

5th Meeting of the Scientific Committee

Shanghai, China, 23 - 28 September 2017

SC5-Doc06

Summary Species Profiles

SPRFMO Secretariat

In 2007, the scientists involved in the international consultations leading to the SPRFMO Convention developed detailed biological and fisheries profiles for the twelve most commonly caught species in the high seas of the South Pacific Ocean. All these species profiles can be accessed on the SPRFMO website at: <https://www.sprfmo.int/meetings/meeting-archive/international-consultations-and-preparatory-conference/new-meetingpage-Science-Working-Group/swg-profiles/species-profiles/>

The Secretariat is currently updating the SPRFMO webpages with the intent of making them more user friendly while also providing useful information to the broad spectrum of SPRFMO stakeholders and the interested public. Guillaume Carruel, who performed an internship at the SPRFMO Secretariat from February to May 2017, expressed interest in producing introductory materials for the SPRFMO fishery resources. He developed eight “Summary Species Profiles” which contain relevant information in a consistent and condensed format. In addition to the comprehensive SPRFMO species profiles, he used information from FishBase and FAO publications and received valuable input from SPRFMO scientists who reviewed his first drafts and provided corrections, comments and guidance.

The Scientific Committee is requested to consider the attached Draft Summary Species Profiles regarding their content and suitability for publication on the SPRFMO website.

Furthermore, the Scientific Committee might address a possible revision of the comprehensive species profiles elaborated in 2007 and not since updated (with exception of *Trachurus murphyi*). The Secretariat is prepared to support such a process, including communications, technical editing and formatting of the final documents, but would require the involvement of one or more scientific editor(s), appointed by the SC, to oversee the scientific review process and for final clearance.

Draft Summary Species Profiles attached:

1. *Trachurus murphyi*
2. *Scomber japonicus*
3. *Hoplostethus atlanticus*
4. *Beryx splendens*
5. *Hyperoglyphe antarctica*
6. *Oreosomatidae*
7. *Epigonus telescopus*
8. *Dosidicus gigas*



Enhancing communication, transmission of knowledge and transparency: Summary Fish Profiles

By Guillaume Carruel¹

Objectives:

The objective of the project is both to reach a **broader public** for the “Fish Species Profiles” that were made by the first SC meetings and to bring a **new perspective** on the SPRFMO role regarding these species fisheries. The complete fish profile will still be available

To fulfil these objectives, the summary fish profile will provide the reader with **synthetic updated scientific details** on the species, **data on the fisheries** of the South Pacific and SPRFMO related **management information**. The aspect of the document will be reader friendly and will include visual material.

Choices and content:

The material to display in the summary fish profiles were divided in 5 essential categories:

- The **fish biology**, recalling the main characteristic of the species (morphology, colour, size data, longevity, age at sexual maturity, details on spawning and food-web role)
- The **Distribution of the Species**, detailing the living environment, the geographical and vertical distribution, the population structure and dynamics.
- The **Fisheries in the South Pacific**, explaining the management units, gears, fishing impact and status of the stocks in the South Pacific high seas.
- The **Existing Management Measures**, referring to the existing SPRFMO CMM applying to this species.
- The **Research Program**, quoting the SC current research program (2013).

Three types of illustrations will enhance the information in the text:

- a colourful **scientific drawing** of the species to clarify the morphology and colour details.
- a **distribution map** in the South Pacific.
- a **chart of the catches**, displaying catches in the SPRFMO area and in the FAO Fishing Areas 81 and 87 (the only FAO Fishing Area entirely contained in the SPRFMO area).

Where there were still some scientific controversy, we tried to either avoid the subject when dealing with a marginal information or consider the different hypothesis regarding major subjects.

Procedure:

A standardized template for the summary fish profile was elaborated (see next page). Then, for each species, we went through the existing “Fish Species Profile”, the FAO Fact Sheet, the FAO catch statistics, the SPRFMO catch reports, the information from FishBase, all the SC reports, the relevant national reports, the SC current research program, and the SPRFMO CMMs.

Future perspectives:

Some aspects of this summary fish profiles are perfectible and some work may be needed to improve them.

- The distribution maps could be homogenised between profiles (using a SPRFMO area font)
- The FAO statistics taken into account are for the area 81 and 87, but SPRFMO is partly covering FAO areas 77, 71 and 57 too. For now, the approximation seems reasonable as the main species covered are not found in the part of the FAO areas 71, and 77 within SPRFMO. Regarding area 57, only the Orange Roughy (and marginally Alfonsino) statistics could prove to be incorrect in the future (fishing occurring in the part of the FAO area 57 within SPRFMO -South of Australia- was closed from 2006 to 2015 and is now controlled by TACs) and it may be useful to look more closely at the Australian reports in the area (otherwise facing an underestimation of the “FAO catches for the South Pacific” figures).
- Update will be needed regarding evolutions of scientific knowledge, management measures, and research perspectives.
- Ultimately, the former “Fish Species Profile” will need some update regarding new researches and scientific progress.

¹ SPRFMO Secretariat Intern, February to May 2017

Common name (*Scientific name*), family, order

Other common names

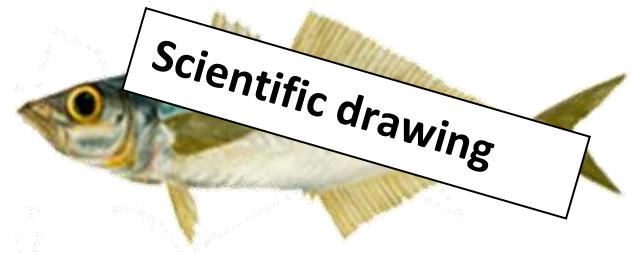
Biology

Morphology and colour:

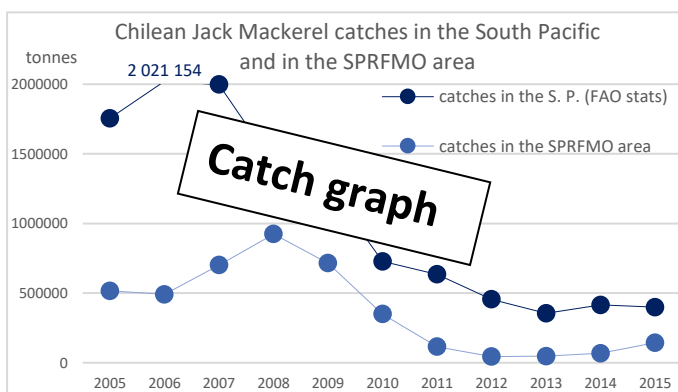
Size:

Age:

Ecology:



