE) and the Spanish Catalogue of Endangered Species (CEEA). Charonia lampas lampas appears on the LESRPE list and also on the CEEA, in the Vulnerable category (there are only two categories: 1- in danger of extinction; and 2- vulnerable). In accordance with Article 54 of Ley 42/2007, this means that it is forbidden to catch, kill, harm, possess or sell this species, etc, with the goal of preserving and protecting its habitats. In addition, because the species is vulnerable, a conservation plan must be adopted within five years (but a recovery plan is not required, being compulsory only for species in danger of extinction). Even there are national requirements for protection there is no requirements for rebulding. As the impact of the fishery could not be analytically determined the Team decided to use the RBF for the species Charonia lampas. In the Appendix 1.2 can be find the PSA Rational Table 1.2.2.c. undertaken by the assessment team and stakeholders during the RBF meeting. The final score for the PSA an therefore the overall score for the PI was 85.		
b	Direct effects			
	Guide post	Known direct effects of the UoA are likely to not **hinder recovery** of ETP species.	Known direct effects of the UoA are **highly likely** to not **hinder recovery** of ETP species.	There is a high degree of confidence that there are no significant detrimental direct effects of the UoA on ETP species.

PI 2.3.1		**The UoA meets national and international requirements for the protection of ETP species** **The UoA does not hinder recovery of ETP species**		
	Met?	NA (RBF)	NA (RBF)	NA (RBF)
	Justification	See SG a)		
c	Indirect effects			
	Guide post		Indirect effects have been considered and are thought to be **highly likely** to not create unacceptable impacts.	There is a high degree of confidence that there are no significant detrimental indirect effects of the fishery on ETP species.
	Met?		NA (RBF)	NA (RBF)
	Justification	See SG a)		
References		[List any references here]		
OVERALL PERFORMANCE INDICATOR SCORE:				**85**
CONDITION NUMBER (if relevant):				**NA**

Evaluation Table for PI 2.3.2 – ETP species management strategy

PI 2.3.2		**The UoA has in place precautionary management strategies designed to:** • **meet national and international requirements;** • **ensure the UoA does not hinder recovery of ETP species.** **Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species.**		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place (national and international requirements)			
	Guide post	There are **measures** in place that minimise the UoA-related mortality of ETP species, and are expected to be **highly likely to achieve** national and international requirements for the protection of ETP species.	There is a **strategy** in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to be **highly likely to achieve** national and international requirements for the protection of ETP species.	There is a **comprehensive strategy** in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to **achieve above** national and international requirements for the protection of ETP species.
	Met?	Y	Y	Y
	Justification	During the site visit, both the authorities and the fishermen consulted commented that they are beginning awareness-raising campaigns aimed at fishermen and divers alike, not to collect live specimens of these large gastropods. Fishermen have instructions to immediately return all captured specimens to the sea once located in the traps, and in any case to report these findings and the survival rates for these molluscs. This strategy means that SG 80 is therefore met. However, a complete strategy does not exist that would allow the established international standards to be exceeded for ETPs, which means that SG 100 is not met.		
b	Management strategy in place (alternative)			
	Guide post	There are **measures** in place that are expected to ensure the UoA does not hinder the recovery of ETP species.	There is a **strategy** in place that is expected to ensure the UoA does not hinder the recovery of ETP species.	There is a **comprehensive strategy** in place for managing ETP species, to ensure the UoA does not hinder the recovery of ETP species
	Met?	Y	Y	N
	Justification	The recently implemented strategy has helped to establish a control strategy on the occasional gathering of *Charonia lampas*. The lack of data on this species prevents limits from being established on the over-harvesting of the species and on its recovery, but the strategy has shown the effectiveness of returning these animals to the sea, and it has even been able to prove their survival. This monitoring throughout the fished area would enable SG 80 to be met. However, the lack of a joint strategy considering aspects of the ecology of Ch. lampas means that the minimum requirements for SG 100 scoring cannot be met.		
c	Management strategy evaluation			
	Guide post	The measures are **considered likely** to work, based on **plausible argument** (e.g. general experience, theory or comparison with similar fisheries/species).	There is an **objective basis for confidence** that the measures/strategy will work, based on **information** directly about the fishery and/or	The strategy/comprehensive strategy is mainly based on information directly about the fishery and/or species involved, and a **quantitative analysis**

PI 2.3.2		**The UoA has in place precautionary management strategies designed to:** • **meet national and international requirements;** • **ensure the UoA does not hinder recovery of ETP species.** **Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species.**		
			the species involved.	supports **high confidence** that the strategy will work.
	Met?	Y	Y	N
	Justification	The fisherman voluntarily decided to monitor the catches for this mollusc, and this data is now starting to be analysed. The definitive results will be available at the end of the 2014-2015 campaign. This monitoring has been extended to other fisheries such as the Miño fishery, and the data will complement the impact and survival studies on the fishing practice species. See the table Appendix 1 4 **Table Appendix 1-4 Fishermen monitoring form. Data Source: CEP**		

EMBARCACIÓN	PUERTO	FEBRERO		MARZO		ABRIL		TOTAL	
		Nº	D. de mar	Nº	D. de mar	Nº	D. de mar	Nº	D. de mar
FARO DE GUIA	VIAVÉLEZ			6	14	43	12	49,00	26,00
TRES MARINOS	VIAVÉLEZ			17	12	8	6	25,00	18,00
ZENIT	VIAVÉLEZ			2	11	1	6	3,00	17,00
VICENTE	VIAVÉLEZ			69	12	11	6	80,00	18,00
ISBERT	VIAVÉLEZ			27	14	19	6	46,00	20,00
SORIANA II	VIAVÉLEZ			17	11	8	6	25,00	17,00
RUBEN DAVID	VIAVÉLEZ			45	11	10	2	55,00	13,00
DOMI-JESU	TAPIA	1	4	4	13	1	4	6,00	21,00
EL ROCIN	TAPIA	2	5	2	14	3	12	7,00	31,00
RONDELO	TAPIA	2	5	3	14	1	7	6,00	26,00
PAZ DE MAR	TAPIA	2	6	5	13			7,00	19,00
FARO DE TAPIA	TAPIA	3	3					3,00	3,00
CARMINA	TAPIA	0	1	4	11	3	7	7,00	19,00
PERLA DEL EO	TAPIA					0	3	0,00	3,00
TOTAL		*10*	*24*	*201*	*150*	*108*	*77*	*319*	*251*

		A study from CEP on fishing using miños from May 2013 to August 2014 in the ports of Lastres and Luarca showed that catches of this species represented 1.83% in numbers and 1.53% in weight of the total catches. All *Charonia lampas* caught during this study were discarded, with 99.3% of them found to be alive. 13 specimens caught using the miño fishing practice in the Lastres area on 22, 23, and 24 April 2014 were transferred to the CEP facilities and kept in captivity in order to ascertain their survival when returned to the sea. 100% of the specimens survived on evaluation 15 days after the transfer. At this point, some of the conchs were released alive into the sea, with the remainder kept in the CEP museum aquariums, where the long-term survival rates were also high. All this data indicates there is a base objective whereby the collected data positively influences the evaluation of the species control strategy, and as such, meets SG 80. Additionally, there isn't any quantitative analysis to show a high level of confidence in the data given the recent implementation of these control measures, and as such, SG100 is not met.		
d	Management strategy implementation			
	Guide post		There is some **evidence** that the measures/strategy is being implemented successfully.	There is **clear evidence** that the strategy/comprehensive strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a) or (b).

PI 2.3.2		**The UoA has in place precautionary management strategies designed to:** • **meet national and international requirements;** • **ensure the UoA does not hinder recovery of ETP species.** **Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species.**		
	Met?		Y	N
	Justification	100% of these animals survived the fishing practices, as is shown through biologist studies and fishermen's data. In accordance with the previously collected data, it is inferred that SG 80 is met, but the lack of long term data means SG 100 is not met.		
e	Review of alternative measures to minimize mortality of ETP species			
	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species.	There is a **regular** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species and they are implemented as appropriate.	There is a **biennial** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality ETP species, and they are implemented, as appropriate.
	Met?	Y	Y	N
	Justification	As was indicated in previous sections of this PI, the catch control measures and mortality of *Charonia lampas* implemented by the CEP are both suitable and satisfactory. The regulatory bodies of the Asturian fishery have made it clear they intend to expand the studies and control regulation for this species, which is evident given the need to report the catches and return retained animals of this species to the sea. SG 80 is met. Although the review duration will be extended, it cannot currently be confirmed that they will occur twice yearly over a long period. SG 100 is not met.		
References				
OVERALL PERFORMANCE INDICATOR SCORE:				**80**
CONDITION NUMBER (if relevant):				**NA**

Evaluation Table for PI 2.3.3 – ETP species information

PI 2.3.3		**Relevant information is collected to support the management of UoA impacts on ETP species, including:** • **Information for the development of the management strategy;** • **Information to assess the effectiveness of the management strategy; and** • **Information to determine the outcome status of ETP species.**		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impacts			
	Guide post	The RBF was used to score PI 2.3.1 for the UoA: Qualitative information is **adequate to estimate productivity and susceptibility** attributes for ETP species.	The RBF was used to score PI 2.3.1 for the UoA: Some quantitative information is adequate to assess productivity and susceptibility attributes for ETP species.	Quantitative information is available to assess with a high degree of certainty the **magnitude of UoA-related impacts, mortalities and injuries and the consequences for the status** of ETP species.
	Met?	Y	Y	N
	Justification	When it comes to data relating to the impact on the species, *Charonia lampas*, according to the publication "Libro Rojo de la Fauna de Asturias", it is commonly landed among waste materials from seines, miños, and is usually found at all ports. It is hardly mentioned in publications, even though they are known to be landed in Gijón, Avilés, Cudillero, Oviñana etc. They are likely to be landed throughout the entire Asturian coast. Additionally, and in accordance with the Royal Decree 139/2011, of 4 February, for the development of the List of Wild Species under a Special Protection Regime and from the National Catalogue of Threatened Species, the species included on the List will be subject to specific monitoring by Autonomous Communities in their territorial domains in order to periodically evaluate their conservation status. The autonomous community or city with a statute of autonomy in whose territory these species are located, are to evaluate the conservation status of the species. Data on the incidence of the fishery with respect to the aforementioned species is already being collected. As indicated in the risk-based analysis for PI 2.3.1, quantitative data has been obtained to allow analysis of the productivity and susceptibility attributes, as such meeting SG 80, but not SG 100, given that despite studies having been undertaken to analyse the animals' mortality, sustainable data collection is required to refine the data in the future and achieve a certain level of confidence.		
b	Information adequacy for management strategy			
	Guide post	Information is adequate to support **measures** to manage the impacts on ETP species.	Information is adequate to measure trends and support a **strategy** to manage impacts on ETP species.	Information is adequate to support a **comprehensive strategy** to manage impacts, minimize mortality and injury of ETP species, and evaluate with a **high degree of certainty** whether a strategy is achieving its objectives.
	Met?	Y	Y	N
	Justification	Appropriate data is obtained and can be used to analyse the suitability of the strategy adopted to manage the fishery's impact on the ETP species, as such,		

PI 2.3.3		**Relevant information is collected to support the management of UoA impacts on ETP species, including:** • **Information for the development of the management strategy;** • **Information to assess the effectiveness of the management strategy; and** • **Information to determine the outcome status of ETP species.**
		meeting the SG 80 objective. All the same, there isn't a high level of confidence in objective compliance with this strategy, which at any rate, will be achieved in the long term, and as such, the requirements to attain SG 100 are not met.
References		
OVERALL PERFORMANCE INDICATOR SCORE:		**80**
CONDITION NUMBER (if relevant):		**NA**

Evaluation Table for PI 2.4.1 – Habitats outcome

PI 2.4.1		The UoA does not cause serious or irreversible harm to habitat structure and function, considered on the basis of the area(s) covered by the governance body(s) responsible for fisheries management.		
Scoring Issue		SG 60	SG 80	SG 100
a	Commonly encountered habitat status			
	Guide post	The UoA is **unlikely** to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	The UoA is **highly unlikely** to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	There is **evidence** that the UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.
	Met?	NA(RBF)	NA(RBF)	NA(RBF)
	Justification	Octopus habitats are usually rocky seabeds. In the map provided by the Regional Ministry of Rural Affairs and Fisheries (Figure 7), Asturian fishing grounds are identified based on data provided by the fisheries sector. Information has been collected on depths, the types of seabed, the main categories of fishing gear used and the species caught. Having identified the zone and given that the seabed is classified in the map, we mainly have (http://www.sigmarinoasturias.es) Figure 8: Rock: compact rocky substrate Petón: a high rocky zone that never emerges above the surface Sand: substrate composed of sands of varying grains Mud: substrate formed of very small particles. The information of impact of fishery on habitats encountered was not available therefore the Team decided to use the RBF for the habitat component. In the Appendix 1.2 can be find the CSA Rational Tables: Table 1.2.3.a. CSA Rationale Table: Coast-coastal margin-large rocky banks-large; Table 1.2.3.b. CSA Rationale Table: Shelf-Inner shelf-large rocky banks-large; Table 1.2.3.c. CSA Rationale Table: Coast-coastal margin-sediment terraces-fine; Table 1.2.3.d. CSA Rationale Table: Shelf-Inner shelf-sediment plains-fine; undertaken by the assessment team and stakeholders during the RBF meeting. The final score for the CSA an therefore the overall score for the PI was 95		
b	VME habitat status			
	Guide post	The UoA is **unlikely** to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	The UoA is **highly unlikely** to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	There is **evidence** that the UoA is highly unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.
	Met?	NA(RBF)	NA(RBF)	NA(RBF)
	Justification	See SGa)		
c	**Minor habitat status**			
	Guide post			There is **evidence** that the UoA is highly unlikely to reduce structure and

PI 2.4.1		**The UoA does not cause serious or irreversible harm to habitat structure and function, considered on the basis of the area(s) covered by the governance body(s) responsible for fisheries management.**		
				function of the minor habitats to a point where there would be serious or irreversible harm.
	Met?			NA(RBF)
	Justification	See SGa)		
References		http://www.sigmarinoasturias.es RBF meeting		
OVERALL PERFORMANCE INDICATOR SCORE:				**95**
CONDITION NUMBER (if relevant):				**NA**

Evaluation Table for PI 2.4.2 – Habitats management strategy

PI 2.4.2		There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats.		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guide post	There are **measures** in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.	There is a **partial strategy** in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.	There is a **strategy** in place for managing the impact of all MSC UoAs/non-MSC fisheries on habitats.
	Met?	Y	Y	N
	Justification	Although there isn't a significant impact on the habitat, the MSC consider it necessary for the UoA to score these PI, even though it is implicit or based on a statement of intentions to maintain minimal risk. The RBF of PI 2.4.1. has indicated that the SG80 level is surpassed when all practices are considered and indicates the selectivity and limited impact of practices that represent a higher percentage of catches, as is the case for traps. Fishing zone data has been collected since 2014 and it is geolocated using their global positioning system, which means they can be overlaid on seafloor maps, and as such, monitor the most sensitive areas. Therefore, SG80 is met, given that we consider the aforementioned data collection is a partial strategy. All the same, SG100 is not met given the lack of strategy to manage the impact of the other fisheries.		
b	Management strategy evaluation			
	Guide post	The measures are **considered likely** to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/habitats).	There is some **objective basis for confidence** that the measures/partial strategy will work, based on **information directly about the UoA and/or habitats** involved.	**Testing** supports **high confidence** that the partial strategy/strategy will work, based on **information directly about the UoA and/or habitats** involved.
	Met?	Y	Y	N
	Justification	The recent implementation of fishing point monitoring means there isn't a high level of confidence in the seafloor control strategy being effective, and as such, SG100 would not be met. SG 80 is met, however, given that the records can be used to locate and avoid fishing zones in sensitive areas, with respect to the species' habitat. This data will allow reproduction protection areas to be established when the data series is long enough, for example.		
c	Management strategy implementation			
	Guide post		There is **some quantitative evidence** that the measures/partial strategy is being implemented successfully.	There is **clear quantitative evidence** that the partial strategy/strategy is being implemented successfully and is achieving its objective, as outlined in scoring issue (a).
	Met?		Y	N
	Justification	There is some quantitative evidence that the strategy is ensuring the habitat remains in good condition for the recruitment to be successful year on year, despite the obvious natural variations in the population's biomass. However, there isn't enough clear quantitative evidence that the measures were satisfactorily		

