Epigonus telescopus
Species Profile

SEAFO
South East Atlantic Fisheries Organisation

(Adapted from www.ictioterm.es)

<u>UPDATE</u>

DRAFT

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(Updated:)

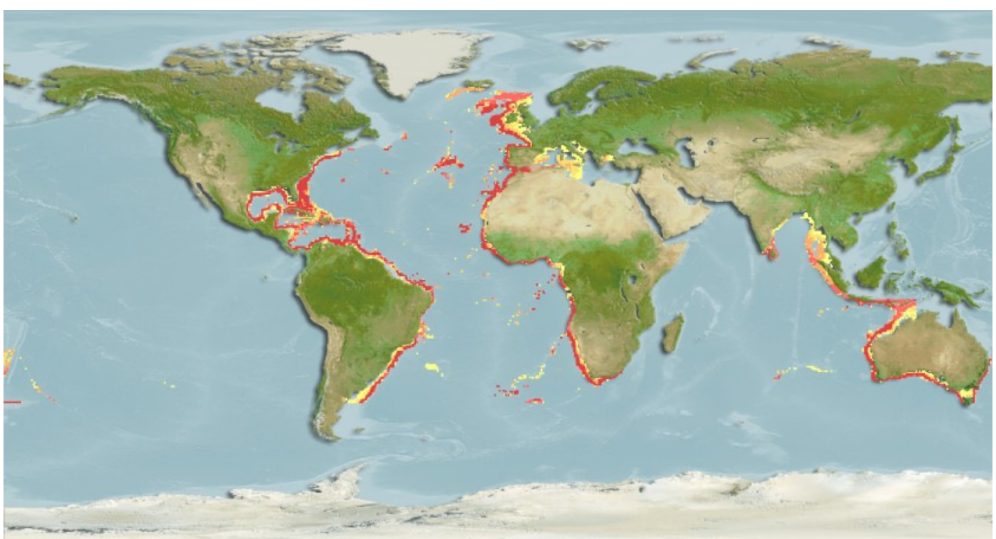
1. Taxomony

Phylum	Chordata
Subphylum	Vertebrata
Superclass	Osteichthyes
Class	Actinopterygii
Subclass	Neopterygii
Infraclass	Teleostei
Superorder	Acanthopterygii
Order	Perciformes
Suborder	Percoidei
Family	Epigonidae
Genus	*Epigonus* Rafinesque, 1810
Species	*Epigonus telescopus* (Risso, 1810)
Synonyms	*Epigonus macrophthalmus* Rafinesque, 1810 *Pomatomus cuvieri* Cocco, 1829 *Pomatomus telescopus* Risso, 1810
Common name	Black cardinalfish
Species code	EPI

2. Species characteristics

2.1 Distribution

This species is widely distributed in the North Atlantic (Iceland to the Canary Islands and Corner Seamounts), in the western Mediterranean, in the Southeast Atlantic, Indian and Southwest Pacific (Walvis Ridge off southwestern Africa to New Zealand) (Abramov, 1992).



(Adapted from www.fishbase.org)

2.2 *Habitat*

E. telescopus is a bathydemersal fish on continental slope at 75-1200 m, but is most abundant at 300-800 m (Tortonese, 1986).
In New Zealand waters, the preferred depth range of schools is 600-900 m (Field et al., 1997). This depth overlaps the upper end of the depth range of orange roughy (*Hoplostethus atlanticus*) and the lower end of alfonsino (*Beryx splendens*) and bluenose (*Hyperoglyphe antarctica*) (Field et al., 1997).

2.3 *Biological characteristics*

Morphology

Dorsal spines (total): 7- 8; Dorsal soft rays (total): 9-11; Anal spines: 2; Anal soft rays: 9. No opercular spines. Snout blunt, eye large. Mouth large, lower jaw equaling or slightly protruding beyond upper jaw. Pyloric caeca 21-34. Brown-violet or black, iridescent in life (Fishbase, 2010).

Maximum size

Maximum size reported is 75 cm, for New Zealand specimens (Anon, 2007). Black cardinalfish in the North Atlantic grow up to about 85 cm TL (Vinnichenko, 1997).

Growth

In New Zealand waters, using the break-and-burn technique, although unvalidated otolith interpretation, indicated the black cardinalfish of 45-72 cm fork length range in age from 15 to 42 years (Tracey, 1993). Pshenichny *et al.* (1986) examined whole otoliths and considered that *E. telescopus* on the North Atlantic Ridge attained a length of about 70 cm at only 10 years. Using lead-radium dating, Andrews and Tracey (2007) indicated a maximum age for *E. telescopus* of at least 104 years for New Zealand specimens. These authors also refer that age estimation from growth increments counts tends to underestimate fish age (Andrews and Tracey, 2007).

Longevity

They are believed to be long-lived and slow growing, reaching maximum ages of around 100 years, and a maximum length of about 75 cm (Anon., 2007).

Natural mortality

For New Zealand specimens, natural mortality is estimated at $M=0.0034y^{-1}$, but there is uncertainty in the estimates of M because fish age is unvalidated for this region (Tracey et al., 2000).

Fecundity

No information is available.

Maturity

In New Zealand, fish become sexually mature around 40-50 cm length, at an age of approximately 35 years (Field *et al*., 1997; Tracey *et al*., 2000). In the Corner Rise Seamount area, they were noted to become sexually mature at age 7 (age was determined by whole otoliths) (Pshenichny et al., 1986).

Spawning season

The spawning season of black cardinalfish is not well known. For South Hemisphere, indications from research surveys data collected off New Zealand waters are that spawning may occur in early winter (May-June) (Field *et al*., 1997; Tracey *et al*., 2000). For North Hemisphere, in the Corner Rise Seamount area, spawning take place in spring-summer (Pshenichny *et al*., 1986). Research surveys took place in Azorean waters, specifically in Sedlo seamount, caught large specimens of *E. telescopus* with advanced gonad maturation stages in September, being 78% of the specimens in spawning condition (Menezes *et al*., 2009).