Fisheries in the South Pacific



Distribution in the South Pacific

Geographic distribution:

Vertical distribution:

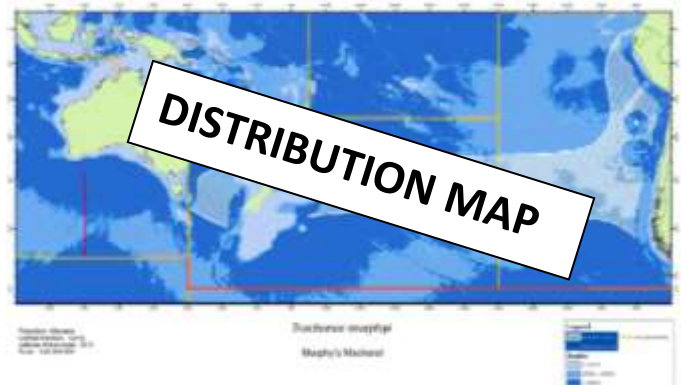
Population structure and dynamics

Management units:

Gear:

Impact:

Status of the stocks and trends:



Research program.

Further research will include:

Existing management measures

All fishing vessels in the SPRFMO Area require authorisation to fish and have to observe all relevant CMMs.

CMM XX:

Chilean jack mackerel (*Trachurus murphyi*), Carangidae, Perciformes

Chinchard du Chili (FAO), Furel, Horse mackerel, Inca scad, Jack mackerel, Jurel, Jurel del Pacifico Sur, Jurel chileno (FAO), Murphy's mackerel, Pacific jack mackerel, Peruvian jack mackerel

Biology

Morphology and colour: Body elongate and slightly compressed. Dark blue dorsal body, silver-white ventrally; upper posterior margin of opercula bear a black spot; pale pelvic fins; caudal, pectoral, and dorsal fins dusky; anal fin pale in the front, dusky in the rear.

Size: Estimated to be up to 79cm (TL) (70.6cm FL) max, size at maturity from 23cm to 33cm (TL) (21cm to 30cm FL).

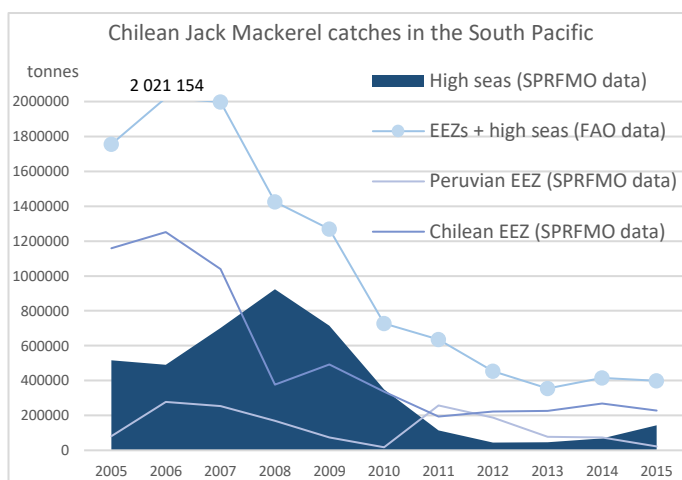
Age: Depending on the place, and the calculation method used, maximum age between 11 and 35 years.

Ecology: Spawning season from July to March. The suitable environmental conditions seem to be a water warmer than 15 °C, and low current. Generalist feeder preying on a wide range of species (crustaceans, small fishes and squid). May be acting to channel energy flow from primary producers to top predators, but not restricted to this role. Predators feeding on *T. murphyi* are similar to those of other mackerels, they include tunas, billfish, and sharks. *T. murphyi* is the main species in the open ocean of the South-Pacific. It is likely to have an important function in the food-webs of the Pacific Ocean (as predator and prey).



© Andres Julian

Fisheries in the South Pacific



At present, there is no directed fishery for *T. murphyi* in the Central and Western South Pacific.

Fishing gear: Purse seine and pelagic trawling.

Impact: Generally mono-specific fisheries, minor bycatch of *Scomber japonicus* and *Brama australis*. SPRFMO applies an ecosystem approach to fisheries management and has taken measures to protect vulnerable marine ecosystems and sea birds.

Status of the stocks and trends: The stock remains at low levels, but shows a continued recovery (population estimates are increasing) since the time-series low in 2010. Fishing effort at or below current (2016) levels were projected to increase spawning biomass from 4.1 million t to 5.2 million t in 2017.

Distribution in the South Pacific

Pelagic (from shores to the open ocean) fish with schooling behaviour.

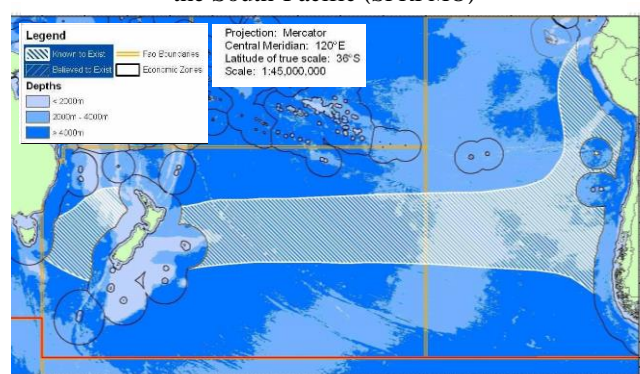
Geographic distribution: Throughout the Southeast Pacific, both inside EEZs and in the high sea. In the 70's expanded its distribution toward the west, reaching New Zealand and forming, within a 35° to 50° S, a variable band, the "Jack Mackerel belt".

Vertical distribution: Between 0 and 300m (depending on water temperature, sometimes on the time of the day and, when close to coastal upwelling areas, on the oxygen content of the water column).

Population structure and dynamics: Several competing stock structure hypotheses suggesting between one and up to five and more separate stocks: Chilean straddling stock, Peruvian straddling stock, high seas central Pacific stock, high seas Southwest Pacific stock, and a New Zealand - Australian straddling stock.

The most relevant fluctuations of the populations are those resulting from the inter-annual dynamics of the El Niño Southern Oscillation and the longer term Inter-Decadal Pacific Oscillation.

Distribution map of *T. murphyi* in the high seas of the South-Pacific (SPRFMO)



Fisheries management

High seas, SPRFMO: (Conservation and Management Measure = CMM)

The scientists give their advices for the entire South-Pacific stock. Fishing vessels are required to observe all CMMs, including:

CMM 05: Authorisation of vessels

CMM 01: Addresses Jack mackerel fisheries in particular.

Effort limitation: Gross tonnage limits defined for each flag State.