PI 2.4.2		**There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats.**		
		implemented given that the data collection measures were recently applied. As such, SG80 is met, but SG100 is not met.		
d	**Compliance with management requirements and other MSC UoAs'/non-MSC fisheries' measures to protect VMEs**			
	Guide post	There is **qualitative evidence** that the UoA complies with its management requirements to protect VMEs.	There is **some quantitative evidence** that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.	There is **clear quantitative evidence** that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.
	Met?	Y	Y	N
	Justification	The collected records and qualitative data indicate they are not affecting vulnerable marine ecosystems, and some qualitative data indicates the advisory unit complies with management requirements and protection measures for vulnerable ecosystems, as such meeting SG80. All the same, the lack of underwater sampling leads to a lack of clear quantitative evidence, meaning SG100 is not met.		
References				
OVERALL PERFORMANCE INDICATOR SCORE:				**80**
CONDITION NUMBER (if relevant):				**NA**

Evaluation Table for PI 2.4.3 – Habitats information

PI 2.4.3		Information is adequate to determine the risk posed to the habitat by the UoA and the effectiveness of the strategy to manage impacts on the habitat.		
Scoring Issue		SG 60	SG 80	SG 100
a	Information quality			
	Guide post	The CSA was used to score PI 2.4.1 for the UoA: Qualitative information is adequate to estimate the types and distribution of the main habitats.	The CSA was used to score PI 2.4.1 for the UoA: Some quantitative information is available and is adequate to estimate the types and distribution of the main habitats.	The distribution of all habitats is known over their range, with particular attention to the occurrence of vulnerable habitats.
	Met?	Y	Y	N
	Justification	The General Directorate for Maritime Fishing has produced a map of Asturian fishing grounds, based on personal interviews with vessel owners and fishermen from associations in the Principality of Asturias that use different fishing practices, in order to include all the areas where the Asturian fishing fleet operates. This work has resulted in the identification, geographical definition, and characterisation of the 226 fishing grounds where the Asturian fishing fleet operates, covering a total area of 984,938 ha. The target species, depth, seafloor type, etc. is indicated for each one. The association representatives agreed to provide their data on fishing areas and collaborate on collecting more habitat data during the working group meeting. This data is now available. The quantitative data obtained, and supported by GIS studies in the case of the octopus trap, means the main types of habitats can be inferred, and as such, meets SG 80. More data would be required to locate the most vulnerable habitats and therefore, attain the SG 100 objective.		
b	Information adequacy for assessment of impacts			
	Guide post	**The CSA was used to score PI 2.4.1 for the UoA:** Qualitative information is adequate to estimate the consequence and spatial attributes of the main habitats.	**The CSA was used to score PI 2.4.1 for the UoA:** Some quantitative information is available and is adequate to estimate the consequence and spatial attributes of the main habitats.	The physical impacts of the gear on all habitats have been quantified fully.
	Met?	Y	Y	N
	Justification	The CSA applied for PI 2.4.1 reflects the quantitative data available and the main habitat attributes. Additionally, the physical impacts of each fishing practice have not been completely ascertained. They do not meet SG 100.		
c	Monitoring			
	Guide post		Adequate information continues to be collected to detect any increase in risk to the main habitats.	Changes in habitat distributions over time are measured.
	Met?		Y	N
	Justification	The ongoing data collection to detect the changes occurring in fishing habits and the effects on the different fishing grounds. SG 80 is met. A long-term data series is required to attain SG 100.		

PI 2.4.3	**Information is adequate to determine the risk posed to the habitat by the UoA and the effectiveness of the strategy to manage impacts on the habitat.**	
References		
OVERALL PERFORMANCE INDICATOR SCORE:		**80**
CONDITION NUMBER (if relevant):		**NA**

Evaluation Table for PI 2.5.1 – Ecosystem outcome

PI 2.5.1		**The UoA does not cause serious or irreversible harm to the key elements of ecosystem structure and function.**		
Scoring Issue		SG 60	SG 80	SG 100
a	Ecosystem status			
	Guide post	The UoA is **unlikely** to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	The UoA is **highly unlikely** to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	There is **evidence** that the UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.
	Met?	NA (RBF)	NA (RBF)	NA (RBF)
	Justification	The information to support an analysis of the impact of the fishery on the ecosystem is not available. The assessment team decided that it would be appropriate to use the RBF tool for the Ecosystem outcome. In the Appendix 1.2 can be find the Scale Intensity Consequence Analysis (SICA) Table 1.2.4.a. undertaken by the assessment team and stakeholders during the RBF meeting. The overall score for these PI was 80.		
References		RBF meeting.		
OVERALL PERFORMANCE INDICATOR SCORE:				**80**
CONDITION NUMBER (if relevant):				**NA**

Evaluation Table for PI 2.5.2 – Ecosystem management strategy

PI 2.5.2		There are measures in place to ensure the UoA does not pose a risk of serious or irreversible harm to ecosystem structure and function.		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guide post	There are **measures** in place, if necessary which take into account the **potential impacts** of the fishery on key elements of the ecosystem.	There is a **partial strategy** in place, if necessary, which takes into account **available information and is expected to restrain impacts** of the UoA on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance.	There is a **strategy** that consists of a **plan**, in place which contains measures to **address all main impacts of the UoA** on the ecosystem, and at least some of these measures are in place.
	Met?	Y	Y	N
	Justification	We consider the measures contained in the octopus MP consider the nature and role of the octopus fishery in the ecosystem, although as has been shown in the analysis, its impact is very low, given it is not an aggressive practice. Although very limited data was collected on this indicator a few years ago, a monitoring system based on in situ sampling and data collection has recently been implemented, which includes all the fisheries' non-target species. That partial strategy will allow an SG 80 score to be attained. All the same, this is a fledgling ecosystem management system and cannot be used to attain the SG 100 objective, given that it doesn't cover all the fisheries' main potential impacts.		
b	Management strategy evaluation			
	Guide post	The **measures** are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/ ecosystems).	There is **some objective basis for confidence** that the measures/partial strategy will work, based on some information directly about the UoA and/or the ecosystem involved	**Testing** supports **high confidence** that the partial strategy/strategy will work, based on information directly about the UoA and/or ecosystem involved
	Met?	Y	Y	N
	Justification	The measures implemented in 2014 implied the revision of the ecosystems where the fishery is already collecting the specimens. Thus, a GIS system has been implemented to check the variation of the catches by area in the UoA, among other measures, would serve as indicator to prove that there is a basis for confidence in that the strategy works and does not affect the zones of particular ecosystemic interest, and as such, meeting SG 80. All the same, this objective basis has not been suitably tested, meaning the SG100 objective is not met.		
c	**Management strategy implementation**			
	Guide post		There is **some evidence** that the measures/partial strategy is being **implemented successfully**.	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a).
	Met?		Y	N
	Justifi	The continuity of the target samplings undertaken onboard several boats operating in a random area have underlined the relative inocuity and relative harmless to the		

PI 2.5.2		**There are measures in place to ensure the UoA does not pose a risk of serious or irreversible harm to ecosystem structure and function.**
	cation	ecosystem. This indicates some evidence that the measures are being implemented satisfactorily, but they need to be sustained in the future to clearly verify the objectives to **address all main impacts of the UoA** on the ecosystem, for maintaining or reducing the impact of the practices to catch octopus, the fishing intensity or the time scale on the overall ecosystem. SG 80 is met, but SG 100 is not met.
References		
OVERALL PERFORMANCE INDICATOR SCORE:		**80**
CONDITION NUMBER (if relevant):		

Evaluation Table for PI 2.5.3 – Ecosystem information

PI 2.5.3		There is adequate knowledge of the impacts of the UoA on the ecosystem.		
Scoring Issue		SG 60	SG 80	SG 100
a	Information quality			
	Guide post	Information is adequate to **identify** the key elements of the ecosystem.	Information is adequate to **broadly understand** the key elements of the ecosystem.	
	Met?	Y	Y	
	Justification	As previously mentioned, the relevant data has improved in recent years (2014-2015). Limited data was previously collected. All the same, the sampling measures implemented in all the fishing zones, collecting detailed data, mean the role of this fishery can be understood, as well as the impact on the ecosystem, as such, meeting SG 80.		
b	Investigation of UoA impacts			
	Guide post	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, but **have not been investigated** in detail.	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, and **some have been investigated in detail**.	Main interactions between the UoA and these ecosystem elements can be inferred from existing information, and **have been investigated in detail**.
	Met?	Y	Y	N
	Justification	The impacts of the management or advisory unit can be inferred based on the data obtained on species composition, community distribution, and the trophic structure, as such, attaining SG 80. If the data is sustained or even augmented, details of the ecosystem interactions in the evaluation unit could be obtained in a few years. Until then, SG 100 is not met.		
c	Understanding of component functions			
	Guide post		The main functions of the components (i.e., P1 target species, primary, secondary and ETP species and Habitats) in the ecosystem are **known**.	The impacts of the UoA on P1 target species, primary, secondary and ETP species and Habitats are identified and the main functions of these components in the ecosystem are **understood**.
	Met?		Y	N
	Justification	The data collected to date means the main functions and interactions of the species collected by the practices can be partially differentiated, along with the affected habitats, as such, meeting the SG 80 objective. As was previously indicated, the recent study on the impacts on the ecosystem does not allow for comprehensive understanding of the interactions between species, and as such, the SG 100 score is not met.		
d	Information relevance			
	Guide post		Adequate information is available on the impacts of the UoA on these components to allow some of the main consequences for the ecosystem to be inferred.	Adequate information is available on the impacts of the UoA on the components **and elements** to allow the main consequences for the ecosystem to be inferred.

PI 2.5.3		**There is adequate knowledge of the impacts of the UoA on the ecosystem.**		
	Met?		Y	N
	Justification	Data collected on the impacts of the advisory unit on the ecosystemic parameters or elements is appropriate, and the variations in the abundance of the caught species mean some of the main consequences can be inferred, as such, meeting SG 80. All the same, this data does not extend to the elements, and as such, SG 100 is not attained.		
e	Monitoring			
	Guide post		Adequate data continue to be collected to detect any increase in risk level.	Information is adequate to support the development of strategies to manage ecosystem impacts.
	Met?		Y	N
	Justification	Increasingly exhaustive data is being obtained, which will allow the increase in risk level to be detected, and as such, SG80 is met. All the same, there is a need to both expand and improve the data in order to develop specific strategies to correctly manage the risk of ecosystemic impact given the relatively recent data collection measures. This means that SG100 is not met		
References				
OVERALL PERFORMANCE INDICATOR SCORE:				**80**
CONDITION NUMBER (if relevant):				**NA**

Evaluation Table for PI 3.1.1 – Legal and/or customary framework

PI 3.1.1		**The management system exists within an appropriate legal and/or customary framework which ensures that it:** • **Is capable of delivering sustainability in the UoA(s); and** • **Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and** • **Incorporates an appropriate dispute resolution framework.**		
Scoring Issue		SG 60	SG 80	SG 100
a	Compatibility of laws or standards with effective management			
	Guide post	There is an effective national legal system **and a framework for cooperation** with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2	There is an effective national legal system and **organised and effective cooperation** with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2.	There is an effective national legal system and **binding procedures governing cooperation with other parties** which delivers management outcomes consistent with MSC Principles 1 and 2.
	Met?	Y	Y	Y
	Justification	Spain has ratified in 1997 the United Nations Convention on the Law of the Sea (UNCLOS) and also forms part of the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR). The EU is also a contracting party of these two conventions. Spain has also adopted the FAO Code of Conduct for Responsible Fisheries in 1995 and is a member state of the FAO Committee on Fisheries (COFI) which has recently endorsed (June 2014) the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (SSF Guidelines). The European fishing fleets are managed within the EU CFP (last reform took effect on 1 January 2014). Based on the general framework of the CFP, the EU establishes suitable management and control measures for the fisheries operating in their waters, or implies the participation of boats with the European flag, or even EU citizens in fisheries in non-European waters. It must be considered that the CFP is in accordance with the objectives of MSC principles 1 and 2. The EC receives advice from various scientific organizations and has several scientific advisory bodies: The Scientific, Technical and Economic Committee for Fisheries (STECF), the International Council for the Exploration of the Sea (ICES) and the Scientific Advisory Committee of the General Fisheries Commission for the Mediterranean (GFCM). In Spain, the Instituto Español de Oceanografía, mainly and the Consejo Superior de Investigaciones Científicas (CSIC), as well as a range of universities and other regional research centres undertake the research projects that form essential aspects of fisheries management. The Spanish Government, through the Secretaría General de Pesca (SGP), part of the MAGRAMA is responsible for applying the management measures to the national fisheries sector. The 2001 Fishing Law covers the directives of the CFP, adapts them to the specific circumstances of Spanish fishing sector. In the Spanish legal system, the Spanish constitution establishes the exclusive jurisdiction of the autonomous regions in matters of inland fishing, shellfish harvesting and aquaculture. Article 10.1.13 of the Statute of Autonomy of the Principality of Asturias, grants exclusive jurisdiction to the Principality of Asturias in matters of inland fishing and shellfish harvesting. Based on the foregoing, Fisheries Act 2/1993 of the principality of Asturias was enacted. Based on the above, it is considered that there is an effective national legal system and binding procedures governing cooperation with other parties, which delivers		

PI 3.1.1		**The management system exists within an appropriate legal and/or customary framework which ensures that it:** • **Is capable of delivering sustainability in the UoA(s); and** • **Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and** • **Incorporates an appropriate dispute resolution framework.**		
		management outcomes consistent with MSC Principles 1 and 2. Therefore, this SI reaches SG100.		
b	Resolution of disputes			
	Guide post	The management system incorporates or is subject by law to a **mechanism** for the resolution of legal disputes arising within the system.	The management system incorporates or is subject by law to a **transparent mechanism** for the resolution of legal disputes which is **considered to be effective** in dealing with most issues and that is appropriate to the context of the UoA.	The management system incorporates or is subject by law to a **transparent mechanism** for the resolution of legal disputes that is appropriate to the context of the fishery and has been **tested and proven to be effective**.
	Met?	Y	Y	Y
	Justification	The Court of Justice of the European Union (CJEU) is the institution of the EU that encompasses the whole judiciary and it is the highest court in the EU legal system. The Court constitutes the judicial authority of the EU and, in cooperation with the courts and tribunals of the Member States, it ensures the uniform application and interpretation of EU law. At a national level, the Spanish legal system is used as the main mechanism to resolve legal disputes. When it comes to fishing infractions, the disciplinary procedures will invariably be open as a result of the resolution adopted to that effect by the Delegate of the Regional Government in the Spanish Autonomous Region in question, in this case the Principality of Asturias. The management system is subject by law to apply a transparent mechanism for resolving legal disputes: The sea fishing disciplinary procedures will be undertaken in accordance with the principle of transparency in the procedures. To those effects, the interested parties will have the right to receive updated data on the current status of their procedures, to get access to the relevant documents, and prior to the hearing, the interested parties could present allegations and provide documents they consider relevant. With the aim of ensuring a completely transparent procedure and the efficacy of the government itself, and to also ensure the due defence of the accused and the interests of all the other parties that may be affected, each initiated disciplinary procedure will follow a systematic course, successively incorporating all the documents, statements, acts, administrative applications, notifications, and other appropriate procedures in the correct order. A procedure initiated as such will be completed and will continue to be the responsibility of the competent body throughout. The fishers or industry representatives can use the complete legal process. The management system has transparent and explicit mechanisms for dispute resolution and which are appropriate to the fishery's context. This mechanism have been tested and shown to be effective since no relevant conflicts were observed in the fishery. Based on the above, it is considered that the management system incorporates an effective and transparent mechanism for the resolution of legal disputes in a manner consistent with MSC Principles 1 and 2. Therefore, this SI reaches SG100.		
c	Respect for rights			
	Guide	The management system	The management system	The management system

