## Species Summary for Splendid Alfonsino

Splendid alfonsino (*Beryx splendens*)

Common names: Splendid alfonsino (English); 红金眼鲷 (Chinese); キンメダイ (Japanese); 빛금눈돔 (Korean); Низкотелый берикс (Russian)

Biological Information

Global distribution ranges from tropical to temperate oceans. Historical catch records in the Emperor Seamount suggest the distribution from Nintoku (45 °N) to Hancock (30 °N). Settlement occurs following a certain period of the pelagic life stage. Adults show a vertical distribution from 200 to 800 m with diel vertical migration, feeding on crustaceans, cephalopods, and fish during the night. Limited information is available for recruitment and reproduction processes in the Emperor Seamounts, whereas the population in the Japanese coast shows 4–5 years to sexually mature and spawning occurs during summer (Shotton 2016).
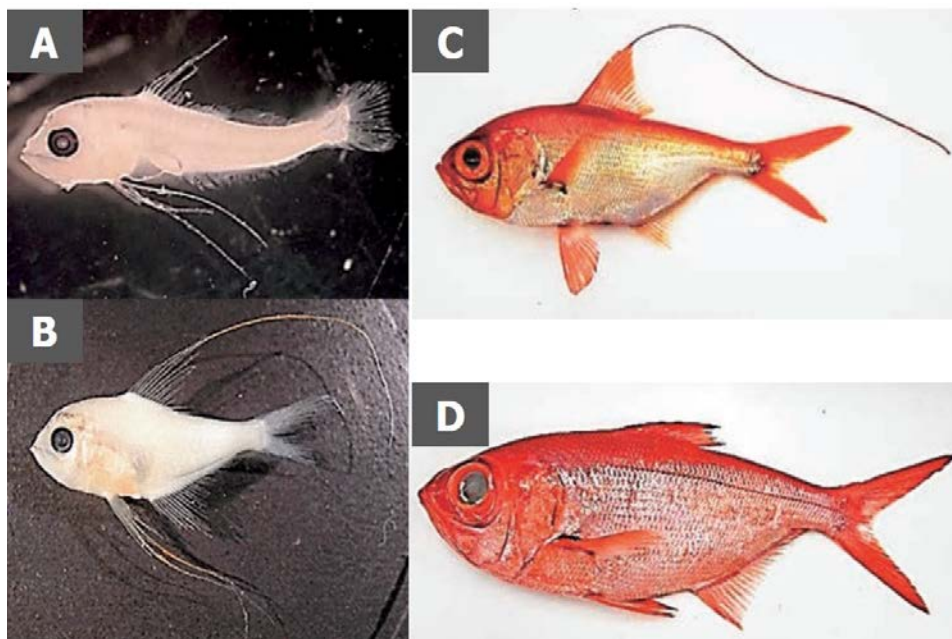
Figure 1: Photographs of Beryx splendens on different developmental stages A) postlarva, B) juvenile, C) young, D) adult (from Watari et al. 2017)
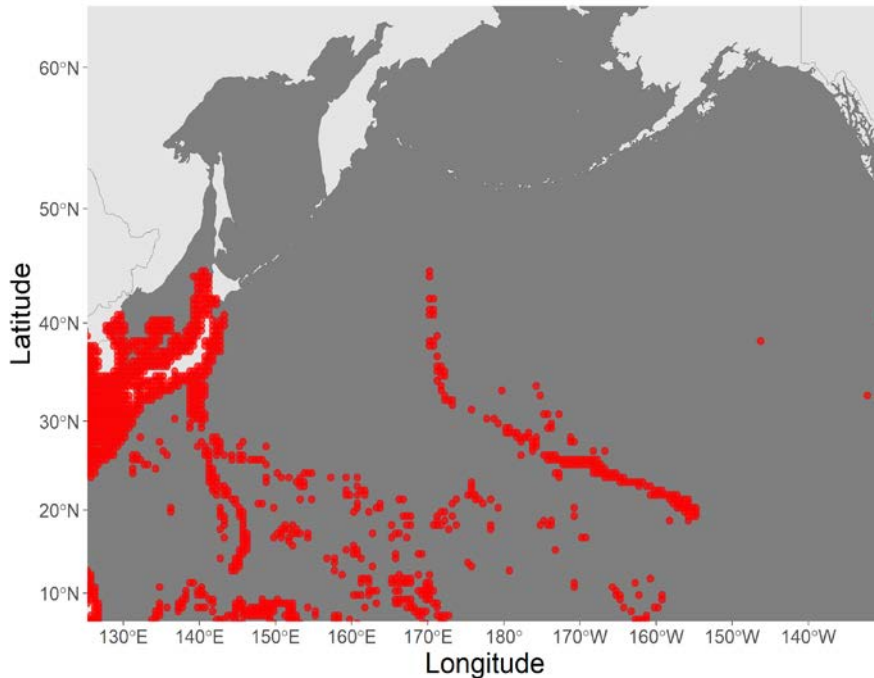
Figure 2: Known distribution of Beryx splendens around NPFC waters. *Points indicate observation data from original sources (AquaMaps 2019, October)*