Catch limits: Total Admissible of Captures established every year; 443 000 t in 2017 for the SPRFMO area & Chilean EEZ. Flag State catch allocations negotiated annually.

Chile agrees on a yearly basis to apply SPRFMO TACs in its EEZ.

CMM 09: Minimising bycatch of seabirds.

EEZs, national measures: TACs and management measures in Australia, Chile, New Zealand, and Peru.

SPRFMO request for relevant scientific advices (2017 [workplan](#) of the Scientific Committee):

Conduct an "update" of the jack mackerel stock assessment (evaluation of alternative stock structure hypotheses, provide a progress update on age determination protocols *T. murphyi*, determine if TAC advice should be revised (perhaps by creating an ensemble model of projection scenarios provided), evaluate the applicability of acoustics data collected, further developments of oceanographic data and modelling to characterize jack mackerel habitat).

Pacific Chub Mackerel (*Scomber japonicus*), Scombridae, Perciformes

Caballa, Caballa verde, Cavalinha, Chub mackerel, Estomino del Pacifico (FAO), Greenback Mackerel, Macarela, Magrú, Maquereau espagnol pacifique (FAO), Pacific Mackerel, Verle

Biology

Morphology and colour: Fusiform and elongate body, with a sharp muzzle. Belly is unmarked or with wavy lines. Dorsal colour green and yellow, with thin blue lines.

Size: 50cm (FL) max, common length of 30cm (FL). Size at sexual maturity is around 26cm (FL).

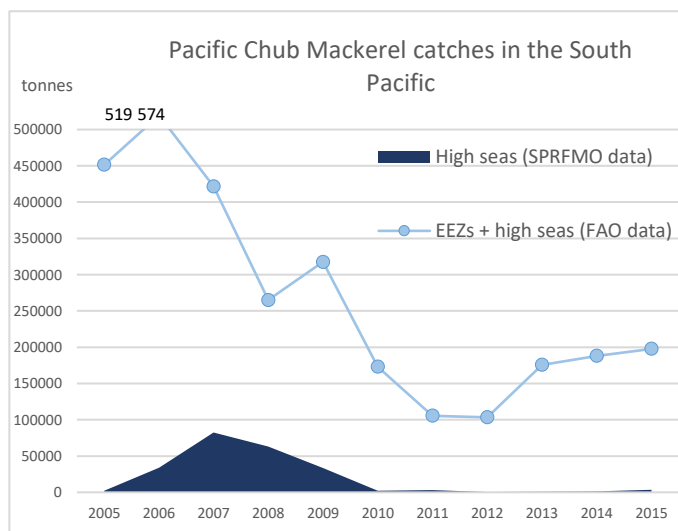
Age: Maximum age could be up to 18 years.

Ecology: In the Eastern Pacific, spawning occurs in several batches in summer. *S. japonicus* is an opportunistic feeder which can vary its trophic level depending on the moment and the type of food available (phytoplankton, copepods, larvae and small juveniles of other fish species). It is preyed upon by a large range of species, such as tunas, billfishes, white seabass, yellowtail, sharks, dolphins, whales and pelicans. These features make the species a very important component of the trophic web, as a link between production levels and top predators.



© NOAA FishWatch

Fisheries in the South Pacific



Fishing gear: Purse seine and pelagic trawling.

Impact: *S. japonicus* is mainly a by-catch of fisheries targeting *T. murphyi*. SPRFMO applies an ecosystem approach to fisheries management and has taken measures to protect vulnerable marine ecosystems and sea birds.

Status of the stocks and trends: Not known in the high seas, thought to range between moderately and overexploited.

SPRFMO request for relevant scientific advices

(2017 [workplan](#) of the Scientific Committee):

- Review scientific appropriateness of observer coverage by fishery.
- Review whether the data standards are appropriate for achieving the assessment goals.
- Evaluate the practicality of data collection programs for better understanding fishery and bird interactions.
- Review electronic at-sea, study fleet, and “self-sampling” monitoring approaches and consider how each may meet or supplement information in SPRFMO’s data standard (and consider practices of other RFMOs)

Distribution in the South Pacific

Pelagic fish with gregarious behaviour, forming schools by size.

Geographic distribution: In the South Pacific, along the coast from Panama to Chile, around the Galapagos Islands.

Vertical distribution: Between the surface and depths of 300m.

Population structure and dynamics: It is believed that the Eastern-South Pacific is home for two different stocks (Central-North Peru and North Chile). Other stocks could exist in the area. Stocks dynamics are not known.

Distribution map of *S. japonicus* in the South-Pacific (FAO)



Fisheries management

High seas, SPRFMO: (Conservation and Management Measure = CMM)

Fishing vessels are required to observe all CMMs, including:

CMM 05: Authorisation of vessels

CMM 09: Minimising bycatch of seabirds.

The CMMs applying to *T. murphyi* fisheries (CMM 01, effort limitation, catch limit) are by default impacting most of *S. Japonicus* fishing (as a by-catch).

EEZs, national measures: Management measures in Peru.

Orange Roughy (*Hoplostethus atlanticus*), Trachichthyidae, Beryciformes

Atlantic slimehead, Búrfiskur, Deep sea perch, Hoplostète orange (FAO), Huichidai, Red roughy, Reloj anaranjado (FAO), Reloj del Atlántico, Sea perch

Biology

Morphology and colour: Colour from pale orange to bright brick red. Mouth and gill cavity bluish black.

Size: 75cm (TL) max, size at sexual maturity is between 28 and 34cm (SL) in the Southwest Pacific.

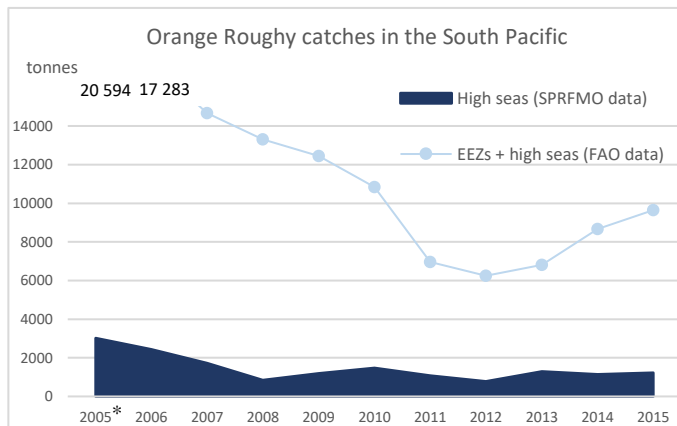
Age: Maximum age could be up to 150 years, age at sexual maturity is between 23 and 31 years (depending on the sex and location).