PI 3.1.1		**The management system exists within an appropriate legal and/or customary framework which ensures that it:** • **Is capable of delivering sustainability in the UoA(s); and** • **Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and** • **Incorporates an appropriate dispute resolution framework.**		
	post	has a mechanism to **generally respect** the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	has a mechanism to **observe** the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	has a mechanism to **formally commit** to the legal rights created explicitly or established by custom of people dependent on fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.
	Met?	Y	Y	Y
	Justification	The rights of fishermen are explicit and legally shielded by the legal coding system (indefinite licences renewed annually) which regulates formal access to the fishing industry. In 1998 (Resolution of 18 June 1998, of the Department of Agriculture, creating the official census of the principality of Asturias's fishing fleet) access was given to all those that had any fishery activity in the last two years. In addition, the right to the recreational fishing of octopus from a boat and on foot is legally recognised (Decree 25/2006, of 15 March, regulating recreational sea fishing in the Principality of Asturias). The operational framework used to regulate the fishing industry is consistent with laws and legal frameworks at the local, national and international levels. In this regard, no tension or conflict between fishermen and/or between fisherman and the Administration regarding fishing rights has been observed. Moreover, via the CFP, the EU management system creates, respects, and ensures legal rights, which are expressly created or established for the practices of persons dependent on fishing in a manner consistent with the sustainable use of the resources while minimizing the environmental impact. The implementation of the CFP by Spain, as a member country of the EU, ensures that these legal rights are taken into account in the national context of the fishery. Based on the above, it is considered that the management system has a mechanism to formally commit to the legal rights of people dependent on fishing for food and livelihood in a manner consistent with MSC Principles 1 and 2. Therefore, this SI reaches SG100.		
References				
OVERALL PERFORMANCE INDICATOR SCORE:				**100**
CONDITION NUMBER (if relevant):				**NA**

Evaluation Table for PI 3.1.2 – Consultation, roles and responsibilities

PI 3.1.2		**The management system has effective consultation processes that are open to interested and affected parties.** **The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties**		
Scoring Issue		SG 60	SG 80	SG 100
a	Roles and responsibilities			
	Guide post	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are **generally understood**.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are **explicitly defined and well understood for key areas** of responsibility and interaction.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are **explicitly defined and well understood for all areas** of responsibility and interaction.
	Met?	Y	Y	Y
	Justification	All organisations, institutions and individuals involved in the management system are easily identifiable and explicitly defined in the legislation (see section 3.5b_P3: Particulars of the recognised groups with interests in the UoA). Jurisdictions in matters of fisheries management are clearly defined between Spain's government and the autonomous regions through the Spanish constitution and each region's autonomy statutes. The clear legal framework and good relationship between national and regional institutions make it possible for there to be no problems in this regard. The Office of Fisheries Management within the DGPM of the Principality of Asturias is vested with the functions of fisheries management, the protection of marine resources, the inspection and monitoring of extraction (Office of Fisheries Inspection and Surveillance), transport, marketing and consumption centres, functions in matters of non-university maritime education and training, and fishery research and experimentation (CEP). At the national level, Maritime Rescue and the Office of the Harbour Master are responsible for matters relating to occupational safety and fishing boats. In addition to the CEP, the University of Oviedo and the Gijón Oceanographic Centre belonging to the IEO also carry out research on this fishery and resource. Fishermen who are part of the University of Asturias are integrated into one of the four fishing guilds (Puerto de Vega, Ortiguera, Viavélez and Tapia de Casariego). The fishing guilds – which are also responsible for managing the wholesale fish markets – are represented in the Federation of Fishermen's Guilds of the Principality of Asturias, which has regional jurisdiction and which is, in turn, represented in the National Federation of Guilds. Also affiliated with the guild is the position of Authorised Fisheries Officer, whose roles and responsibilities are clearly defined by Decree 23/1995 of 2 March (1. Ensure compliance with the rules and regulations governing fishery; 2. Collaborate with monitoring of Principality of Asturias' Inland Waters Surveillance in monitoring compliance with the legislation on fisheries; and 3. Report regularly on the state of fishery resources). The Fisheries Officer has no power to impose a sanction; rather, should he believe that a violation is taking place he must inform the competent authority (Civil Guard or the Office of Fisheries Inspection and Surveillance of the DGPM Based on the above, it can be concluded that the roles and functions of all areas of responsibility and interaction involved in fisheries are clear, well defined, and		

PI 3.1.2		**The management system has effective consultation processes that are open to interested and affected parties.** **The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties**		
		understood by all parties. Therefore this SG get 100.		
b	Consultation processes			
	Guide post	The management system includes consultation processes that **obtain relevant information** from the main affected parties, including local knowledge, to inform the management system.	The management system includes consultation processes that **regularly seek and accept** relevant information, including local knowledge. The management system demonstrates consideration of the information obtained.	The management system includes consultation processes that **regularly seek and accept** relevant information, including local knowledge. The management system demonstrates consideration of the information and **explains how it is used or not used**.
	Met?	Y	Y	N
	Justification	The DGPM (the sections of Management, Surveillance and Inspection and the CEP) and the guilds take part in the consultation process for drafting the MP. Through this process, relevant scientific and technical information is obtained on the biology of the resource and the status of the fishery, and the local knowledge of fishermen is also included. The climate of dialogue is good and collaborative and the outcome is an absence of conflict between the parties mentioned and the approval of a MP by consensus. The management system demonstrates that it has taken into consideration the information obtained; in the various meetings held to prepare the MP, the opinion of all stakeholders is expressed and there is the opportunity to subsequently send the changes requested in writing to the DGPM. However, the end use of all the information is not clearly explained nor are the reasons for taking certain decisions (e.g., changing the closed season) given in writing. The reports drafted annually by the CEP on the fishing campaign surveillance are not publicly available by default; however, the information is regularly shared with stakeholders in the fishing campaign surveillance and preparation meetings. Based on the above, it can be concluded that the management system regularly seek and accept relevant information and demonstrates consideration of it, but do not always explain how it is used, therefore this SI get SG 80.		
c	Participation			
	Guide post		The consultation process **provides opportunity** for all interested and affected parties to be involved.	The consultation process provides **opportunity and encouragement** for all interested and affected parties to be involved, and **facilitates** their effective engagement.
	Met?		Y	Y
	Justification	There are consultation processes that allow all interested parties effective involvement based on different mechanisms of representation. The EU Advisory Councils are one of the main mechanisms, but at a national level, the fishermen are also represented by fishermen's associations and federations in the different forums		

PI 3.1.2		**The management system has effective consultation processes that are open to interested and affected parties.** **The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties**
		and consultation mechanisms, whether they are general in nature or specific to each fishery. The Common F isheries Policy Reform process allowed all the interested parties, including the civil society, to provide their comments to the Green Paper on Fishing in Europe that formed the basis for the new CFP. On a national level, the Spanish government regularly meets with the sector to tackle shared interest issues and learn of their opinions on the issues that affect their activity. The Consejo Asesor de Medio Ambiente (CAMA, Environment Advisory Council) of MAGRAMA is a forum where environmental NGOs and the fishing sector have the opportunity to discuss environmental issues, including those related to the health of the seas and the existing issues, and where action measures are proposed to try to improve the identified negative aspects. Fishing activity related aspects are discussed in CAMA. The process of consultations at the level of the Principality of Asturias provides the opportunity for, and encourages all stakeholders to, participate in meetings for drafting the MP in an open and transparent process. There is participation by the DGPM and the eight guilds that are part of the MP (Cudillero, Oviñana, Luarca, Puerto de Vega, Ortiguera, Viavélez, Tapia de Casariego and Figueras) and it was adopted unanimously, since the DGPM does not impose a measure without consensus with the fishing sector. Although there are other potential stakeholders, such as conservation NGOs, recreational fishing associations (e.g., Volver al Pedreru) and fishermen's guilds east of the San Esteban de Pravia estuary (outside the scope of the MP), we have not observed interest by any of them in participating in this process. We are not aware of any request to participate which has been denied by the DGPM. Based on the above, it is clear that the consultation process provides opportunity and encouragement for all to get involved, and facilitates their effective engagement; therefore this SI reaches SG 100.
References		
OVERALL PERFORMANCE INDICATOR SCORE:		95
CONDITION NUMBER (if relevant):		**NA**

Evaluation Table for PI 3.1.3 – Long term objectives

PI 3.1.3		**The management policy has clear long-term objectives to guide decision-making that are consistent with MSC fisheries standard, and incorporates the precautionary approach.**		
Scoring Issue		SG 60	SG 80	SG 100
a	Objectives			
	Guide post	Long-term objectives to guide decision-making, consistent with the MSC fisheries standard and the precautionary approach, are **implicit** within management policy.	Clear long-term objectives that guide decision-making, consistent with MSC fisheries standard and the precautionary approach are **explicit** within management policy.	Clear long-term objectives that guide decision-making, consistent with MSC fisheries standard and the precautionary approach, are **explicit** within **and required by** management policy.
	Met?	Y	Y	Y
	Justification	The new EU CFP set of rules for managing European fishing fleets and for conserving fish stocks, aiming to ensure that fishing and aquaculture are environmentally, economically and socially sustainable and that they provide a source of healthy food for EU citizens. Its goal is to foster a dynamic fishing industry and ensure a fair standard of living for fishing communities. The current policy stipulates that between 2015 and 2020 catch limits should be set that are sustainable and maintain fish stocks in the long term and it also does away with the wasteful practice of discarding through the introduction of a landing obligation by no later than 2019. The CFP adopts a cautious approach which recognises the impact of human activity on all components of the ecosystem and seeks to make fishing fleets more selective in what they catch, and to phase out the practice of discarding unwanted fish. This way the CFP is committed not only to sustainability and to applying the pre-cautionary principle to fisheries management, but also to an 'ecosystem-based approach'. Nationally, Spain ratified the Convention on Biological Diversity in 1993. Its objectives are the conservation of biodiversity, the sustainable use of its components and the fair and equitable sharing of benefits arising from the utilisation of genetic resources. Act 3/2001, of 20 March, on State Marine Fisheries establishes as objectives the oversight of the balanced and responsible exploitation of fisheries resources, the promotion of sustainable development and the adoption of the necessary measures to protect, preserve and restore the said resources and their ecosystems, while at the same time it intends to improve the conditions in which fishing activities are carried out and the standard of living of the fishermen. The Statute of Autonomy of the Principality of Asturias (Organic Law 1/1999) sets out the jurisdiction of Asturias with regard to the regulation of shellfish harvesting and inland fishing and the protection of the ecosystems in which these activities take place. Moreover, within the DGPM' fisheries policy, the long-term objectives for this fishery are implicitly defined, guide decision-making and are consistent with the Principles 1 and 2 of the MSC. The precautionary approach is inherent in the management policy and the information available is applied on a regular basis to the design of the fishery MP. Certain general objectives are spelt out in Fisheries Act 2/1993, such as that the DGPM "shall promote the improvement of production structures in the fisheries sector and, in particular, foster the renewal and modernisation of fishing vessels in order to increase productivity, health and safety at work and the improvement of the quality of the products handled, taking into account the need to adapt the fishing effort to the state of resources and selectivity of the gear to use". Based on the above, it is clear that the management policy has clear long-term		

PI 3.1.3		**The management policy has clear long-term objectives to guide decision-making that are consistent with MSC fisheries standard, and incorporates the precautionary approach.**
		objectives to guide decision-making that are consistent with MSC fisheries standard; therefore this SI reaches SG 100
References		
OVERALL PERFORMANCE INDICATOR SCORE:		**100**
CONDITION NUMBER (if relevant):		**NA**

Evaluation Table for PI 3.2.1 Fishery-specific objectives

PI 3.2.1		**The fishery-specific management system has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2.**		
Scoring Issue		SG 60	SG 80	SG 100
a	Objectives			
	Guide post	**Objectives**, which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are **implicit** within the fishery-specific management system.	**Short and long-term objectives**, which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are **explicit** within the fishery-specific management system.	**Well defined and measurable short and long-term objectives**, which are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery-specific management system.
	Met?	Y	N	N
	Justification	The MP for the Octopus in Asturias implicitly determines objectives consistent with achieving the outcomes expressed in Principles 1 and 2 of the MSC. Certain general objectives are also spelt out in the Law 2/1993 of the Principality of Asturias (see PI 3.1.3). However, short- and long-term objectives are not clearly spelt out in the MP; it states explicitly only that the plan's objective is to preserve the resource and improve its marketing within the geographical scope of the participating fishermen's guilds (Resolution of 26 November 2014). The lack of specificity in the objectives shows that these are not consistent with achieving the results expressed in Principles 1 and 2 of the MSC. Based on the above, it can be concluded that the fishery-specific management system has implicit objectives which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, nevertheless those objectives (in a short and long-term) are clearly not explicit, well defined and measurable; therefore this SI gets SG 60.		
References				
OVERALL PERFORMANCE INDICATOR SCORE:				**60**
CONDITION NUMBER (if relevant):				**3**

Evaluation Table for PI 3.2.2 – Decision-making processes

PI 3.2.2		**The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery.**		
Scoring Issue		SG 60	SG 80	SG 100
a	Decision-making processes			
	Guide post	There are some decision-making processes in place that result in measures and strategies to achieve the fishery-specific objectives.	There are **established** decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.	
	Met?	Y	Y	
	Justification	The decision making process in the fishery is a co-management system, both for the design of the MP as for everyday decision-making. The decision-making process incorporates both the scientific and technical knowledge of scientists and technicians from the DGPM (especially the CEP Office of Fisheries Inspection and Surveillance), from the IEO and the University of Oviedo, as well as the local knowledge of fishermen. The guilds, as institutions representing the productive sector, are actively involved in taking decisions through face-to-face meetings and formal communications. From the standpoint of scientific research, the CEP contributes to the management objectives by improving and integrating scientific knowledge into the fishery. Although the CEP is a small centre with limited staff, there is a strong commitment to get all the information possible in order to reduce the uncertainties surrounding the biology/ecology of the octopus and to collect all the data, both dependent and independent of the fishery, that may help it to be better monitored. Communication between the parties (cofradías and DGPM) is direct and easy, allowing high flexibility in the decision-making process. The decision-making process is an administrative procedure (regulated by Act 30/1992 of 26 November on the Legal Regime of Public Administrations and the Common Administrative Procedure). Regardless of this process, first the DGPM polls the guilds about the MP for the next campaign. It subsequently sends a draft plan to all the guilds, which have a period of time to submit their observations. At some point in the process, there is a face-to-face meeting between the DGPM and the fishermen's guilds participation in the plan and the conditions of the MP are agreed. The DGPM subsequently publishes the plan in the Official Gazette of the Principality of Asturias (Spanish acronym BOPA), after which the guilds have a new deadline to, if they so wish, bring an administrative appeal before the Board of Administrative Litigation of the Superior Court of Justice of Asturias. In any event, the good climate and understanding between the parties means that things have never come to that point. All this results in measures and strategies to achieve the objectives of the fishery, based on a clear and established decision-making process; therefore this SI reaches SG 80. .		
b	Responsiveness of decision-making processes			
	Guide post	Decision-making processes respond to **serious issues** identified in relevant research,	Decision-making processes respond to **serious and other important issues**	Decision-making processes respond to **all issues** identified in relevant research,