Fishery

Since the discovery of large populations of North Pacific armorhead in the Emperor Seamount in the late 1960s, Splendid alfonsino has been exploited as an alternative resource to the armorhead due to the large temporal fluctuation of the armorhead population. The main fishing methods are bottom trawls and gillnets.

Historical catch record (Figure 3) shows the highest catch proportion by Japan, followed by Korea and Russia. Russia terminated their fishery nearly a decade ago. Fishing pressure somewhat reflects the recruitment condition of North Pacific armorhead. In 2010 and 2012, when high recruitment of the armorhead occurred, the annual catch decreased below 1,000 tons, whereas it increased up to 4,000 tons ever since then.

Size composition analysis from the catch data by Japanese trawlers suggests the substantial decrease in size of fish in catches over the past decade, raising the concern about growth and recruitment overfishing (Sawada et al. 2018).
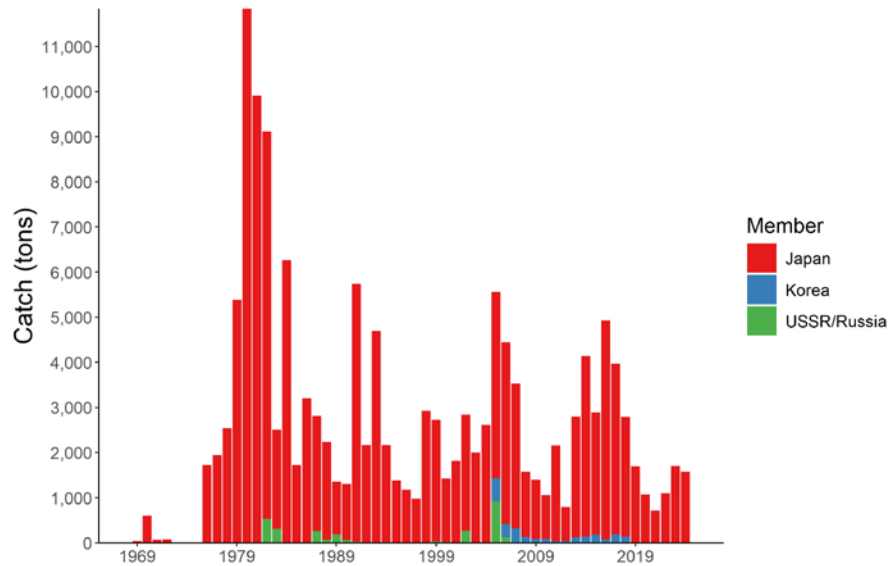
Figure 3: Historical trends of Splendid alfonsino catches in NPFC waters. *The annual amounts of catch by each country are shown by the bar plot.*
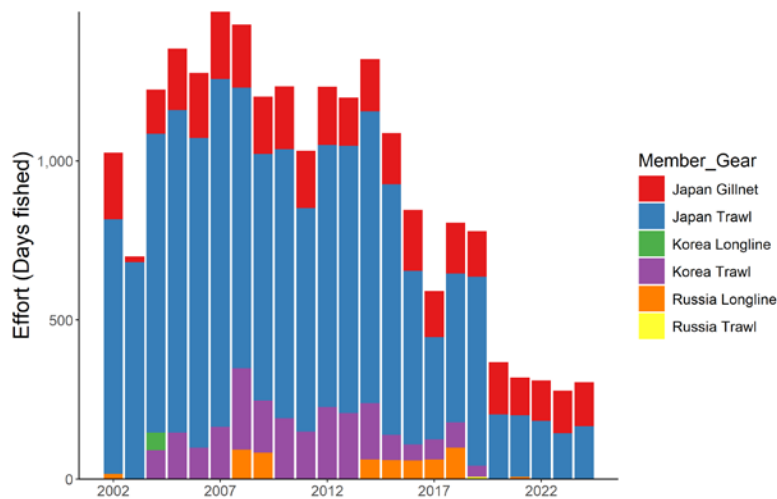
Figure 4. Historical fishing efforts for Splendid alfonsino. *The annual fishing efforts by each country and each gear are shown by the bar plot. The efforts are calculated by the total fishing days operated during the year*