Ecology: The spawning of *H. atlanticus* occurs from May generally at depths of 700-1000 m. Fecundity is low and probably not all mature fish spawn every year. *H. atlanticus* is an opportunistic predator with juveniles feeding mainly on crustaceans, and switching to squid, fishes and others as they grow larger.



© Irish Sea Fisheries Board

Fisheries in the South Pacific



* Catches in 2005 might have been higher than 20 594 t as the catches off the south of Australia are not taken into account here.

Fishing gear: Bottom trawling.

Impact: Often found in association with a large number of other fish species (*Allocyttus niger*, *Pseudocyttus maculatus*, *Neocyttus rhomboidalis*, *Epigonus telescopus*, *Beryx splendens*, *Mora moro*, *Dalatias spp.*, and others). The impact of bottom fishing in the SPRFMO area has been assessed and, where there was concerns, SPRFMO has taken measures to protect vulnerable marine ecosystems (VMEs) and sea birds.

Status of the stocks and trends: Of the 10 stocks identified in New Zealand, 2 were likely to be in a good shape, 5 were not, and 3 had an unclear status. In Australia, of the 6 identified stocks, 3 were overfished, and one was undefined. In the high seas, progress has been made in assessments but their status remains unclear.

SPRFMO request for relevant scientific advices

(2017 [workplan](#) of the Scientific Committee):

- Ensure that catch series are updated to include all catch from study areas and finalise estimates of initial biomass, productivity, and stock status for relevant *H. atlanticus* sub-stocks.
- Consider the recent global review report of *H. atlanticus* biology, stock assessment, and approaches to management.
- Report on relevant data and model developments to predict VMEs indicator taxa
- Update data available and evaluate the impact of fishing activities on VMEs and ecologically or biologically significant marine areas in the convention area and evaluate spatial management options
- Review and recommend modifications to the bottom fishing measure
- Draft an assessment framework for demersal species.
- Draft risk assessment of the impact of deep water fishing on deep water sharks.

Distribution in the South Pacific

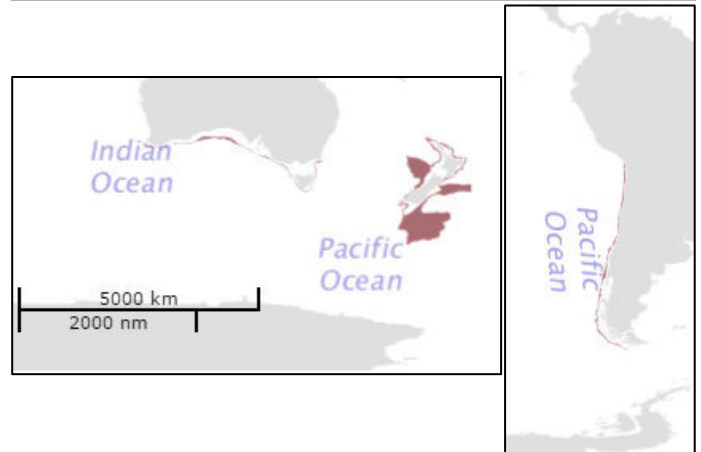
Bottom or near bottom fish.

Geographic distribution: In the Southwest Pacific, *H. atlanticus* occurs along the shelf edge of Southern Australia, around the entire New Zealand shelf, on ridge and hill features in the Tasman Sea, and on the Louisville Ridge. In the Southeast Pacific, it is found off Central and Southern Chile.

Vertical distribution: Found in depths of 180m to at least 1800m. Most common in depths from 700m - 1100m, generally near or within 100m off the bottom.

Population structure and dynamics: Although the species has a global distribution, individual stocks may occur on very small spatial scales in association with small groups of seamounts. Some individuals may migrate up to 100km in search of a spawning ground.

Distribution maps of *H. atlanticus* in the South-Pacific (FAO)



Fisheries management

High seas, SPRFMO: (Conservation and Management Measure = CMM)

Fishing vessels are required to observe all CMMs, including:

CMM 05: Authorisation of vessels

CMM 03: Management of Bottom Fishing.

CMM 09: Minimising bycatch of seabirds.

EEZs, national measures: Several stocks managed in the Australian, New Zealand and Chilean EEZs with total allowable catches applying. Memorandum of Understanding between Australia and New Zealand regarding South Tasman rise.

Splendid alfonsino (*Beryx splendens*), Berycidae, Bericiformes

Alfonsino, Alfonsino besugo (FAO), Bérýx long (FAO), Imperador, Splendid alfonsino, Slender alfonsino

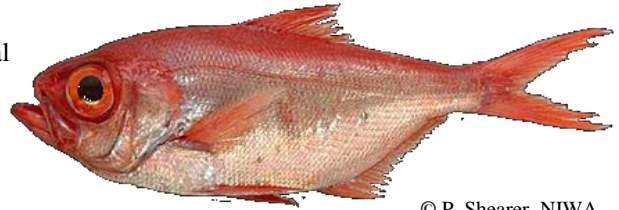
Biology

Morphology and colour: 4 dorsal spines, 13–16 soft dorsal rays, 4 anal spines, and 26–30 soft anal rays. The lateral line extends to caudal fin.

Size: 70cm (FL) max and 4kg max. Average size at maturity is between 30 and 34cm (FL).

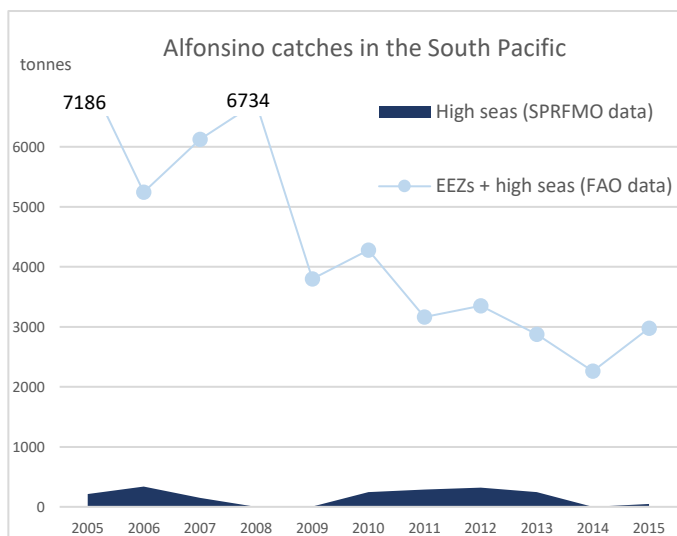
Age: Maximum age of 20 years (depending on the sex and the location), age at sexual maturity is around 2 years.