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery.		
		monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take some account of the wider implications of decisions.	identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.	monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.
	Met?	Y	Y	N
	Justification	The active participation of the CEP and the fishermen allows the decision-making process to respond to serious and important issues relevant in terms of research, fishery surveillance and consultation (e.g., the establishment of an onboard monitoring plan, GPS satellite tracking of vessels, databases of catches, CPUE, etc.). This process works on a regular basis and is able to respond quickly to any event that affects the fishery due to the harmony between managers and fishermen. However, not all topics are addressed (e.g., the influence of climatic factors on the octopus population) and there is also a lack of fishery status indicators that could guide solid, day-to-day decision-making. Nevertheless, the implications of the decisions taken around the more serious and important issues (but not to all issues) on fisheries management (e.g reproductive closure, minimum size, etc.) are considered, therefore this SI gets a SG of 80. However the SG100 is not met.		
c	Use of precautionary approach			
	Guide post		Decision-making processes use the precautionary approach and are based on best available information.	
	Met?		Y	
	Justification	Ley 2/1993 on Fisheries of the Principality Asturias has a precautionary approach because it establishes that the improvement of the fisheries sector shall be promoted taking into account "the need to adapt the fishing effort to the situation of the resources". The precautionary approach is inherent in the decision-making process and is applied. The decision-making process is based on the best information available and, in addition, the DGPM in general – and the CEP in particular – make a great effort to get the best information available; if there is no relevant information, it responds quickly by designing a study to cover these gaps. A clear example of this is the project commissioned to the consultancy firm SIGMA SL to carry out during the 2014-15 campaign sampling on board the boats (features of the fishing gear, fishing zones, retained catch, discards, ETP species, etc.), install GPS/GPRS devices in ten boats and proceed to the marketing/release/recapture of octopus. Although the DGPM does not suggest fishery closures when indicators like the CPUE fall, the Fisheries Act 2/1993 of the Principality of Asturias provides that octopus fishing boats should also have licences for other coastal fishing gear, and thus, in practice, it is the fishermen themselves who regulate themselves and leave fishing when profits decline. The entire system uses a precautionary approach based on the best scientific and technical information available, so the SI gets a SG of 80..		
d	Accountability and transparency of management system and decision-making process			
	Guide	Some information on the	**Information on the**	Formal reporting to all

PI 3.2.2		**The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery.**		
	post	fishery's performance and management action is generally available on request to stakeholders.	**fishery's performance and management action is available on request**, and explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.	interested stakeholders **provides comprehensive information on the fishery's performance and management actions** and describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.
	Met?	Y	Y	N
	Justification	During the consultations for the drafting of the MP each year, and during the decision-making process, information is offered on the current status and historical evolution of different fishery indicators (catches, sales, CPUE, price, octopus weight distribution, etc.). When a guild requests information, all or part of the fishery surveillance report is provided to it. However, this report – which is prepared by CEP staff – is merely descriptive and does not do a deep analysis of the data (e.g., statistical, modelling or prediction methods) nor does it give recommendations on possible measures to take. One example is the recent report from the 2013-14 campaign in which it states that "this has been the worst campaign since records have been kept", however it does not explain the possible causes or propose any actions to take. This information is not exhaustive nor is it distributed automatically to all stakeholders, and it does not describe how the management system responds to the new information and recommendations arising from research on and/or assessment of the fishery. There is an established decision-making process, although it does not seem to be an entirely transparent process since the information is not publicly accessible. Nevertheless, at the meetings attended by CEP technicians, these technicians advise the DGPM and the guilds on the status of the fishery and on decision-making. Based on the above, it can be concluded that the information is available and given upon request, but there is not a formal reporting to all stakeholders; therefore this SI gets SG 80.		
e	Approach to disputes			
	Guide post	Although the management authority or fishery may be subject to continuing court challenges, it is not indicating a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability for the fishery.	The management system or fishery is attempting to comply in a timely fashion with judicial decisions arising from any legal challenges.	The management system or fishery acts proactively to avoid legal disputes or rapidly implements judicial decisions arising from legal challenges.
	Met?	Y	Y	Y
	Justifi	In Title IX of the 2/1993 Fisheries Act of the Principality of Asturias there is a		

PI 3.2.2		**The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery.**
	cation	section related to offences and sanctions that states in great detail all the kinds of offences (classified as minor, serious and very serious) and the concomitant sanctions, which range from administrative fines to the revocation of licences and disqualification from activity for up to three years. We have not observed any legal disputes within the scope of this fishery. In any event, should there be any,the legislative framework makes it clear how they must be resolved. The resolution of conflicts between fishermen and the Administration is done through dialogue and direct negotiations. Otherwise, it is done with statements from the involved parties to the administration and appeals, both administratively and – if rejected – via the appropriate judicial processes to the authorities necessary for the resolution of disputes between the parties (Superior Court of Justice of Asturias). Conflict resolution with other fisheries (trawl platform and recreational) has cooperation/dialogue frameworks established. The DGPM consults the fishermen's guilds regarding the regulations concerning the recreational fishing of octopus in Asturias. The conflict with the trawlers (state-jurisdiction fishery) dates from many years ago (creel boats claim that the industrial trawling fleet occasionally operates in inland waters and that they have no reason to obey the octopus ban) and there have not been, to our knowledge, meetings and/or contacts to resolve it. However, Act 3/2001 of 26 March, on State Marine Fisheries sets out in its first additional provision the creation of two bodies for coordination and consultation between the Spanish state, autonomous regions and the fisheries sector when the issues are topics of common interest. The National Fisheries Council is the coordinating body between the MAGRAMA and the autonomous regions, and on it are represented the SGP, the Directors General of the General Secretariat of Maritime Fisheries and a representative from each of the autonomous regions. The other body is the Consultative Committee of the Fisheries Sector, which has advisory and consultation functions, and which has representatives from the most important associations or organisations in the fisheries sector, including the National Federation of Fishermen's Guilds. Based on the above, it can be concluded that the management system acts proactively to avoid legal disputes, so this SI gets a SG of 100.
References		
OVERALL PERFORMANCE INDICATOR SCORE:		**85**
CONDITION NUMBER (if relevant):		**NA**

Evaluation Table for PI 3.2.3 – Compliance and enforcement

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the management measures in the fishery are enforced and complied with.		
Scoring Issue		SG 60	SG 80	SG 100
a	MCS implementation			
	Guide post	Monitoring, control and surveillance **mechanisms** exist, and are implemented in the fishery and there is a reasonable expectation that they are effective.	A monitoring, control and surveillance **system** has been implemented in the fishery and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.	A **comprehensive** monitoring, control and surveillance system has been implemented in the fishery and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.
	Met?	Y	N	N
	Justification	The DGPM' Office of Fisheries Inspection and Surveillance has the primary responsibility for ensuring compliance with the rules governing the activity (Fisheries Act 2/1993 of the Principality of Asturias, Title IX). This body has four teams: one on the eastern coast, two on the central coast and one on the western coast. In each one, there are three or four agents who monitor all fishing activities, from the catch to the sale. The DGPM' Office of Fisheries Inspection and Surveillance is also responsible for the fisheries officers hired by the guilds. Both bodies have a good relationship and work together. The fisheries offices are guild staff and their functions are regulated by Decree 23/1995 of 2 March, create the position of Authorised Fisheries Officer. Each of the guilds in Puerto de Vega, Ortiguera, Viavélez and Tapia de Casariego has a fisheries officer. Their functions are: 1) Ensure compliance with the rules governing the exploitation plans (mainly barnacle and octopus); 2) Collaborate with the Inland Waters Surveillance of the Principality of Asturias in the enforcement of fishing laws and 3) Report periodically on the state of fish stocks in their purview. The Fisheries Officer has no sanctioning powers; rather, should he believe that a violation is taking place he must inform the competent authority (Civil Guard or the Office of Fisheries Inspection and Surveillance of the DGPM Monitoring of Fisheries (Spanish acronym DGPM). During the visit, we have been able to verify in many ways that octopus fishery in Asturias is not conflictive and that there is generally a high degree of compliance by fishermen. The system has proven to be sufficient to meet most of the rules set out in the MP. However, it is known that there is a lack of robustness to enforce the rules exhaustively with the total number of traps set at sea or to monitor the unloading of the catches. This seems to be partly cause by staff shortages at the fish auctions. Because of this, the fisheries officers perform other tasks beyond those provided for in Decree 23/1995, such as administrative work, management of the fish auction, etc. This fact (more pronounced in some guilds than others) limit the effectiveness of the work of this group, and even more when they have to share their job with the surveillance of the Barnacle Exploitation Plan. In addition, the fisheries officers agree that they spend much more time on barnacle fishery than on octopus fishery. A Monitoring, control and surveillance mechanisms is implemented in the fishery and there is a reasonable expectation that it is effective therefore the PI gets 60. Nevertheles, the issue with the figure of the Coastguards figure can weaken the ability of the monitoring, control and surveillance system to enforce relevant management measures, strategies and/or rules, therefore the PI do not get a SG of 80.		

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the management measures in the fishery are enforced and complied with.		
b	Sanctions			
	Guide post	Sanctions to deal with non-compliance exist and there is some evidence that they are applied.	Sanctions to deal with non-compliance exist, **are consistently applied** and thought to provide effective deterrence.	Sanctions to deal with non-compliance exist, are consistently applied and **demonstrably** provide effective deterrence.
	Met?	Y	Y	Y
	Justification	There are few sanctions in this fishery due to the low conflict, but they are applied consistently and have proved to be dissuasive. The vast majority of sanctions related to octopus are to recreational fishers for not reaching the minimum wage or for exceeding the quota. In the last five years (2010-2014), the Office of Fisheries Inspection and Surveillance of the DGPM has imposed only nine sanctions on professional octopus fishermen with traps (five in 2010 and only one in 2014 (information provided by the DGPM). We have no evidence that the fisheries officers have imposed any sanctions during the same period, although they have reported conflicts with other recreational fishermen. In 2015, Spain modified the penal code under which shellfish poaching is now considered a criminal offense, with penalties of up to two years in prison (Organic Law 1/2015, of 30 March, on the Penal Code, article 180) and so is expected to have a strong deterrent effect as sentences are gradually made public. Based on the above, it can be concluded that sanctions exist, are consistently applied and demonstrably provide effective deterrence; therefore this SI reaches SG 100.		
c	Compliance			
	Guide post	Fishers are **generally thought** to comply with the management system for the fishery under assessment, including, when required, providing information of importance to the effective management of the fishery.	**Some evidence exists** to demonstrate fishers comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery.	There is a **high degree of confidence** that fishers comply with the management system under assessment, including, providing information of importance to the effective management of the fishery.
	Met?	Y	Y	N
	Justification	The fishermen are maintaining high levels of commitment in complying with the management system requirements and the fishery regulations. The control system is very effective and hardly any cases of non-compliance have been reported. The data provided by the fishery activity (catch and landing data) can be considered essential for monitoring the status of the stock. Moreover the fishers have to complete the onboard logbooks and the catches are compared to the sales notes in the port. Nevertheless during the site visit we could observe que existen lagunas en cuanto al número de nasas totales caladas en el mar y respecto al control de las ventas. Debido a esto there is not a high degree of confidence that fishers comply with the management system, therefore the SI gets a SG of 80.		
d	Systematic non-compliance			
	Guide post		There is no evidence of systematic non-compliance.	
	Met?		Y	
	Justifi	There is no evidence of systematic non-compliance in this fishery; we have not noticed any sign in our site visit. Therefore this SI gets a SG of 80.		

PI 3.2.3		**Monitoring, control and surveillance mechanisms ensure the management measures in the fishery are enforced and complied with.**
	cation	
References		
OVERALL PERFORMANCE INDICATOR SCORE:		75
CONDITION NUMBER (if relevant):		3

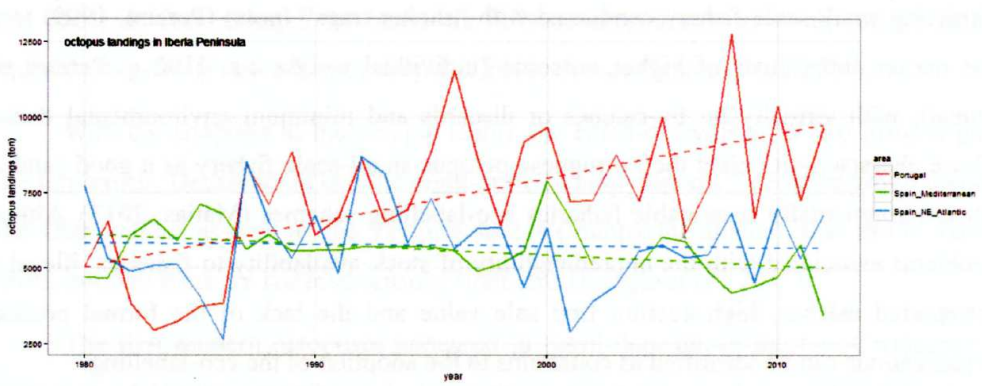
Evaluation Table for PI 3.2.4 – Monitoring and management performance evaluation

PI 3.2.4		**There is a system of monitoring and evaluating the performance of the fishery-specific management system against its objectives.** **There is effective and timely review of the fishery-specific management system.**		
Scoring Issue		SG 60	SG 80	SG 100
a	Evaluation coverage			
	Guide post	There are mechanisms in place to evaluate **some** parts of the fishery-specific management system.	There are mechanisms in place to evaluate **key** parts of the fishery-specific management system	There are mechanisms in place to evaluate **all** parts of the fishery-specific management system.
	Met?	Y	Y	N
	Justification	There is a MP that is reviewed annually with the sector. The data monitoring and analysis system is reviewed, as is the scientific knowledge generated. There is ample feedback from the fishermen at the meetings. Measures such as minimum catch weight, the closed season or catching the protected species *Charonia lampas* have been assessed to better protect the octopus and PET species in the area. In this sense, we have implemented a specific daily monitoring on all vessels to register catches of C. lampas and ensure they are returned to the sea. However, the operation of other measures of the fishery-specific management system as the number of traps per boat, the annual TAC of 10,000 kg/boat, transparency in the decision-making process or the number of ships that could join the fishery have not been assessed, so the SI gets a SG of 80.		
b	Internal and/or external review			
	Guide post	The fishery-specific management system is subject to **occasional internal** review.	The fishery-specific management system is subject to **regular internal** and **occasional external** review.	The fishery-specific management system is subject to **regular internal** and **external** review.
	Met?	Y	Y	N
	Justification	In this fishery there are regular opportunities and/or forums for decision-makers to receive internal feedback on the management system, and there are also exchange of information between the fishing community and the management institution. Only occasionally the fishery-specific management system is subject to **external** review like the Comité de Coordinación del Cantábrico and other forums with regional fishing agencies. In 2014 a forum with fishers, scientists and managers from Galicia, Asturias, Cataluña, Islas Canarias y Portugal around common octopus fisheries was held in Santiago de Compostela organized by WWF. External reviews are not regular so this SI gets a SG of 80.		
References				
OVERALL PERFORMANCE INDICATOR SCORE:				**80**
CONDITION NUMBER (if relevant):				**NA**

Appendix 1.2 Risk Based Framework (RBF) Outputs

Appendix 1.2.1 Consequence Analysis (CA) for Principle 1

Table 1.2.1.a: Principle 1 CA: Target Species (*Octopus vulgaris*)

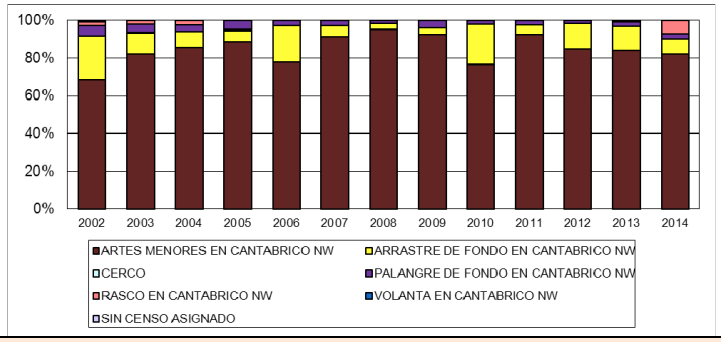
	Scoring element	Consequence subcomponents	Consequence Score
PRINCIPLE ONE: Stock status outcome	Target species: *Octopus vulgaris*	**Population size**	80
		Reproductive capacity	
		Age/size/sex structure	
		Geographic range	
Rationale for most vulnerable subcomponent	According to data from reports and interviews with all the stakeholders involved in the fishery, the most vulnerable subcomponent would be the size of the population, since none of the other three subcomponents seems to be subject to significant changes. With regard to the population size, despite the inherent variability resulting from changes in atmospheric/oceanographic parameters, the trend over the last ten years shows a slight drop in the size of the population. The graph below (Lourenço, 2015) shows the trend of catches in different areas of the Iberian Peninsula.  The most important characteristics that determine the variability of the population would be: - Short life cycle - Short spawning period - Influence of weather conditions on the abundance, which determines survival at critical stages - A total population replacement occurs annually.	