Food consumption

For New Zealand specimens, prey items evidenced from research surveys include mesopelagic fish, natant decapods prawns and octopus (Tracey *et al.*, 2000). Pshenichny et al. (1986) identified mesopelagic fish, squid and shrimp in stomach of specimens from North Atlantic Ridge.

Life history parameters for specimens caught off New Zealand (Tracey et al., 2000)

Parameter	**Symbol**	**All**	**Male**	**Female**
Natural mortality	M	0.034	–	–
Age at recruitment	A_r	45	–	–
Age at maturity	A_s	45	–	–
Gradual recruitment	S_r	13	–	–
Gradual maturity	S_m	13	–	–
Von Bertalanffy parameters	L_{inf}	70.8	70.9	67.8
	K	0.034	0.038	0.034
	t_0	-6.32	-4.62	-8.39
Length-weight parameters	a	0.027	–	–
	b	2.87	–	–
Recruitment variability	σ_R	1.2	–	–
Recruitment steepness		0.75	–	–

2.4 *Population structure*

No information is available.

2.5 *Behavior and associated species*

In New Zealand waters, the preferred depth range of schools is 600-900 m (Field et al., 1997). This depth overlaps the upper end of the depth range of orange roughy (*Hoplostethus atlanticus*) and the lower end of alfonsino (*Beryx splendens*) and bluenose (*Hyperoglyphe antarctica*) (Field et al., 1997). Black cardinalfish is a target species for deep sea trawlers, and up to 80% of the annual catch in New Zealand waters has been taken on or near seamounts.

2.6 *Resilience / productivity*

Very Low, minimum population doubling time more than 14 years (t_{max}=104).

2.7 *Intrinsic vulnerability*

High to very high vulnerability (70 of 100).

3. Fisheries

3.1 *Fleets*

This species is caught by bottom trawl fishery.

3.2 *Historical catch and effort data*

In Namibia (sub-division B1), orange roughy fishery started in 1995 (did not fish in 1998) and continued until 2005. This fishery also catch other deep-sea fish, particularly, alfonsino, boarfish, oreo dory, and cardinal fish (Anon., 2009). The following table illustrates the total annual effort in number of trawls and the total number of deep-sea fish (orange roughy, alfonsino, boarfish, oreo dory, and cardinal fish). The LPUE attained the highest value in 1995 and thereafter decreased rapidly to reach the lowest LPUE in 1999 (Anon, 2009).

Number of trawls made per year and the total landings of deep-sea species taken by the orange roughy fleet in sub-division B1 (Anon, 2009).

Year	No of trawls	Total landings (t)
1995	20	47
1996	223	340
1997	188	110
1999	16	4
2000	327	196
2001	295	130
2002	40	10
2003	63	32
2004	46	28
2005	61	40
2006	0	0

3.3 Fishing activities

- *Description (temporal and spatial) of the current and past fishing activities taking place.*
- *Consider here the yearly evolution of the fishing activities/operations in the area (e.g. by fleets, target resource, etc…).*

3.4 Stock size

No information is available.

3.5 Biological reference points

- *Estimates of relevant reference points based on fishing mortality (F); biomass (B); and others. (see http://www.fao.org/docrep/006/X8498E/x8498e0c.htm).*

3.6 Fishery status and trends

3.7 Stock status

Not known or uncertain (not much information is available to make a judgment).

4. Impact of Fishing

4.1 *Incidental catch*

- *Assessment of incidental catch of seabird, mammals, reptiles and protected fish species, in the fishing action targeting this species using pertinent observations.*
- *Fishing impact has to be described by gears.*

4.2 *Habitat impact assessment*

The main method used to catch this species is a high-opening trawl generally fished hard down on the bottom. Trawling for this species on seamounts impacts habitat (Clark and O'Driscoll 2003; Koslow et al., 2001), but the precise impact of this on the black cardinalfish populations or other species on the seamounts is unknown.

Studies have shown that repeated trawl disturbances alter the benthic community by damaging or removing macro-fauna and encouraging anaerobic bacterial growth. Severe damage of coral cover from bottom trawl fishing inside the Australian EEZ has been documented (Koslow et al., 2001).

Bottom trawling also tends to homogenise the sediment, which damages the habitat for certain fauna. Benthic processes, such as the transfer of nutrients, remineralisation, oxygenation and productivity, which occur in undisturbed, healthy sediments, are also impaired (EC, 2004).

As fishing gear disturbs soft sediment they produce sediment plumes and re-mobilise previously buried organic and inorganic matter. This increase in the rates of nutrients into the water column has important consequences for the rates of biogeochemical cycling (Kaiser et al., 2002).

4.3 *By-catch and discards*

- *Targeting studies on that matter should be referenced and also the results and conclusions.*
- *Also analysis based on scientific observations should be used.*

5. Management

5.1 *Regulation measures*

- *List of existing regulations measures adopted in relation to the stock.*

5.2 *Comprehensible fishery management*

- *Detailed description on how the management measures are affecting the status of the stock.*
- *Reflect when other aspects (exogenous factors, e.g. climate) that might contribute for changes on stock status are also considered.*

5.3 *Ecosystem-based vision*

- *Trophic and associative implications should be considered.*
- *Adaptative techniques and practices to reduce non-desirable impacts should be considered.*

6. Research

6.1 *Past and current research activities*

- *Short description of target fisheries research, and research on resources and ecosystem conservation.*

6.2 Further research proposal

- *Research priorities and how to implement them.*

7. Other remarks

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8. References

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