Ecology: Spawning season is variable between locations. *B. splendens* generally swim clear of the bottom but move progressively closer to the seabed as they mature. *B. splendens* inhabit rocky bottoms. They are often found in association with bluenose (*Hyperoglyphe antarctica*), gemfish (*Rexea solandri*), hoki (*Macruronus novaezelandiae*), javelinfish (*Lepidorhynchus denticulatus*), and orange roughy (*Hoplostethus atlanticus*). *B. splendens* feeds by hunting, within 20m of the bottom, mainly small squids and fishes, but also crustaceans. They are prey at various stages of their life to other bony fishes and sharks.



© P. Shearer, NIWA

Fisheries in the South Pacific



Fishing gear: Bottom trawling, sometimes mid-water trawling.

Impact: Found in association with a large number of other fish species (*Hoplostethus atlanticus*, *Alloctytus niger*, *Pseudocyttus maculatus*, *Neocyttus rhomboidalis* and others). The impact of bottom fishing in the SPRFMO areas has been assessed and, where there was concerns, SPRFMO has taken measures to protect vulnerable marine ecosystems (VMEs) and sea birds.

Status of the stocks and trends: Not known in the high seas.

Distribution in the South Pacific

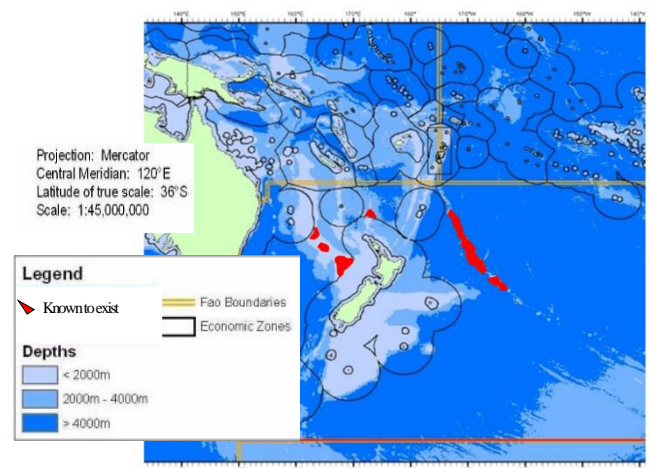
Bottom or near bottom fish species found on outer continental shelves and slopes, seamounts and ridges.

Geographic distribution: In the Pacific, it is found in the Tasman Sea and the Juan Fernandez Ridge.

Vertical distribution: Between 25 and 1300m (depending on the age and area), adults are most abundant between 300 and 700m in the South Pacific.

Population structure and dynamics: There is no information available as to whether *B. splendens* is a single stock in the South Pacific or not.

Distribution map of *B. splendens* in the high seas of the South-Pacific (SPRFMO)



SPRFMO request for relevant scientific advices

(2017 [workplan](#) of the Scientific Committee):

- Report on relevant data and model developments to predict VME indicator taxa
- Update data available and evaluate the impact of fishing activities on VMEs and ecologically or biologically significant marine areas in the convention area and evaluate spatial management options
- Review and recommend modifications to the bottom fishing measure
- Draft an assessment framework for demersal species.
- Draft risk assessment of the impact of deep water fishing on deep water sharks.

Fisheries management

High seas, SPRFMO: (Conservation and Management Measure = CMM)
Fishing vessels are required to observe all CMMs, including:

CMM 05: Authorisation of vessels

CMM 03: Management of Bottom Fishing.

CMM 09: Minimising bycatch of seabirds.

EEZs, national measures: Landings of *B. splendens* from the New Zealand, Australian, and Chilean EEZ are regulated by catch limits.

Bluenose warehou (*Hyperoglyphe antarctica*), Centrolophidae, Perciformes

Blue-eye cod, Blue-eye trevalla, Bluenose, Blue nose, Big-eye, Deepsea trevally, Deep sea travella, Matiri, Rouffe antarctique (FAO), Rufo antártico (FAO), Sea trevally, Trevalla

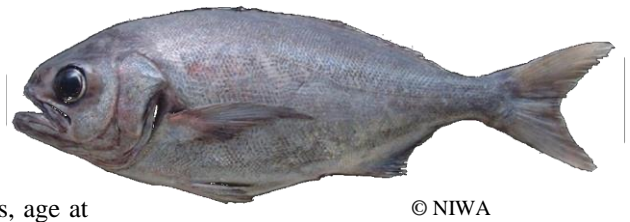
Biology

Morphology and colour: Uniformly dark to black compressed body with a continuous dorsal fin.

Size: 140cm (FL) max, size at sexual maturity is 60cm (FL) for males and 70cm (FL) for females.

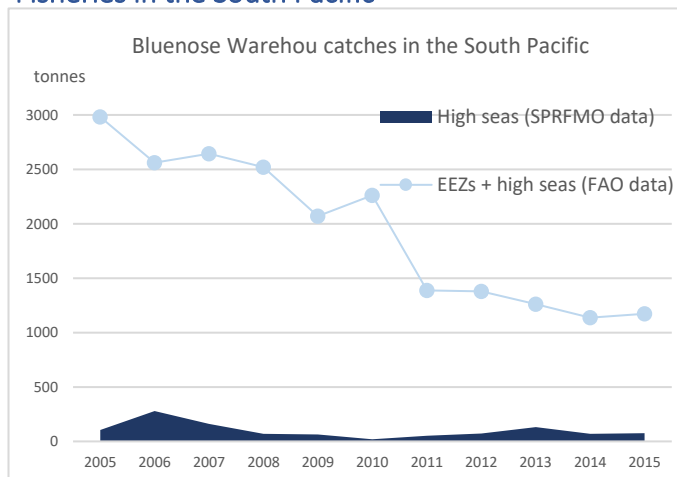
Age: Maximum age of at least 25 years, and might be up to 76 years, age at sexual maturity is between 7 and 12 years.

Ecology: Spawning occurs off Tasmania from late summer to autumn with females releasing oocytes in three or four large batches. The aggregations can begin to form some months before spawning starts. *H. antarctica* feeds on midwater organisms (pelagic tunicates, squid, small fish and occasionally crustaceans). They are prey at various stages of their life to other fishes (particularly sharks and orcas).



© NIWA

Fisheries in the South Pacific



Multi-species fisheries, targeted and non-targeted catches.

Fishing gear: Bottom trawling, midwater trawling, bottom longlines, dahn lines, trot lines, and drop lines.