Rationale for consequence score	Sustaining acceptable and consistent CPUE levels during a time series of 15 years and the results of the application of the RBF would indicate proper maintenance of the resource. These observations must be placed within the year-on-year variability of the cephalopod resources. During the series analysed, a gradual decrease in the size of the population was detected, but there is minimum impact on the variation of the structure of the sizes and no evident changes in the dynamics of the resource have been observed, reaching a SG of 80, but not a SG of 100, as the stakeholders related to the fisheries in the management unit agree on stating that they observed a slight fall in the size of the population, that is to say, it is appreciable.

Appendix 1.2.2 Productivity-Susceptibility Analysis (PSA)

Table 1.2.2.a. PSA Rationale Table : Target Species *Octopus vulgaris*

PI number	**1.1.1. Stock status**	
A. Productivity		
Scoring element (species)	*Octopus vulgaris*	
Attribute	**Rationale**	**Score**
Average age at maturity.	For the UoC it has been estimated at 640 g. Studies carried out in nearby subpopulations indicates a mean size of about 900 g for males and 1,700 g for females. This size is calculated taking into consideration the animals caught in one annual cycle (Otero et al., 2007). However, other authors recommend that the estimate of the size or weight at maturity be made during the breeding season, which would prevent overestimations of this parameter (Xunta). The abnormal deposition in the statoliths of the common octopus prevents calculation of the age of this species in a precise way using these structures. These estimations were made using the stylets but were not applied in a large number of specimens. The score of this attribute is 1 when the average age at maturity is five years or less and we have to bear in mind that the life span of this species is about two years.	**1**
Average maximum age	The estimated maximum age for the common octopus in the waters of Galicia is two years, which is consistent with observations for Asturias' waters.	**1**
Fecundity	The actual fertility of this species varies from 100,000 to 500 000 eggs.	**1**
Average maximum size	Not applicable (invertebrate species)	**NA**
Average size at maturity	Not applicable (invertebrate species)	**NA**
Reproductive strategy	Octopus females lay their small eggs in substrates fixed to the seabed for about one month (Garci et al., in press) and their strategy is called "simultaneous terminal spawning" (Rocha et al., 2001). However, Gonçalves et al. (2002), Sieiro et al. (2005) and Guerra et al. (in press), qualify this stating that it would be an intermittent terminal spawning. Subsequent to this, it looks after the clutch until they hatch, which depends basically on water temperature.	**2**
Trophic level	The trophic level of the common octopus has not been calculated for the study unit. However, Lourenço et al. (2014) estimated a trophic level of 3.40 and 3.66 for octopus inhabiting waters south and west of Portugal, respectively. These estimates were made based on the isotopes of nitrogen and can be extrapolated to the specimens that inhabit the waters of Asturias.	**3**
Density dependence	No depensatory or compensatory dynamics or likely.	**3**
B. Susceptibility		
Fishery only where the scoring element is scored cumulatively	**Octopus traps**	
Attribute	**Rationale**	**Score**

Areal Overlap	Octopus fishery overlaps with the concentration of the stock. The overlap is more than 30%.	**3**
Encounterability	The overlap in the water column is high because – although the depths of minimum and maximum catch differ – the midrange, bottom and gear are similar	**3**
Selectivity of gear type	Specimens smaller than first maturity are regularly caught.	**2**
Post capture mortality	There is evidence based on data from fishermen and sample-takers that 95% of the animals below the minimum size caught are returned to the fishery without harm. Mortality is, therefore, very low.	**1**
Catch (weight) only where the scoring element is scored cumulatively	In this case, percentages from each of the fisheries are allocated relative to the others that may take catches of common octopus. The source is the reports from the CEP and data provided by different stakeholders. For the octopus creel, 85% of the total catch has been allocated in accordance with the data of the last 12 years (see RBF and the chart below) 	**0,85**
Additional fishery impacting the stock	**Trawl**	
Attribute	**Rationale**	**Score**
Areal Overlap	Octopus fishery overlaps with the concentration of the stock. The overlap is more than 30%.	**3**
Encounterability	The overlap in the water column is high because – although the depths of minimum and maximum catch differ – the midrange, bottom and gear are similar	**3**
Selectivity of gear type	Specimens smaller than first maturity are frequently caught	**3**
Post capture mortality	The mortality of the catches is very high because of the type of gear. However, in the case of the octopus, there is the possibility that some of the species of a size smaller than that allowed for fishing could survive. Mortality is, therefore, very high.	**3**
Catch (weight) only where the scoring element is scored cumulatively	In this case, percentages from each of the fisheries are allocated relative to the others that may take catches of common octopus. The source is the reports from the CEP and data provided by different stakeholders. In the case of trawling, a percentage of 11% of the total catch has been allocated (see RBF)	**0,11**
Fishery only where the scoring element is scored cumulatively	**Longline**	
Attribute	**Rationale**	**Score**
Areal Overlap	Octopus fishery overlaps with the concentration of the stock. Overlapping comprises from 10 to 30%.	**2**
Encounterability	The overlap in the water column is low because the number of hooks near the bottom is small, impeding the octopus resource's accessibility to the gear	**1**

Selectivity of gear type	There is insufficient information on this regard, although the smallest specimens would be far less likely to be caught than the adult specimens	**2**
Post capture mortality	The selectivity of the hook gear would make it possible for the post-catch mortality to be very low.	**1**
Catch (weight) only where the scoring element is scored cumulatively	The percentage of catches is some 3% per year of the total catch of common octopus.	**0,03**
Fishery only where the scoring element is scored cumulatively	**Hand collection**	
Attribute	**Rationale**	**Score**
Areal Overlap	The spatial overlap between octopus hook fishery and the distribution of the stock is small, considering that this type of fishing done by sport fishers and pensioners is done in shallow coastal areas.	**1**
Encounterability	The overlap in the water column is half, as it is a very targeted fishery, which also has no access to deeper areas, where most of the resource is located	**2**
Selectivity of gear type	The hook is extremely selective gear, but on numerous occasions specimens that are undersized according to the rules are caught and returned to the sea. The ability to see the animals' arms and the specimens in hollows means that it is possible that the specimens seen are smaller than the minimum size allowed.	**2**
Post capture mortality	The catch mortality is very low, since immediately after capturing the specimens, they may be returned to the sea if they do not reach the minimum size	**1**
Catch (weight) only where the scoring element is scored cumulatively	The percentage of catches is some 1% per year of the total catch of common octopus.	**0,01**

MSC PSA Worksheet for RBF for PI 1.1.1

							Productivity Scores [1-3]									Susceptibility Scores [1-3]						Cumulative only								
Scoring element	First of each scoring element	Family name	Scientific name	Common name	Species type	Fishery descriptor	Average age at maturity	Average max age	Fecundity	Average max size	Average size at Maturity	Reproductive strategy	Trophic level	Density Dependance	Total Productivity (average)	Availability	Encounterability	Selectivity	Post-capture mortality	Total (multiplicative)	PSA Score	Catch (tons)	Weighting	Weighted Total	Weighted PSA Score	MSC PSA-derived score	Risk Category Name	MSC scoring guidepost	Consequence Score (CA)	Final MSC score (per scoring element)
1	First	Octopodidae	Octopus vulgaris	Common octopus	Invertebrate	Creels	1	1	1			2	3	3	1,83	3	3	3	1	1,65	2,47	85	0,85	2,10	2,57	82	Low	≥80	80	81
1	First	Octopodidae	Octopus vulgaris	Common octopus	Invertebrate	Trawling	1	1	1			2	3	3	1,83	3	3	3	3	3,00	3,52	11	0,11	0,39	2,57					
1	First	Octopodidae	Octopus vulgaris	Common octopus	Invertebrate	Longline	1	1	1			2	3	3	1,83	2	1	2	1	1,08	2,13	3	0,03	0,06	2,57					
1	First	Octopodidae	Octopus vulgaris	Common octopus	Invertebrate	Hand collection	1	1	1			2	3	3	1,83	1	2	2	1	1,08	2,13	1	0,01	0,02	2,57					

Table 1.2.2.b. PSA Rationale Table : Main Seconday Species

PI number	**2.2.1 Secondary species**	
A. Productivity		
Scoring element (species)	*Necora Puber*	
Attribute	**Rationale**	**Score**
Average age at maturity.	Unknown to the certification unit. However, available information indicates that the age of first maturity is one year.	**1**
Average maximum age	Although not estimated in Asturias' waters, the maximum estimated age for the velvet crab in the United Kingdom is from six to 10 years (Biotic, www.marlin.ac.uk).	**1**
Fecundity	Females can lay more than 200,000 eggs in a single clutch. Their fertility is from 300,000 to 450,000 eggs.	**1**
Average maximum size	Not aplicable (invertebrate species)	
Average size at maturity	Not aplicable (invertebrate species)	
Reproductive strategy	Oviparous, with fertilisation via copulation. The female is responsible for transporting the eggs on the underside of her body, held by her four pairs of pleopods until they hatch, and takes care of them for several months until they become larvae (they go through various stages until the reach the appearance of adults). Spawning occurs in winter and spring months between January and March.	**1**
Trophic level	The trophic level of the velvet crab has not been calculated for the study unit. However, Schaal et al. (2010) gave a trophic level of 2.6 for this species. Schaal, G., P. Riera and C. Leroux (2010) Trophic ecology in a northern Brittany (Batz Island, France) kelp (Laminaria digitata) forest, as investigated through stable isotopes and chemical assays. Journal of Sea Research 63(1): 24-35.	**1**
Density dependence	No information regarding this issue	**3**
B. Susceptibility		
Fishery only where the scoring element is scored cumulatively	Octopus traps	
Attribute	**Rationale**	**Score**
Areal Overlap	Velvet crab fishery overlaps with the concentration of the stock. The overlap is more than 30%.	**3**
Encounterability	The overlap in the water column is high because – although the depths of minimum and maximum catch differ – the midrange, bottom and gear are similar	**3**
Selectivity of gear type	Specimens smaller than first maturity are not regularly caught. The velvet crab's possibility of being caught in the traps is low	**1**
Post capture mortality	There is evidence based on data from fishermen and sample-takers that 100% of the animals survive.	**1**
Catch (weight) only where the scoring element is scored cumulatively	Not aplicable	

MSC Worksheet for RBF for PI 2.2.1

	Productivity Scores [1-3]	Susceptibility Scores [1-3]	Cumulative only																						
Family name	**Scientific name**	**Common name**	**Species type**	**Fishery descriptor**	Average age at maturity	Average max age	Fecundity	Average max size	Average size at Maturity	Reproductive strategy	Trophic level	Density Dependance	Total Productivity (average)	Availability	Encounterability	Selectivity	Post-capture mortality	Total (multiplicative)	PSA Score	Catch (tons)	Weighting	Weighted Total	Weighted PSA Score	**MSC PSA-derived score**	Risk Category Name	MSC scoring guidepost
Portunidae	*Necora Puber*	Necora	Invertebrate	Octopus traps	1	1	1		1	1	1	3	1,33	3	3	1	1	1,20	1,79					98	Low	≥80

Table 1.2.2.c. PSA Rationale Table : ETP species

PI number	**2.3.1 ETP species outcome**	
A. Productivity		
Scoring element (species)	*Charonia lampas lampas*	
Attribute	**Rationale**	**Score**
Average age at maturity.	The gasteropods of this order usually mature at ages of less than five years. As there is no information on this species, we take a more conservative or average score.	**2**
Average maximum age	30 years (www.mergullo.com)	**3**
Fecundity	150 000	**1**
Average maximum size		
Average size at maturity		
Reproductive strategy	They spawn many larvae that become plankton	**3**
Trophic level	2 (seaaroundus.org)	**1**
Density dependence	No data. We take the most conservative	**3**
B. Susceptibility		
Fishery only where the scoring element is scored cumulatively	Octopus traps	
Attribute	**Rationale**	**Score**
Areal Overlap	Triton snail catches overlaps with the concentration of the stock. The overlap is more than 30%.	**3**
Encounterability	The overlap in the water column is high because – although the depths of minimum and maximum catch differ – the midrange, bottom and gear are similar.	**3**
Selectivity of gear type	Specimens smaller than first maturity are not regularly caught. The *Charonia lampas* possibility of being caught in the traps is low	**1**
Post capture mortality	There is evidence based on data from fishermen and sample-takers that 100% of the animals survive.	**1**
Catch (weight) only where the scoring element is scored cumulatively	Not Applicable	

MSC PSA Worksheet for RBF for PI 2.3.1.

					Productivity Scores [1-3]								Susceptibility Scores [1-3]							
Scoring element	Family name	Scientific name	Common name	Species type	Average age at maturity	Average max age	Fecundity	Average max size	Average size at maturity	Reproductive strategy	Trophic level	Density dependance	Total Productivity (average)	Availability	Encounterability	Selectivity	Post-capture mortality	Total (multiplicative)	PSA Score	MSC PSA-derived score	Risk Category Name	MSC scoring guidepost
3	Ranellidae	Charonia lampas	Triton snail	Invertebrate	2	3	1			3	1	3	2,17	3	3	1	1	1,20	2,48	85	Low	≥80

Appendix 1.2.3 Consequence Spatial Analysis (CSA)

A CSA Rationale Table for each habitat can be found below:

Table 1.2.3.a. CSA Rationale Table: Coast-coastal margin-large rocky banks-large

PI number	2.4.1	Habitat	Trap-Coast-coastal margin-large rocky banks-large
Consequence	**Rationale**		**Score**
Regeneration of biota	The substrate where the octopus is found is basically rocky (large), but it can also be found in beach areas in much smaller proportions. RRegeneration in the rocky area occurs very quickly – in less than a year – since creel fishery is very selective and does not affect the seabed to any great extent. The depth where the resource is ranges from coastal areas up to 200 m, although its presence is greatest at 25 to 100 m. In this case, for less than 25 m, the score is low.		**1**
Natural disturbance	According to the distribution of the common octopus in Asturias in this habitat, the habitat disturbance should be considered low (less than 60 m).		**1**
Removability of biota	The influence of the depletion of fishing gear on the epibiota is minor. In the octopus' habitat is primarily found epifauna of less than 5 cm, although there are also moderately rough biota.		**2**
Removability of substratum	It is the same as stated in the previous section, since the effects on the rocky area and the beach areas are not affected by the depletion from the traps.		**1**
Substratum hardness	In this case, the predominant substrate in the octopus' habitat is composed of consolidated rocks. However, to a lesser extent, it is also found in beach areas, so the hardness of the substrate would be a halfway point between the two habitats.		**1**
Substratum ruggedness	As in the previous case, the octopus' preference is rocky areas that let it shelter itself. However, there may also be specimens in other areas due to its migration from deeper areas to the coast, especially in the breeding season.		**2**
Seabed slope	Low, in coastal and platform zones.		**1**
Spatial	**Rationale**		**Score**
Gear footprint	Traps		**1**
Spatial overlap	Less than 30%		**1**
Encounterability	Less than 30%		**1**

Table 1.2.3.b. CSA Rationale Table: Shelf-Inner shelf-large rocky banks-large

PI number	2.4.1	Habitat	Trap-Shelf-Inner shelf-large rocky banks-large	
Consequence	**Rationale**			**Score**
Regeneration of biota	The substrate where the octopus is found is basically rocky (large), but it can also be found in beach areas in much smaller proportions. The regeneration of the rocky area occurs very quickly – in less than a year – since creel fishery is very selective and does not affect the seabed to any great extent. The depth where the resource is ranges from coastal areas up to 200 m, although it presence is greatest at 25 to 100 m. In this case, for less than 25 m, the score is low.			**2**
Natural disturbance	According to the distribution of the common octopus in Asturias in this habitat, the habitat disturbance should be considered low (less than 60 m).			**2**
Removability of biota	The influence of the depletion of fishing gear on the epibiota is minor. In the octopus' habitat is primarily found epifauna of less than 5 cm, although there are also moderately rough biota.			**2**
Removability of substratum	It is the same as stated in the previous section, since the effects on the rocky area and the beach areas are not affected by the depletion from the traps.			**1**
Substratum hardness	In this case, the predominant substrate in the octopus' habitat is composed of consolidated rocks. However, to a lesser extent, it is also found in beach areas, so the hardness of the substrate would be a halfway point between the two habitats.			**1**
Substratum ruggedness	As in the previous case, the octopus' preference is rocky areas that let it shelter itself. However, there may also be specimens in other areas due to its migration from deeper areas to the coast, especially in the breeding season.			**2**
Seabed slope	Low, in coastal and platform zones.			**1**
Spatial	**Rationale**			**Score**
Gear footprint	Traps			**1**
Spatial overlap	Less than 30%			**1**
Encounterability	Less than 30%			**1**