Assessment

There are no biomass estimates available for Splendid alfonsino in NPFC waters.

Surplus production models developed by Japan in 2008 showed that the average fishing mortality is 20–28 % higher than the MSY level (Nishimura and Yatsu 2008). This analysis, however, remains unreliable as the estimated CPUE is biased due to target shifts between North Pacific armorhead and Splendid alfonsino and the estimated intrinsic population growth rate parameter was too high for long-lived deep-sea fish.

In 2024, Yield Per Recruit (YPR) and Spawning Biomass Per Recruit (SBPR) was conducted by NPFC, and concluded that growth overfishing is occurring with high likelihood, and that Splendid alfonsino is being captured before they are mature, likely reducing the spawning potential, while the dome-shaped selectivity in trawl fisheries may make the analyses pessimistic on the stock status (NPFC-2024-SSC BFME05-Final Report).

Management

Active Management Measures

The following NPFC conservation and management measures pertain to this species:

- CMM 2025-05 For Bottom Fisheries and Protection of VMEs in the NW Pacific Ocean

Available from https://www.npfc.int/active-conservation-and-management-measures

Table 1: Current status of management measures

Item	Status	Description
Biological reference point	Not accomplished	Not established
Stock status	Intermediate	High likelihood of growth overfishing, likely reduced spawning potential, though the analyses may be pessimistic
Catch limit	Intermediate	No operation from November to December, Restriction of trawl mesh size
Harvest control rule	Not accomplished	Not established
Other	Intermediate	No expansion of fishing beyond established areas, No operation in the designated areas, No more increase in the fishing vessels

Currently, there is no accepted harvest control rule for this species.

In 2016, the management measures were implemented, which includes limiting the fishing effort to the 2007's level, prohibiting fisheries from November to December (which corresponds to the spawning season for North Pacific armorhead) and not allowing fisheries in C-H Seamount and the southeastern part of Koko Seamount (for the protection of VMEs)

In 2019, an additional measure was adopted, which includes the regulation of the mesh size (trawl: > 13 cm) to protect juvenile fish of this species. Effectiveness of this measure yet to be clearly demonstrated (Sawada and Ichii 2020).

Data Availability

Table 2: Catch data

Data	Member	Fishery	Year	Comments
Annual catch	Japan	Trawl	1969-present	
		Gillnet	1990-present	
	Korea	Trawl	2004-2019	
	Russia	Trawl	1969-1988; 2002; 2005; 2006; 2010; 2011; 2013; 2019	
CPUE	Japan	Trawl	1970-present	Logbook data availabe
		Gillnet	2008-present	Logbook data available
	Korea	Trawl	2013-2019	Logbook data available
	Russia	Trawl	1969-1988; 2010; 2019	

Table 3: Biological data

Data	Member	Year	Comments
Age	Japan	2013-present	annual ring analysis
	Korea	2013-2017, 2019	
	Russia		
Length	Japan	2009-present	Protocol revised (see NPFC-2018-SSC BF01-WP03)
	Korea	2013-2019	
	Russia		
Maturity	Japan	2013-present	
	Korea	2013-2017, 2019	
	Russia	1969-1988; 2010; 2011; 2013; 2019	

References

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