Impact: Trawl fisheries often find *H. antarctica* in association with *Beryx splendens*, *Beryx decadactylus*, *Nemadactylus sp.*, *Plagiogeneion rubiginosus* and other non-commercial species (congers, sharks and others). The impact of bottom fishing in the SPRFMO areahas been assessed and, where there was concerns, SPRFMO has taken measures to protect vulnerable marine ecosystems (VMEs) and sea birds.

Status of the stocks and trends: Not known in the high seas.

SPRFMO request for relevant scientific advices (2017 [workplan](#) of the Scientific Committee):

- Report on relevant data and model developments to predict VME indicator taxa
- Update data available and evaluate the impact of fishing activities on VMEs and ecologically or biologically significant marine areas in the convention area and evaluate spatial management options
- Review and recommend modifications to the bottom fishing measure
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Distribution in the South Pacific

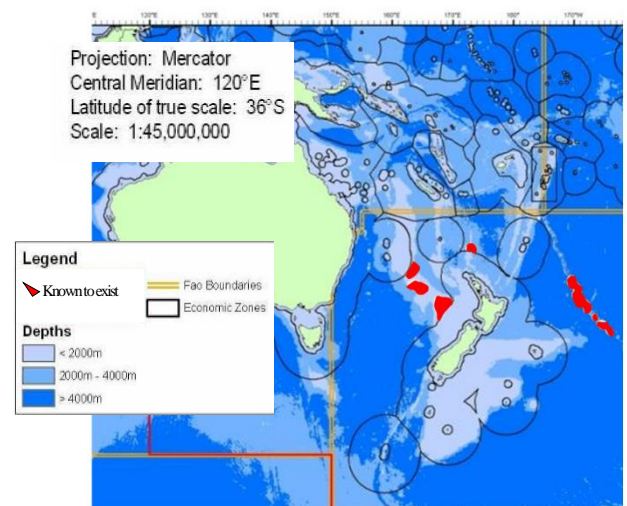
Bottom or near bottom fish.

Geographic distribution: In the South Pacific, it is found in the Tasman Sea, Australian and New Zealand EEZs.

Vertical distribution: Depths of about 40m to at least 1000m (depending on life stage and diurnal vertical migration), most common between 200 and 750m.

Population structure and dynamics: Generally sedentary in the short term (6-8 months), although age specific migration may occur (leading to broad scale connectivity amongst regional population).

Distribution map of *H. antarctica* in the high seas of the South-Pacific (SPRFMO)



Fisheries management

High seas, SPRFMO: (Conservation and Management Measure = CMM)

Fishing vessels are required to observe all CMMs, including:

CMM 05: Authorisation of vessels

CMM 03: Management of Bottom Fishing.

CMM 09: Minimising bycatch of seabirds.

EEZs, national measures: Landings of *H. antarctica* from the New Zealand, and Australian fisheries are regulated by catch limits.

Oreo species complex, Oreosomatidae, Zeiformes

a. (*Allocyttus niger*), Black dory, Black oreo (FAO), Black oreo dory

b. (*Neocyttus rhomboidalis*), Deepwater dory, Deepwater oreo dory, Oreo dory, Oxeye oreo, Spiky oreodory, Spiky oreo (FAO)

c. (*Pseudocyttus maculatus*), Oreo dory, Round oreo, Smooth dory, Smooth oreo, Smooth oreo dory (FAO), Spotted dory, Spotted oreo

Biology

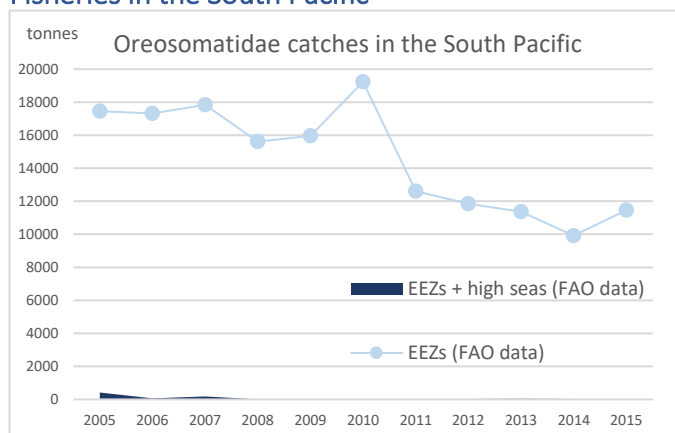
Morphology and colour: Body black to grey for *A. niger* and *N. rhomboidalis*, chocolate brown for *P. maculatus*, with dark fins.

Size: 55cm (TL) max for *A. niger*, 44cm (TL) max for *N. rhomboidalis*, 60cm (TL) max for *P. maculatus*. Females reach a larger size than males. Size at sexual maturity is 34cm (TL) for the two first species, 40cm (TL) for *P. maculatus*. Very slow growth rate.

Age: Maximum age is 150 years (for *A. niger*), 120 years (for *N. rhomboidalis*) and 100 years (for *P. maculatus*). Age at sexual maturity is between 27 and 31 years.

Ecology: Spawning of Oreos occurs around spring in the South-West Pacific. Juveniles are pelagic for a few years before living close to the seabed in large shoals (often segregated by sex) over rough ground near pinnacles and canyons. Oreos are grazers and opportunistic predators, they feed on salps, benthic crustaceans (*N. rhomboidalis*, *P. maculatus*), fishes and squids (*N. rhomboidalis*).

Fisheries in the South Pacific



Mainly a by-catch of *Hoplostethus atlanticus* fisheries, but also targeted.

Fishing gear: Bottom trawling.

Impact: Often found in association with other oreos, *Hoplostethus atlanticus*, *Beryx splendens*. The impact of bottom fishing in the SPRFMO area has been assessed and, where there was concerns, SPRFMO has taken measures to protect vulnerable marine ecosystems (VMEs) and sea birds.

Status of the stocks and trends: Not known in the high seas.

SPRFMO request for relevant scientific advices

(2017 [workplan](#) of the Scientific Committee):

Report on data and model developments to predict VME indicator taxa

Update data and evaluate the impact of fishing activities on VMEs and ecologically or biologically significant marine areas in the convention area and evaluate spatial management options

Review and recommend modifications to the bottom fishing measure

Draft an assessment framework for demersal species.

Draft risk assessment of the impact of deep water fishing on deep water sharks.

Existing management measures

High seas, SPRFMO: (Conservation and Management Measure = CMM)

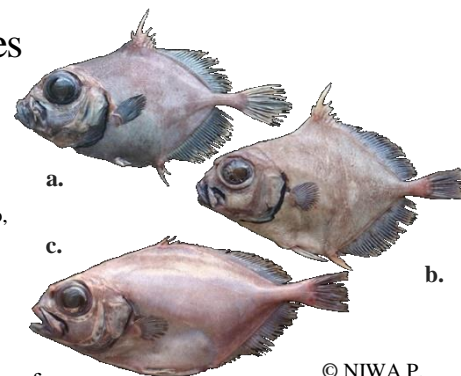
Fishing vessels are required to observe all CMMs, including:

CMM 05: Authorisation of vessels

CMM 03: Management of Bottom Fishing.