Table 1.2.3.c. CSA Rationale Table: Coast-coastal margin-sediment terraces-fine

PI number	2.4.1	Habitat	Trap-Coast-coastal margin-sediment terraces-fine

Consequence	Rationale	Score
Regeneration of biota	The substrate where the octopus is found in this area comprises small uneven sandy areas among rocky areas. Regeneration in this area is so fast, so it is assigned a low score, for these reasons and because the sub-biome is at less than 25 m.	**1**
Natural disturbance	According to the distribution of the common octopus in Asturias in this habitat, the habitat disturbance should be considered low.	**1**
Removability of biota	The influence of the depletion of fishing gear on the epibiota is minor. In the octopus' habitat is primarily found epifauna of less than 5 cm, although there are also biota of less than 30 cm buried in the sand.	**2**
Removability of substratum	It is the same as stated in the previous section, since the effects on the rocky area and the beach areas are not affected by the depletion from the traps.	**1**
Substratum hardness	In this case, the predominant substrate in the octopus' habitat is composed of unconsolidated sediments. According to this parameter, the traps would have a high score.	**3**
Substratum ruggedness	As in the previous case, the octopus' preference is rocky areas that let it shelter itself. However, there may also be specimens in other areas near the coast due to its migration from deeper areas to the coast, especially in the breeding season. The habitat is flat or gently rolling.	**3**
Seabed slope	Low, in coastal areas.	**1**

Spatial	Rationale	Score
Gear footprint	Traps	**1**
Spatial overlap	Less than 30%	**1**
Encounterability	Less than 30%	**1**

Table 1.2.3.d. CSA Rationale Table: Shelf-Inner shelf-sediment plains-fine

PI number	2.4.1	Habitat	Trap-Shelf-Inner shelf-sediment plains-fine	
Consequence	**Rationale**			**Score**
Regeneration of biota	The substrate where the octopus is found in this area comprises small uneven sandy areas among rocky areas. Regeneration in this area is so fast, so it is assigned a medium score, for these reasons and because the sub-biome is at less than 100 m.			**2**
Natural disturbance	According to the distribution of the common octopus in Asturias in this habitat, the habitat disturbance should be considered medium.			**2**
Removability of biota	The influence of the depletion of fishing gear on the epibiota is minor. In the octopus' habitat is primarily found epifauna of less than 5 cm, although there are also biota of less than 30 cm buried in the sand.			**2**
Removability of substratum	It is the same as stated in the previous section, since the effects on the beach areas are not affected by the depletion from the traps.			**1**
Substratum hardness	In this case, the predominant substrate in the octopus' habitat is composed of unconsolidated sediments. According to this parameter, the traps would have a high score.			**3**
Substratum ruggedness	As in the previous case, the octopus' preference is rocky areas that let it shelter itself. However, there may also be specimens in other areas near the coast due to its migration from deeper areas to the coast, especially in the breeding season. The habitat is flat or gently rolling.			**3**
Seabed slope	Low, in coastal areas.			**1**
Spatial	**Rationale**			**Score**
Gear footprint	Traps			**1**
Spatial overlap	Less than 30%			**1**
Encounterability	Less than 30%			**1**

MSC Worksheet for RBF for PI 2.4.1.

Only main habitats scored?	No						Consequence score [1-3]								Spatial score [0.5-3]							
Habitat details							Habitat productivity		Gear-habitat interaction					Consequence score	Gear footprint	Spatial overlap	Encounterability	Spatial score	CSA score	MSC CSA-derived score	Risk category	MSC scoring guidepost
Scoring element	UoA/Gear type	Biome	Sub-biome	Feature	Habitat type	Depth (m)	Regeneration of biota	Natural disturbance	Removability of biota	Removability of substratum	Substratum hardness	Substratum ruggedness	Seabed slope									
1	Trap	coast	coastal margin	large rocky banks	large	25	1	1	2	1	1	2	1	1,22	1	1	1	1,00	1,58	99	Low	≥80
1	Trap	shelf	inner shelf	large rocky banks	large	200	2	2	2	1	1	2	1	1,67	1	1	1	1,00	1,94	96	Low	≥80
1	Trap	coast	coastal margin	sediment terraces	fine	25	1	1	2	1	3	3	1	1,56	1	1	1	1,00	1,85	97	Low	≥80
1	Trap	shelf	inner shelf	sediment plains	fine	100	2	2	2	1	3	3	1	2,00	1	1	1	1,00	2,24	91	Low	≥80

Appendix 1.2.4 Scale Intensity Consequence Analysis (SICA)

Table 1.2.4a. SICA: PI 2.5.1 Ecosystem

	Spatial scale of fishing activity	Temporal scale of fishing activity	Intensity of fishing activity	Relevant subcomponents	Consequence Score
PRINCIPLE TWO: Ecosystem outcome	3	3	3	**Species composition**	
				Functional group composition	
				Distribution of the community	80
				Trophic size/structure	
Rationale for spatial scale of fishing activity	The area where the resource is fished with traps affects to approximately 30% of the ecosystem in which the resource is distributed, if we count the zone of Asturias. If we count Galicia, it would be the same, because we would take both areas as the population and the percentage of overalp of the ecosystem and the fishing activity would be similar. It must be taken into consideration that the distribution of the ecosystem occupied by the octopus could reach more than 800 m, as shown by the catches in the Demersal Campaign (IEO 2014)				
Rationale for temporal scale of fishing activity	The mean fishing days per vessel operating in the Unit of Assessment is about 84, which corresponds to a score of 3.				
Rationale for intensity of fishing activity	Fishing intensity appears to be moderate, since there is detectable evidence of fishing activity at a wide local level.				
Rationale for Consequence score	After collecting all the information from the stakeholders (scientists, fishermen's guilds, NGOs, etc.) it was seen that the component of the ecosystem, which could be most vulnerable, would be the annual changes in the geographical distribution of communities. This change is detectable but not significant and is dependent on climatic conditions occurring in certain years, and on the success of the annual recruitment. The SG 80 is met, but not the SG 100, since the agents indicate changes related to octopus fishery.				

Appendix 1.3 Conditions

Table A1.3: Condition 1

Performance Indicator	**PI 1.2.2 There are well defined and effective harvest control rules (HCRs) in place** **SG80a. Well defined HCRs are in place that ensure that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock fluctuating around a target level consistent with (or above) MSY.**
Score	75
Rationale	Well defined HCRs are not in place for this fishery and some of them are not responsive to the state of the stock. Several management tools and measures (like the TAC) are not well defined and have not changed in the last 15 years, and cannot ensure that the susceptibility of octopus to removal is no higher than that which would cause the risk to octopus to be above an acceptable risk range.
Condition	The client is required to work actively to promote and support well-defined HCRs consistent with the harvest strategy that is responsive to the state of the octopus stock in the coast of Asturias. Management tools and measures should ensure that the exploitation rate is adequate to the octopus population status and are expected to keep the stock fluctuating around a sustainable long-term highly productive level and above an acceptable risk range.
Milestones	The following actions can be verified during annual surveillance audit: Year 1: The client shall demonstrate that it has taken steps to support the development of comprehensive HCRs. Year 2 & 3: The fishery shall demonstrate that options for HCRs have been outlined and discussed with stakeholders, and a policy document developed. Year 4: The fishery shall demonstrate that the HCRs are responsive to the state of the stock and the policy changes agreed in previous years and have been formally accepted by the government of the Principality of Asturias with clear evidence of the implementation of the agreed HCRs.
Client action plan	The proposal for actions to be carried out entails the following plans: January – October 2016: Joint assessment by the parties involved in the MP of current knowledge about capture control and the determination of the variables that will be needed for finding out and recording within a given time period the number of specimens, weight, location, variability of fishing grounds, seasonal fluctuation, etc. with regard to the specific determination of the CPUE in the assessed area. The biological information needed to establish correlations that will enable the adaptation of management systems will be taken into account, with a basic review of the HCRs and the TAC in order to ensure the sustainability of the stock and to avoid its over-exploitation above a risk level acceptable for the population. A research programme with the methods and instruments needed to properly record the HCRs and any diagnostic instruments needed will be designed with the biological indices to be taken into account defined. The objective is to establish a harvest threshold risk level for a given period. This implicitly means proposing minimal models of resource abundance based on which a fishery control mechanism would be established, with the possibility of closing the fishery when it is deemed that the population has reached an acceptable minimum. These actions will be developed jointly, and will result in clear and firm cooperation commitments between the regional administration, fishermen's guilds included in the Principality of Asturias' Octopus MP and the CEP. Other

	organisations, such as the Navia-Porcía Coastal Action Group will also be collaborating. A document containing objectives, goals and a commitment to agreements among all the parties involved and that will ensure rigorous control of catches for sustainable self-management of stocks will be drawn up. October 2016 – September 2018: Application of the methodology designed in the previous phase with the recording and harvest control by the fisheries sector under the supervision of the CEP in order to determine acceptable levels of biological risk. Working sessions between all the parties involved to follow up the work will be held based on a pre-established schedule, and the results obtained by applying the recording and harvest control instruments proposed will be assessed. Follow-up reports will be drafted with the results obtained in the successive fishing campaigns. November 2016 – December 2018: Organisation of technical workshops on octopus fishery which will address the Forum's recommendations on octopus fishery in northwestern Spain, held in Santiago de Compostela in January 2015. The aim – among others – of these workshops will be an analysis and discussion by the scientific community of the results that are being obtained from field work, and conclusions will be drawn on measures to implement in the management plans in order to ensure the sustainability of the resources. This action will be organised in collaboration with the Navia-Porcía Coastal Action Group and the WWF, calling on participation from the scientific community and industry not only in Asturias, but also Galicia and Portugal, or other communities related to octopus fishing. June 2018 – November 2018: Drafting of the conclusions of the research programme, with recommendations to be considered by the administration when developing future management plans that will ensure exploitation based on the fluctuations of the species and that will ensure the non-overexploitation of resources that are below risk levels. June 2018 – November 2018: Definition and incorporation of the conclusions and recommendations obtained in the research programme into the guidelines for the Octopus MPs in the Principality of Asturias, and addition thereof to the text published in the Official Gazette of the Principality of Asturias (BOPA), ensuring the sustainability of the stock through management tools and measures. The objective is to incorporate exploitation control measures that complement current fisheries management strategies with regard to the octopus catch (annual quota per vessel, number of creels per vessel, minimum weight, closed season) into criteria relating to the species' biomass, considering the results per unit of fishing effort not for the whole period, but rather continuously, ensuring that a minimum of octopus fishing is not exceeded. This way, should the results so indicate, a limitation could be placed on the current criteria for the closed season, or on the number of traps included in the current HCR, or a review – depending on the trend of the catches – carried out of the minimum authorised weights. November 2018 – November 2019: Implementation of the MP for the 2018-2019 campaign, collection of information and assessment of results. Analysis of the possibility of establishing a protocol for self-management of the fishery by each guild included in the plan, within the general framework, based on the maintenance of the fishing effort at limits acceptable for the sustainability of the species, with the possibility of the closure of the fishery when this limit is reached. The co-responsibility for coordinating the proposed targets will be assumed by the member of the four fishermen's guilds involved in the certification process for which the Puerto de Vega guild acts as coordinator.

	Achieving the objectives and goals proposed requires the necessary involvement of the politicians and technicians deemed responsible as determined by the DGPM and leveraging the already-existing formal channels of information and discussion of the octopus MP, which provides for meetings and agreements between: the other members of the fishermen's guilds included in the Octopus MP of the Principality of Asturias; those politically and technically responsible for the CEP; and – to a lesser extent – other agencies and bodies of local scope, such as the Navia-Porcía Zone Coastal Action Group.
Consultation on condition	The action plan was consulted and approved by the CEP and therefore by the DGPM.

Table A1.3: Condition 2

Performance Indicator	**PI 3.2.1 The fishery-specific management system has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2.**
Score	60
Rationale	The MP for the Octopus in Asturias implicitly determines objectives consistent with achieving the outcomes expressed in Principles 1 and 2 of the MSC. Certain general objectives are also spelt out in the Ley 2/1993 of the Principality of Asturias (see PI 3.1.3). However, short- and long-term objectives are not clearly spelt out in the MP; it states explicitly only that the plan's objective is to preserve the resource and improve its marketing within the geographical scope of the participating fishermen's guilds (Resolution of 26 November 2014). The lack of specificity in the objectives shows that these might not be consistent with achieving the results expressed in Principles 1 and 2 of the MSC.
Condition	The client is required to work actively to achieve short and long-term specific objectives, consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, that direct policy together with a functioning operational framework (measures and strategies). These objectives need to be transparent and explicitly incorporated in the management system. There should also be a clear means of assessing performance relative to these objectives.
Milestones	The following elements can be verified during annual surveillance audit: Year 1: the client shall demonstrate there is documented evidence that policy options based on defined objectives have been outlined and discussed with stakeholders. The client should work to encourage this first stage in forums and meetings providing information and data from the fishery. Year 2 & 3: all stakeholders involved in the management of the fishery in collaboration with the scientific community should be working to develop a specific MP for this fishery with clear, specific short and long term objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2. Client should provide deliverables that shows the state of the work done. Year 4: clear evidence that the agreed policy has been implemented should be provided. The client must provide information on the existence and implementation of a MP specific to this fishery, which is consistent with achieving the outcomes expressed by MSC Principle 1 and 2. SG80.
Client action plan	The Action Plan is based on the coordination of actions among all stakeholders involved (managers, fishermen and researchers) and follows the same model applied after the results of the pre-assessment mainly for the components of Principle 2. This action will take place concomitantly with the action planned for the same period in the condition set out for PI 1.2.2., since their objectives are very similar and can be addressed together, leveraging and maximising the benefits from the time and effort invested. The results of the actions for the condition of P.I. 1.2.2 also contribute to achieving this condition, since they will include measurable objectives in the management plan. January – October 2016: The parties involved in the drafting of the MP: DGPM, fishermen's guilds and the CEP will discuss what concrete and specific targets can be incorporated into the MP based on existing information and on the feasibility and trend studies carried out in octopus plans from previous years. The science-based studies necessary to incorporate new criteria (related to the ecosystem, the environment, etc.) into fishery management will also be designed in order to thus be able to specify new short- and medium-term objectives in line with Principles 1 and 2 of the MSC. These studies will also serve to assess whatever objectives are set out in the plans, and to validate

	their relevance or establish any necessary corrections. This action will be carried out by means of meetings between the parties involved not only in the certification, but in the entire management plan (fishermen, researchers and managers from the entire area of implementation of the MP). Minutes of the meetings will be drafted and a report will be requested from the CEP on the results of the assessment and follow-up of the plans implemented and their possible application in the definition of a new plan with the introduction of concrete and measurable objectives. They will also analyse what studies are necessary to incorporate new criteria and measurable objectives into the plan. October 2016 – November 2016: If – based on already-existing data – it is possible to define a measurable objective related to MSC Principles 1 and 2, the possibility of incorporating it into the plan for the following year will be discussed with the DGPM. This action will be framed within any negotiations between the DGPM and the fishing guilds that will be carried out to define the Octopus MP and will require the agreement of all parties involved in the fishery. November 2016 – September 2018: During 2016-17 and 2017-18 campaigns, scientifically-based studies designed to incorporate new criteria into the fishery and to establish concrete short- and medium-term objectives in the MP will be carried out. An assessment of the objectives that have been included in the plan on the basis of the information already available will also be conducted. This action will be carried out by the CEP in collaboration with fishermen, and the results will be shown in reports that will enable follow-up and assessment of the action. November 2016 - November 2018: Technical seminars on octopus fishery will be organised and will address the recommendations of the forum held in Santiago de Compostela in January 2015 as regards to management plans and elements for their control, assessment and follow-up. These sessions will enable the results being obtained from the research programmes of the successive campaigns to be discussed by the scientific community. This action will be implemented in collaboration with the Navia-Porcía Coastal Action Group and the WWF. June 2018 - November 2018: New criteria and objectives derived from the studies carried out related to Principles 1 and 2 of the MSC, as well as the plan to assess them, will be agreed with the DGPM. To this end, the agreement of all parties involved in the fishery will be sought. The MP will be published by the MP and will constitute the element that announces that the action plan has been created. November 2018 – November 2019: The MP with the new criteria and specific objectives will be implemented and an assessment will be carried out, the results of which will be incorporated into the management plan for the following year, thereby making ongoing adjustments of the objectives based on the needs of the fishery. If studies in previous campaigns enable the introduction of measurable short and medium-term objectives into the exploitation plan for the 2016-2017 campaign, there is a possibility that by the third year it will be possible to show their consistency and comply with the condition. In any case, by the fourth year the objectives derived from the new studies to be carried out will already have been incorporated and there will be data demonstrating the consistency of the MP.
Consultation on condition	The action plan was consulted and approved by the CEP and therefore by the DGPM.

Table A1.3: Condition 3

Performance Indicator	**PI 3.2.3 Monitoring, control and surveillance mechanisms ensure the management measures in the fishery are enforced and complied with.** **SG80a. A monitoring, control and surveillance system has been implemented in the fishery and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.**
Score	75
Rationale	The Coastguards are guild staff and their functions are regulated by Decree 23/1995 of 2 March. Their functions are: 1) Ensure compliance with the rules governing the management plans (mainly barnacle and octopus); 2) Collaborate with the Inland Waters Surveillance of the Principality of Asturias in the enforcement of fishing laws and 3) Report regularly on the state of fishery resources. Coastguards have no sanctioning powers; rather, should they believe that a violation is taking place they must inform the competent authority (Civil Guard or the Office of Fisheries Inspection and Surveillance of the DGPM). That there is a lack of robustness to enforce the rules exhaustively with the total number of traps set at sea or to monitor the unloading of the catches. This seems to be partly due to lack of enough human resources at the fish auctions. Because of this, the coastguards perform other tasks beyond those provided for in Decree 23/1995, such as administrative work, management of the fish auction, etc. This fact (more pronounced in some guilds than others) limit the effectiveness of the work of this group, and even more when they have to share their job with the surveillance of other MPs as the barnacle Plan. In conclusion, the monitoring, control and surveillance system implemented in the fishery has to demonstrate the ability to enforce relevant management measures, strategies and/or rules to meet SG80a.
Condition	The client is required to work actively to promote and support that all guilds understand and respect the roles and responsibilities of the Coastguard figure (specified in the Decreto 23/1995) and that those roles are clarified in detail for the octopus MP. Promoting those actions the monitoring, control and surveillance system might be better implemented in the fishery and should demonstrate good enforcement to the relevant management measures, strategies and/or rules.
Milestones	The following elements can be verified during annual surveillance audit: Year 1: the client shall demonstrate that the stakeholders including the Fisheries administration have discussed the roles and responsabilities of the coastguard figure. Year 2 & 3: all stakeholders (but mainly guilds and fisheries administration) should be working to develop a protocol that clearly details the roles and responsabilities of the coastguard regarding the octopus MP. Client should provide deliverables that shows the state of the work done. Year 4: the client should provide clear evidence that the protocol that details the roles and responsabilities of the Guardapescas Marítimo in the octopus trap fishery in Asturias have been implemented in the management system. Actions carried the years before shall demonstrate that the monitoring, control and surveillance system are better implemented in the fishery and demonstrate good enforcement to the relevant management measures, strategies and/or rules.
Client action plan	October 2015 - October 2016: Analysis and discussion of the Coastguard current situation and search for solutions for improvement, through:

	The compilation of existing information on the work and tasks currently being done by the coastguard (instructions, protocols, information systems, etc.) and description of the mechanisms of collaboration with the Office of Fisheries Inspection and Surveillance, the Guardia Civil and other agencies with responsibilities related to control. An interview with the coastguard in order to see first hand what their tasks are and to describe any unwritten procedures being followed. In addition, proposals for improvement will be sought, and an assessment of the strengths and weaknesses of the current system will be carried out along with an analysis of possible technical measures to be adopted, especially in order to improve the control of the number of creels set in the sea, the unloading of catches and the activity of recreational fishermen. A meeting to be held with the participation of the coastguard, the Office of Fisheries Inspection and Surveillance, those from the Civil Guard responsible for the surveillance of maritime fishing, fishermen's guilds and other possible interested parties (e.g., recreational fishermen), in order to discuss the information collected and possible technical proposals for improvement and to set out principles for a formal and consistent protocol of action. The study and proposal of possible management measures that will improve the system such as the incorporation of more resources, coordination between the guilds to have a common surveillance system exclusively for octopus fishery, etc. Collaboration will be requested of the Navia-Porcía Coastal Action Group, technicians from the DGPM and/or external consultants for the funding and completion of these tasks. The results of the analysis of the current situation will be contained in a report and the proposals agreed upon will be contained in a written document. <u>October 2016 – June 2017</u>: Establishment of a protocol of performance in the surveillance of octopus traps fishing, with a clear and concise definition of the functions and powers that correspond to each of the parties. Based on existing information and the proposals of the parties involved resulting from the previous phase, the necessary protocols will be set out with the clear definition of the tasks of the coastguard, the specific procedures designed to ensure compliance with the legislation, the mechanisms to create the link between the coastguard and security forces, the means that will be at their disposal to perform their functions, the systems for recording and subsequently checking the control actions carried out, etc. These protocols will be contained in a document that must be approved unanimously by the parties involved and will be of compulsory compliance by all of them, and the necessary internal dissemination thereof will be effected. A reference or an extract from the protocol may be incorporated into the Octopus MP for the 2017-2018 campaign for publication in the Official Gazette of the Principality of Asturias. During this period, if necessary, funding will be sought for drafting the protocol and also for implementing the management measures which – aside from the

	formal recording of the activities – may improve the control and surveillance system. <u>June 2017- October 2018:</u> Training and information actions on the implementation of the protocol aimed at the coastguard and the rest of the staff involved in control and surveillance tasks. Implementation of the protocol and application of any management measures whose approval was decided for the 2018-21019 octopus campaign. Design and implementation of a system for assessing the results obtained with the implementation of the protocol and the agreed improvement measures. Adaptation of the protocol on the basis of the results obtained for implementation in the 2019-2020 campaign.
Consultation on condition	The action plan was consulted and approved by the CEP and therefore by the DGPM.

8.1 Appendix 2. Peer Review Reports

- ***Peer Review 1***

Summary of Peer Reviewer Opinion

Has the assessment team arrived at an appropriate conclusion based on the evidence presented in the assessment report?	**Yes/No** **Yes**	**CAB Response**
Justification: The overall conclusion that this fishery meets the MSC standard and should be certified is warranted, provided that concern expressed for P1 1.1.1 regarding the basic requirement for applicability of Consequence Analysis within the Risk Based Framework is resolved (ie. availability of a valid index of abundance).		

Do you think the condition(s) raised are appropriately written to achieve the SG80 outcome within the specified timeframe? [Reference: FCR 7.11.1 and sub-clauses]	**Yes/No** **NO**	**CAB Response**
Justification: **Condition 1** should be reconsidered because this condition is not achievable as currently worded. The current wording includes; 'Management tools and measures should ensure that the exploitation rate is adequate to the octopus population status and are expected to keep the stock fluctuating around a sustainable long-term highly productive level and above an acceptable risk range'. This is not achievable because; 1. Management tools and measures are fixed and so will not ensure any effect that responsive action of any harvest control rule might achieve. Again this indicates confusion between fixed measures and a HCR. 2. Exploitation rate cannot be quantified and need not be consistent to regulate spawner escapement and ensure adequate egg production and larval supply (an appropriate objective for such a short-lived species). 3. No management action is going to keep the stock around a sustainable level; the environment will regulate that level.		We partially agree with the referee. He is very sharp at the time of pointing to the clues that could be extracted from other large fisheries of cephalopods or finfishes. In the case of these marine mollusks, there are only two fisheries that are actually managed within the concepts of a well-controlled including MSY points. These are the cases of the Falkland Islands (*Illex argentinus* and *Loligo gahi*) and the fisheries of the surrounded waters of Japan (basically *Todarodes pacificus*). In the first case, the estimation of the biomass at the beginning of the fishing season and the application of an escapement model allow to maintain the fishery in good conditions during decades. However, the influence of environmental parameters provokes periodically sudden depletions. The case of Japan is a wee bit different because they estimate the biomass of the stock based, among other parameters, on the abundance of larvae at the beginning of the season. As occurred in the southwest Atlantic, the environment affects this abundance in certain anomalous years. In these cases, it is easy to apply proper Harvest Control Rules to keep the stock in good values during long periods but in the case of the common octopus, among other cephalopod species collected in small scale fisheries, it is very difficult to translate the same concept of HCR, due also to the particular ecology of this benthic animals and the singularity of this fisheries. If we could have proper management points (i.e. MSY, PRI), everything would be easier and we would avoid also the use of other analysis such as the Risk Based Framework. Considering all these points, we proposed the condition above mentioned and, although we know that there are other parameters that are not possible to contro (i.e. climate), we are positive that the measurements argued in response to the condition will enhance the perspective of the status of the stock and will reduce

	the possibility of patent depletions or collapse. Finally and regarding the wording of the condition, we have to underline that it is very important to couple with the Marine Stewardship Council certification requirements. Probably, the referee will chose another wording and we would agree with him but the requirements are well established and clear and we should attend all of them.

If included:

Do you think the client action plan is sufficient to close the conditions raised? [Reference FCR 7.11.2-7.11.3 and sub-clauses]	**Yes/No** **Yes**	**CAB Response**
Justification: The plan described is focused to address a better worded and appropriate objective related to maintaining productivity above the point of recruitment impairment. It is directed toward collecting the data required to develop appropriate HCRs. Toward this end the proposed research program should include developing size-maturity relationships by sex.		

Table 5. For reports using one of the default assessment trees.

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
Example:1.1.2	*No*	*No*	*NA*	*The certifier gave a score of 80 for this PI. The 80 scoring guidepost asks that there is evidence that rebuilding strategies are rebuilding stocks, or it is highly likely based on simulation modelling or previous performance that they will be able to rebuild the stock within the timeline specified. However, no timeline has been specified based on previous performance, or simulation models.*	
1.1.1				RBF Table 2	
1.1.2	*Yes*	*Yes*			
1.2.1	*Yes*	*Yes*			

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
1.2.2	*No*	*No*		The rationale for the score given is unclear because current fixed management measures and tools are erroneously considered to be HCRs. HCR is defined as 'a set of well-defined pre-agreed rules or actions used for determining a management action in response to changes in indicators of stock status with respect to reference points.' Accordingly the score awarded cannot be justified based on HCRs being 'in place', but it may be possible to justify a score of 60 based on that they may be 'available'…..ie. Currently available measures for regulating effort (season) or catch (individual quotas) or perhaps even more relevant egg production (minimum legal size and/or closed season) could be adapted to develop HCRs if relevant resource status targets can be identified.	We agree with the referee and thus we refer at the beginning of our justification that in fisheries where little data are obtained and cannot be managed with objective and specific maximum permitted catches, e.g. management measures are limited to minimum sizes, closed season periods, maximum catches, etc, these fishing strategies and plans apply to long seasonal periods and tend to be equivalent to harvest control rules (HCRs). Besides, we also noted the difficulty of accepting the actual definition of HCR in place, which not ensure that the explotation rate is reduced above the point of recruitment impairement or other management indices such as the MSY. That is why we decided to suggest a condition to improve the fishery's performance and to try to reach the SG80 level. The text was corrected as suggestd by the referee to justify the SG60.

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
1.2.3	*NA*	*No*		Concerns expressed above about indices of abundance and understanding of HCR's is also relevant here.	We partially agree with the referee. We already refer to the issues related to HCR in these small-scale fisheries. However, we consider that we have presented enough information to afford the scoring of this issue. I am sure that we are able to provide it if it is required.
1.2.4	*Yes*	*Yes*			
2.1.1				*RBF Table 2*	
2.1.2	*Yes*	*Yes*			
2.1.3	*Yes*	*Yes*			
2.2.1				*RBF Table 2*	
2.2.2	*Yes*	*Yes*			
2.2.3	*Yes*	*Yes*			
2.3.1				RBF Table 2	

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
2.3.2	*Yes*	*Yes*			
2.3.3	*Yes*	*Yes*			
2.4.1				*RBF Table 2*	
2.4.2	*Yes*	*Yes*			
2.4.3	*Yes*	*Yes*			
2.5.1				*RBF Table 2*	
2.5.2	*Yes*	*Yes*			
2.5.3	*Yes*	*Yes*			
3.1.1				*No comment*	
3.1.2				*No comment*	
3.1.3				*No comment*	

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	**Justification** Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
3.2.1				*No comment*	
3.2.2				*No comment*	
3.2.3				*No comment*	
3.2.4				*No comment*	

Table 6. For reports using the Risk-Based Framework.

Performance Indicator	Does the report clearly explain how the process(es) applied to determine risk using the RBF has led to the stated outcome? Yes/No	Are the RBF risk scores well-referenced? Yes/No	Justification: Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response:
1.1.1	*Yes*	*No*	The rationale for using landings as an index of abundance is unclear given that data on trends in CPUE are also available. It is generally accepted that CPUE (in most cases) represents a more reliable abundance index than does landings. In this case information throughout the report indicates that both landings and CPUE series are biased. However it appears that the landings series is more systematically biased than is the CPUE series. This issue is further confused in that multiple time series are presented for both indices, all showing differing trends, and it is unknown which trend (if any) best represents the UoA. Trends in all fishery parameters (Catch, Effort, and CPUE) should be presented, only for the series that best represent the UoA, and the choice of the index selected as most representative of abundance trends should be better rationalized. This is a very important point because use of Consequence Analysis in the RBF is conditional upon the existence of data from which trends can be identified. There are also several errors in Table 1.2.2 a-results of PSA analysis that have minor effects on scoring and rationale, as follows;	We agree with the opinion of the referee in the use of CPUE during the time series we studied and all the arguments addressed and also with the other points. In fact we refer to these issues throughout the report, did took them into account at the time of analyzing the evolution of the data from 2000 and we also presented the whole information we got from all stakeholders. These CPUE, in this area, is closely linked with the LPUE due to the particular and small-scale fishery we are dealing with. We also agree with the particular circumstances associated to the scarcity of data in these resources but it has to taken into account the particularity of this small-scale fisheries. That is a crucial point because the absence of data on stock status reference points, derived either from analytical or empirical approaches prevents to calculate, for instance the MSY or the point where the recruitment is impaired. That is why we applied the RBF in this principle P.1.1.1. The scoring derived from this analysis is calculated based on parameters such as fecundity of the species, average maximum age, trophic level etc. What we presented in the tables was a justification why we used the RBF and also introduced a discussion about the particular fishery on the common octopus in the area studied.