CMM 09: Minimising bycatch of seabirds.

EEZs, national measures: In Australian and New Zealand EEZs, management measures and annual total catches are in place.



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Distribution in the South Pacific

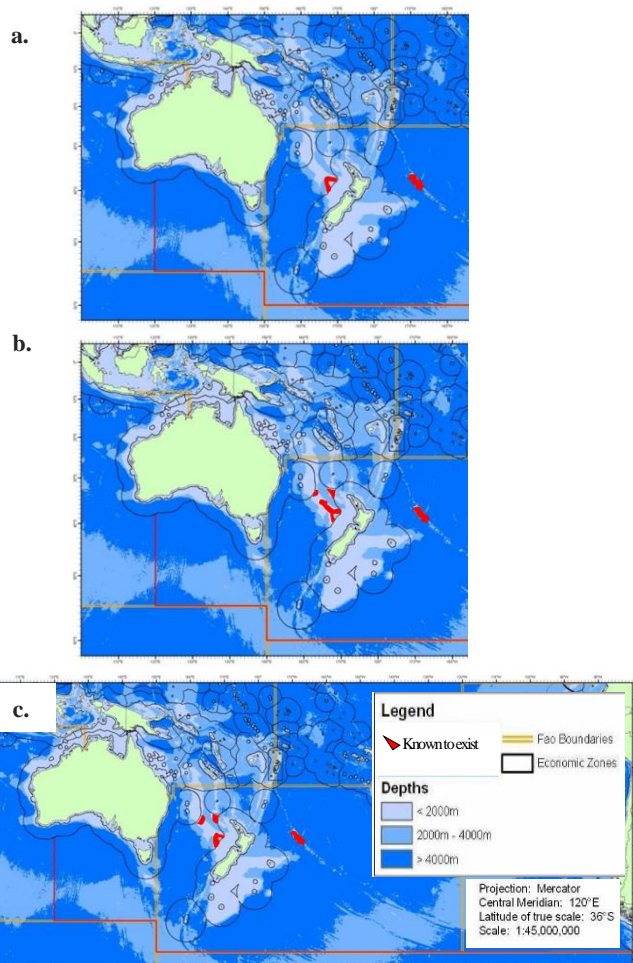
Bottom or near bottom fish.

Geographic distribution: Oreos are found in the New-Zealand and Australian EEZs, in the Tasman sea and on the Louisville Ridge. *P. maculatus* found off Chile too.

Vertical distribution: Depths of 400m (200m for *N. rhomboidalis*) to 1500m. Most common in depths from 600m - 1000m (and from 600 to 1400m for *P. maculatus*).

Population structure and dynamics: Oreos probably migrate to spawning grounds (distance unknown). Stocks are likely to be distinct on small scales.

Distribution maps of (a.) *Allocyttus niger*, (b.) *Neocyttus rhomboidalis*, and (c.) *Pseudocyttus maculatus* in the S.-P. (SPRFMO)



Black cardinal fish (*Epigonus telescopus*), Epigonidae, Perciformes

Black deepsea cardinalfish, Bulls-eye, Boca negra (FAO), Cardinalfish, Poisson cardinal (FAO), Telescope cardinal

Biology

Morphology and colour: Snout blunt, large eye, large mouth, lower jaw equalling or slightly protruding beyond upper jaw. Brown-violet or black, iridescent in life.

Size: 75cm (TL) max, size at sexual maturity is between 40 and 50cm (FL).

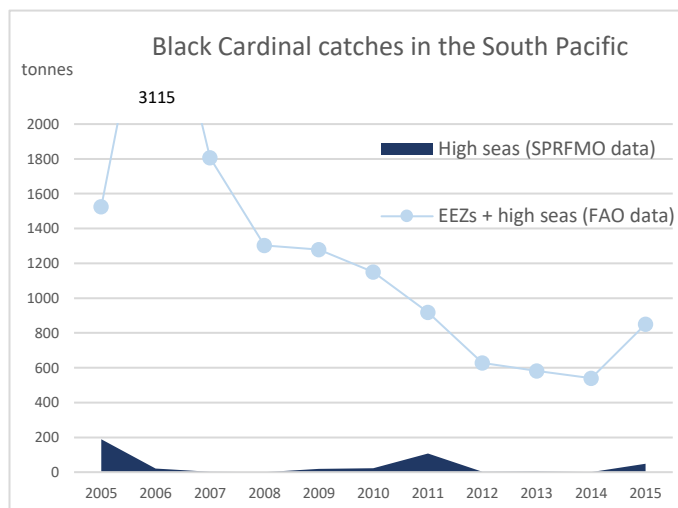
Age: Maximum age of around 100 years, age at sexual maturity could be 7 years old.

Ecology: Spawning may occur in winter in New Zealand. Juveniles are pelagic and undergo major changes as they mature, including moving closer to the seabed. *E. telescopus* adults feed on small fishes and planktonic invertebrates.



© UNKNOWN

Fisheries in the South Pacific



Mostly by-catch, sometimes targeted

Fishing gear: Bottom trawling.

Impact: Often found in association with *Hoplostethus atlanticus*, *Beryx splendens*, *Hyperoglyphe antarctica*, *Allocyttus niger*, *Pseudocyttus maculatus*, *Neocyttus rhomboidalis*. The impact of bottom fishing in the SPRFMO area has been assessed and, where there was concerns, SPRFMO has taken measures to protect vulnerable marine ecosystems (VMEs) and sea birds.

Status of the stocks and trends: Not known in the high seas.

SPRFMO request for relevant scientific advices (2017 [workplan](#) of the Scientific Committee):

- Report on relevant data and model developments to predict VME indicator taxa
- Update data available and evaluate the impact of fishing activities on VMEs and ecologically or biologically significant marine areas in the convention area and evaluate spatial management options
- Review and recommend modifications to the bottom fishing measure
- Draft an assessment framework for demersal species.
- Draft risk assessment of the impact of deep water fishing on deep water sharks.

Distribution in the South Pacific

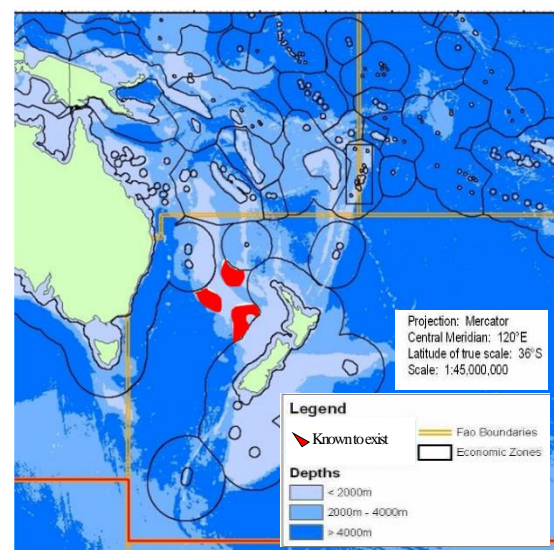
Bottom or near bottom fish.

Geographic distribution: In the Pacific, between Australia and New Zealand.

Vertical distribution: Depths of 75m to 1200m. Most common in depths from 600 to 900m.

Population structure and dynamics: Not known.

Distribution map of *E. telescopus* in the high seas of the South-Pacific (SPRFMO)



Fisheries management

High seas, SPRFMO: (Conservation and Management Measure = CMM)

Fishing vessels are required to observe all CMMs, including:

CMM 05: Authorisation of vessels

CMM 03: Management of Bottom Fishing.

CMM 09: Minimising bycatch of seabirds.

EEZs, national measures: Landings of *E. telescopus* from the New Zealand, and Australian EEZs are regulated by catch limits.

Jumbo flying squid (*Dosidicus gigas*), Ommastrephidae, Teuthida

Calamar rojo, Encomet géant (FAO), Humboldt squid, Jibia, Jibia gigante (FAO), Pota

Biology

Morphology and colour: Large squid. Mantle very large, robust, thick-walled. Rhomboidal, broad and muscular fins. Arm tips are elongated and carry closely packed suckers. Internal insemination; one of the arms of adult males becomes a sexual organ.

Size: 2.5m (TL) max, 1.2m (ML) max, and up to 50kg. Size at sexual maturity depends on the sex (females are larger), and the population.

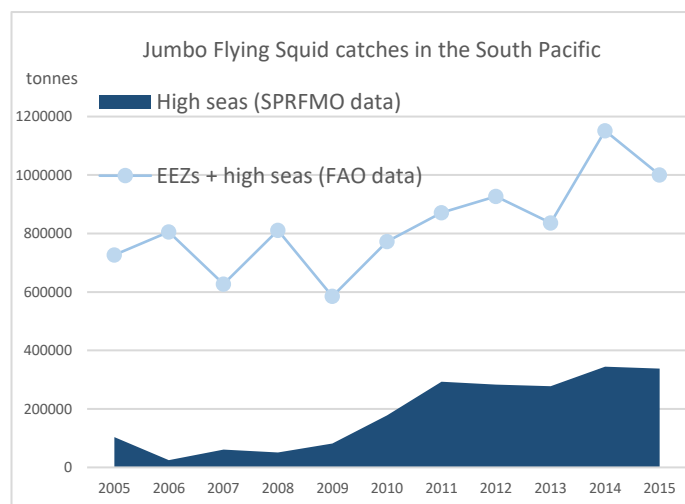
Age: Maximum age of 2 years and an average life span of 1 to 2 years depending on the population.

Ecology: *D. gigas* reproduce only once. Spawning occurs in surface-water of the continental slopes and in adjacent oceanic areas. The anatomical development includes four phases (paralarvae, juvenile, sub adult, adult) during which its important role in the oceanic food-web evolves. Prey to a variety of predators among which sperm whales, marlins, swordfishes and sharks, *D. gigas* is an opportunistic feeder and preys on open water fishes (e.g. *Sardinops sagax*, *Myctophidae*) and other available species.



© Roger Hall, inkart net, 2015

Fisheries in the South Pacific



Fishing gear: Hand jiggers, auto-machined jiggers, all with light emission, and mid-water trawling.

Impact: No information available for the jig fishery, but it is assumed to catch only squid. Some other squids may be taken. SPRFMO applies an ecosystem approach to fisheries management and has taken measures to protect vulnerable marine ecosystems and sea birds.

Status of the stocks and trends: Not known or uncertain, although the limited assessments available suggest that the stock(s) are likely not fully exploited.

SPRFMO request for relevant scientific advices

(2017 [workplan](#) of the Scientific Committee):

- Further develop assessment approaches
- Identify data needs to achieve spatially integrated assessment
- Historical catch data recovery is required
- Consider impact of incomplete spatial coverage (e.g., in-zone and SPRFMO area) and/or spatially disaggregated approaches

Distribution in the South Pacific

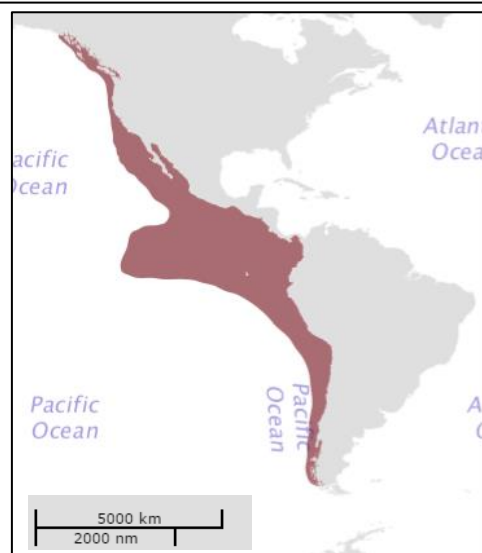
Species living between the layers close to the surface and near the bottom.

Geographic distribution: Endemic to the Eastern Pacific. Ranging from Northern California to Southern Chile, and from the Americas coasts to 140 °W at the equator.

Vertical distribution: Significant diel vertical migrations. Above 250m at night and under 250m during the day (sometimes under 1000m).

Population structure and dynamics: Demonstrate a considerable plasticity in the schooling behaviour. Long-distance migration is likely to be an important element in the life-history. Abundance is largely influenced by environmental variables such as the El Niño Southern Oscillation events. Genetic studies have confirmed that *D. gigas* off Peru and off Mexico belong to separate populations. Populations sub-units have been identified throughout its range.

Distribution map of *D. gigas* in the South-Pacific (FAO)



Fisheries management

High seas, SPRFMO: (Conservation and Management Measure = CMM)

Fishing vessels are required to observe all CMMs, including:

CMM 05: Authorisation of vessels

CMM 09: Minimising bycatch of seabirds.

EEZs, national measures: Management measures are in place in the Chilean and Peruvian EEZs.