			Productivity; -The rationale for average age at maturity actually describes size at maturity. -Reproductive strategy should score 2 for demersal spawning (not 1, as in the table) -Density dependence should score 2 (not 3 as in the table for depensation) Susceptibility -Traps and trawls both score selectivity as 'regularly caught', but traps assign score=2 (correct) whereas trawls assign score=3 (incorrect…score 3 relates to frequently caught).	On the other hand, regarding the errors pointed by the referee, we almost agree with him. However, we would like to make some remarks: • ED: The rationale for average age at maturity actually describes size at maturity. CAB. He is right. However, the impossibility of verifying the age of the animals, we addressed their sizes. This is not very important since the score is 1 when the average age at maturity is five years or less and the life span of this species is about two years. The text was improved in the Table • ED: Reproductive strategy should score 2 for demersal spawning (not 1, as in the table) CAB. This point was studied in detail because was quite controversial. We had decided to score as 1 because the octopus spawning is conceptually benthic rather than demersal. However, since there is parental care of the eggs, the fertilization is quite different than i.e. corals and finally we have to take the most precautionary score, we agree with ED and changed the score for 2. This does not influence the overall scoring. The RBF Table was also corrected. • ED: Density dependence should score 2 (not 3 as in the table for depensation) CAB: Since there are not evidences in the bibliography regarding depensation in the areas studied, we decided to score in a precautionary way (3), as suggested by the MSC Fisheries Certification Requirements and Guidance. • ED: Traps and trawls both score selectivity as 'regularly caught', but traps assign score=2 (correct) whereas trawls assign score=3

				(incorrect…score 3 relates to frequently caught). CAB. He is completely right. The score (3) was correct but there was a typographic error since trawling "frequently" catches specimens smaller than first maturity. Corrected in the text.
2.1.1	*Yes*	*Yes*		
2.2.1	*Yes*	*Yes*		
2.3.1	*Yes*	*No*	Table 1.2.2 c. PSA rationale table for ETP species B: Susceptibility; states that 'Triton snail fishery…….'is there really a directed fishery on this ETP species? This table also describes selectivity of the gear for velvet crab (obviously not the relevant species) The post-capture mortality rationale in this table also appears to be based on velvet crab. This table should be carefully checked for other efforts.	The referee is right since there is not a directed fishery for this species but a catch of *Charonia lampas* in the traps. Corrected in the text. He is also right when he refers to the triton crab. This was a typographic error that was also corrected in the table. However, the post capture mortality is not referred to the crab but to the triton snail.
2.4.1	*Yes*	*Yes*		
2.5.1	*Yes*	*No*	Table 1.2.4 a. The SICA analysis rationale for consequence score seems to be interpreted basted on detectable changes in the Octopus population rather than in entire communities. Changes in the distribution of entire communities due to effects of the UoA would likely be negligible and not detectable against changes due to natural variation, given the high selectivity and lack of impact of the fishing gear. Accordingly it seems the score of 80 should be increased to 100.	What we refer here is the subcomponent on which the fishing activity is having the most impact. In this case, based on the whole information we got from the stakeholders, bibliography and other sources, the distribution of the community, not only the octopus, was addressed as the most vulnerable showing a possible detectable change in geographic range but minimal impact on communities dynamic change. Thus, the score of 80 should be maintained.

Table 7 For reports assessing enhanced fisheries.

Does the report clearly evaluate any additional impacts that might arise from enhancement activities? Note: Justification to support your answers is only required where answers given are 'No'.	**Yes/No**	**CAB Response:**
Justification: *N/A*		

- ***Peer Review 2***

Overall Opinion

Has the assessment team arrived at an appropriate conclusion based on the evidence presented in the assessment report?	**Yes**	**Conformity Assessment Body Response**
The conclusion is that the octopus fishery in the area has a low impact on target species, by-catch species, habitat and ecosystem and it complies with MSC Principles and Criteria to be certified subject to an agreed action plan to meet the conditions set. However, although a management plan exists for this fishery in the area, some of the management measures (TAC, number of traps by vessel) were arbitrarily (they were not based in any previous scientific or local knowledge) established long time ago and they have not been changed since then. In addition, fishing effort for the fishery is not controlled. Therefore, it is considered that this fishery needs to be closely monitored to be sure that the MSC principles and criteria are still met during the next few years.		We recognize that this is one of the weak points of the fishery and agreed that it should be monitored in the future. Nevertheless, the special characteristic of this artisanal fishery (particularly the flexibility that the legal framework gives to the fleet to change to another fishery based on fishers´decissions) is a key point for deducing the effort if captures decrease.

Do you think the condition(s) raised are appropriately written to achieve the SG80 outcome within the specified timeframe?	**Yes**	**Conformity Assessment Body Response**
Justification: The CAB has set three conditions for certification with respect to the Performance Indicators 1.2.2; 3.2.1 and 3.2.3. These are all relevant.		

If included:

Do you think the client action plan is sufficient to close the conditions raised?	**Yes**	**Conformity Assessment Body Response**
Justification: It seems that client action plan obliges the client to take action to remedy the deficiencies identified during the assessment process.		

Performance Indicator Review

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
Principle I					
1.1.1 Stock status	Yes	Yes	N/A	RBF The graph used to support your score in the justification section (Lourenco 2015) is missing (in the Appendix 1.2.1 it is impossible to read it due to the low quality of the image). The rationale supports the given score.	We agree. The graph was included in the text as suggested (justification section of PI.1.1.1.) and replaced properly by other more clear afterwards in the Appendix 1.2.1.
1.1.2 Stock rebuilding	N/A	N/A	N/A		
1.2.1 Harvest strategy	Yes	Yes	Yes	SI_f refers to unwanted catch of the target stock. Non-target species are assessed in P2. It is suggested to review the justification section.	Justification section has been reviewed to focus on unwanted catch of the target species.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
1.2.2 Harvest Control rule	Yes	Yes	Yes, Condition 1	SI_a The rationale supports the given score. However, the way in which the information is shown in the justification section seems to be unclear for me (maybe too long) and it is considered that this section should be reviewed. The assessors' team lists some management measures in place in the octopus fishery in Galician waters. Although this information is interesting, this area is not being assessed in the present report. Reading this information, it seems that the established closed seasons for the octopus fishery in both counties (From the 15th of July to December in Asturias and from May to the 1st of July in Galicia) are slightly contradictory. SI_c The assessor's team states: "the slow but steady drop of capture levels due to the alteration of climate factors". Although it seems true that octopus abundance depends on climate factors as you previously explained, it has not been proved that the drop of capture levels in waters of Asturias is due to this cause.	SI_a. We agree with the referee and improved the justification of the score. The aim of including Galicia there was the patchy distribution of the common octopus population, which makes that the managemente in neighbouring areas should be compatible. In both cases, the fishing season matches at the end on spring-commencement of summer. We have to bear in mind that the abundance in both regions is not the same and at the same time. That is why, among other reasons, the effort is different in both regions. In the text is seems clear that most of the management control is similar in both areas. We clarified these issues in the text. SI_c. We agree with the reviewer. However, this variation due to climatic factors was proved in the neighbour area of Galicia, as shown in the paper of Otero et al., 2008). We changed the te text to include this information

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
1.2.3 Information and monitoring	Yes	Yes	N/A	The rationale supports the given score.	
1.2.4 Assessment of stock status	N/A	N/A	N/A		
Principle II					

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
2.1.1 Primary species outcome	No	?	N/A	To justify the score in this PI the assessors's team used the pre-assessment carried out by BV, which is not available here. Therefore, it is difficult to check if the information used to score this indicator is correct. In page 125 (SA 3.1.7) of the MSC Fisheries Certification Requirements and Guidance document is stated: " The team shall consider species used as bait in the UoA, whether they were caught by the UoA or purchased from elsewhere, as either primary or secondary species using the definitions provided under SA 3.1.3 and SA 3.1.4 respectively". In your rationale, I can not find any reference to the bait used in this fishery (probably mackerel or sardine). Have you considered these species in your assessment?	The reviewer is right. We did not include any justification because the creel fishery in the UoA do not use fresh or frozen bait (sardine, mackerel or any other commn bait) but blocks of artificial bait that is more effective and lasts more time underneath the water surface. We clarified this information in the general information of Principle 2 and in the Tables of Primary and Secondary species.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
2.1.2 Primary species management strategy	Yes	No	N/A	There is not any reference to bycatch species in the MP for the octopus fishery in Asturias. Therefore, it is difficult to support that there is a partial strategy in place to maintain primary species just because there is a MP for the octopus fishery. It is considered SG80 is hardly met and this section needs to be reviewed. It also applies to PIs 2.2.2 and 2.3.2. SI_a In 1.2.2 the assessors' team indicated that the management plan for the octopus fishery includes a five months closed season (from July to December) but in this section you stated that the closed season lasts three months. Which one is correct?	The management plan does not include bycatch records, nevertheless the harvest strategy includes a comprehensive monitoring of all unwanted catch (undersized octopus, ETP species and other bycatch species) in this fishery. This monitoring, starting in 2014, is beeing carried out jointly between the CEP and the private consultancy SIGMA SL and registers onboard the boats all unwanted catches during the fishing season. Possible changes in the bycatch composition will be detected. The survivorship of the unwanted catch is also checked. Fishers will also have to fill out log books with this information. We consider this monitoring is a partial strategy, that it is moreover, going to be maintained in the future. Closed season is 5 months from July to December as stated in PI 1.2.2. The mistake in this section has been corrected.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
2.1.3 Primary species information	No	No	N/A	The rationales given in this PI seem to be very general and difficult to understand. It is suggested to review all of them.	There are no Primary species in this fishery, nevertheless we have been cautious scoring this PI as 85.
2.2.1 Secondary species outcome	*No*	*No*	*N/A*	RBF In table Appendix 1-3 the catch of Necora puber in the Cantabrian Sea comprises more than 5% by weight of the total catch of all species. However, the assessor's team has stated several times that the percentage of this species caught in the area is lower than 5%. It is suggested to clarify this information. If I am correct the scoring guidepost for this PI in the RBF section is 80 but in the justification section it is shown a score of 100.	The most comprehensive information available was the work done in the nearby Galician octopus trap fishery (Xunta de Galicia 2007). This information was used in the RBF. In the whole Galician coast the % in weight of *Necora puber* is 4.7% and in particular in the cantabrica coast of Galicia is 5.5%. Based on this and beeing conservative, *Necora puber* was considered as Secondary and main species in the Asturian octopus fishery. After doing the PSA the MSC Score (excel cell AD54) is 100. Following PF5.1.2 of the FCRv2.0, the PSA alone shall be used to produce the overall score for this PI.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
2.2.2 Secondary species management strategy	*Yes*	*No*	*N/A*	See my first comment in PI 2.1.2 (There is not any reference to bycatch species in the MP for the octopus fishery in Asturias […]). The first table shown in SI_a needs a footnote to know the source of this information. SI_b It is unclear if the rationale shown in this section refers to primary or secondary species. It is suggested to clarify this information. SI_e SG80 states: "There is a **regular** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality" In the rationale section the assessors' team notes that this review started in 2014. In my opinion due to the recent implementation of this measure, it is unclear if this review can be considered **regular.**	As stated in the CAB response for PI 2.1.2 the management plan does not include bycatch records, nevertheless the current harvest strategy includes a comprehensive monitoring of all unwanted catch (undersized octopus, ETP species and other bycatch species) in this fishery. This monitoring, starting in 2014, is beeing carried out jointly between the CEP and the private consultancy SIGMA SL and registers onboard the boats all unwanted catches during the fishing season. Possible changes in the bycatch composition will be detected. The survivorship of the unwanted catch is also checked. Fishers will also have to fill out log books with this information. We consider this monitoring is a partial strategy, that it is moreover, going to be maintained in the future. Data from the table mentioned by the reviewer comes from this monitoring. A reference has been added to the table in the SI_a justification. Before 2014 the CEP conducted some monitoring and log books were also filled up by the fishers not detecting bycatch. Besides the sales notes of the fishery does not show relevant bycatch. These measures were reviewed and the current strategy explained was settled. We therefore consider there is a regular review.
2.2.3 Secondary species information	*Yes*	*Yes*	*Yes*	The rationale supports the given score.	

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
2.3.1 ETP species outcome	Yes	Yes	N/A	RBF In the susceptibility table (table B, selectivity of gear type) of the PSA analysis you talk about velvet crab when the species being assessed is triton snail. In page 147 the number of the PI is incorrect (PI 2.3.1 nor 2.1.3). The MSC scoring guidepost shown here is >=80.	Velvet crab has been changed by triton snail in Table B. PI number in page 147 has been changed. After doing the PSA the MSC Score (excel cell AD54) is 85. Following PF5.1.2 of the FCRv2.0, the PSA alone shall be used to produce the overall score for this PI.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
2.3.2 ETP management strategy	Yes	No	N/A	See my first comment in PI 2.1.2 (There is not any reference to bycatch species in the MP for the octopus fishery in Asturias […]).	As stated in the CAB response for PI 2.1.2 the management plan does not include bycatch records, nevertheless the current harvest strategy includes a comprehensive monitoring of all unwanted catch (undersized octopus, ETP species and other bycatch species) in this fishery. This monitoring, starting in 2014, is beeing carried out jointly between the CEP and the private consultancy SIGMA SL and registers onboard the boats all unwanted catches during the fishing season. Possible changes in the bycatch composition will be detected. The survivorship of the unwanted catch is also checked. Fishers will also have to fill out log books with this information. We consider this monitoring is a partial strategy, that it is moreover, going to be maintained in the future.
2.3.3 ETP species information	Yes	Yes	N/A	The rationale supports the given score.	

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
2.4.1 Habitats outcome	Yes	Yes	N/A	RBF The MSC scoring guidepost shown in the RBF section is >=80 but in the justification section is 100 (According to the MSC Fisheries Certification Requirements and Guidance document: "If additional information is available to justify modifying the final MSC score, the team should use it to adjust the score either upward or downward by a maximum of (only) 10 points").	After doing the CSA the MSC Score (excel cell AD54) is 95. Following PF7.6.3 of the FCRv2.0, where no additional information exists to bring to bear on the PI, the team shall apply the MSC score directly to the PI
2.4.2 Habitats management strategy	Yes	No	N/A	It is considered that due to the recent implementation of the fishing zone monitoring system, it is difficult to say that a partial strategy is in place in regard to the impact of the fishery on the habitat. It is true that habitat data is being collected but a strategy to reduce the impact of the fishing gear on the sustrate is not yet implemented. It is suggested to review this justification.	The PI 2.4.1 is socred 95. The traps used in this fishery by itself is a partial strategy. Moreover thejoint project between the CEP and SIGMA SL is tracking several boats by GPRS, so fishing areas will be comprehensively detected and could be compared to protected areas or sensitive habitats.
2.4.3 Habitats information	Yes	Yes	N/A	The rationale supports the given score.	

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
2.5.1 Ecosystem outcome	*Yes*	*Yes*	*N/A*	When applying the SICA analysis to this PI it seems that the rationale used for the consequence score refers only to the octopus stock. It is understood that this PI refers to the whole ecosystem and it is suggested to review this justification.	The text was improved to avoid misundesrtandings.
2.5.2 Ecosystem management strategy	*No*	*No*	*N/A*	SI_ b The justification section is difficult to understand. It is proposed to review this section. SI_c Evidence that the measures included in the management strategy are implemented successfully is not provided in the justification section. It is proposed to review the justifications.	Both sections were clarified according to the sugestions made by the referee
2.5.3 Ecosystem information	*Yes*	*Yes*	*N/A*	The rationale supports the given score.	
Principle III					
3.1.1 Legal and/or customary framework	*Yes*	*Yes*	*N/A*	The rationale supports the given score.	

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
3.1.2 Consultation, roles and responsibilities	*Yes*	*Yes*	*N/A*	The rationale supports the given score.	
3.1.3 Long-term objectives	*Yes*	*Yes*	*N/A*	The rationale supports the given score.	
3.2.1 Fishery specific objectives	*Yes*	*Yes*	*Yes, Condition 2*	The rationale supports the given score.	
3.2.2 Decision making processes	*Yes*	*Yes*	*Yes*	The rationale supports the given score.	

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
3.2.3 Compliance and enforcement	*Yes*	*Yes*	*Yes, Condition 3*	SI_a. The first phrase in the justification section seems to indicate that SG_80 is met. Please review this paragraph. I do not have specific information about this particular fishery but it seems clear that the number of traps set by vessel and total landings of octopus and other species are not exhaustively monitored in other local fisheries in Spain and Portugal. Therefore, it is considered that the rationale supports the given score (75).	Thanks for pointing this out, first phrase was wrong and therefore deleted. SI a is 60 as justified in the next paragraphs.
3.2.4 Monitoring and management performance evaluation	*Yes*	*Yes*	*N/A*	The rationale supports the given score.	

Any Other Comments

Comments	Conformity Assessment Body Response
Page 57. The score shown in the summary table for PI 3.1.3 (Long term objectives = 80) does not coincide with the score given in the justification section for this PI (100). Some other scores do not coincide with the scores shown in the RBF section.	The table is corrected in section.