North Pacific Fisheries Commission

NPFC-2021-SSC BFME02-WP06

Species summary of North Pacific armorhead (*Pentaceros wheeleri*) in the Emperor seamounts

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North Pacific armorhead (*Pentaceros wheeleri*)

Common names: Pelagic armorhead, Slender armorhead (English); 五棘鲷 (Chinese); クサカリツボダイ (Japanese); 북방돗돔 (Korean); кабан-рыба (Russian)

Biological Information

North Pacific armorhead has a unique life history consisting of a pelagic larva phase and a demersal adult stage on the seamounts (Kiyota et al. 2016). Distribution of the larva includes Gulf of Alaska to North Pacific Ocean off central California and south of Japan, with center of abundance at the Emperor Seamounts. Following their settlements in the seamounts, adults make morphological changes from the “fat” type to the “lean” type concurrent with their dietary shifts. Vertical distribution of the adults ranges from 300-500 m. Juveniles at the epipelagic stage mainly feeds on copepods, shifting the targets towards fish and large crustaceans with growth.

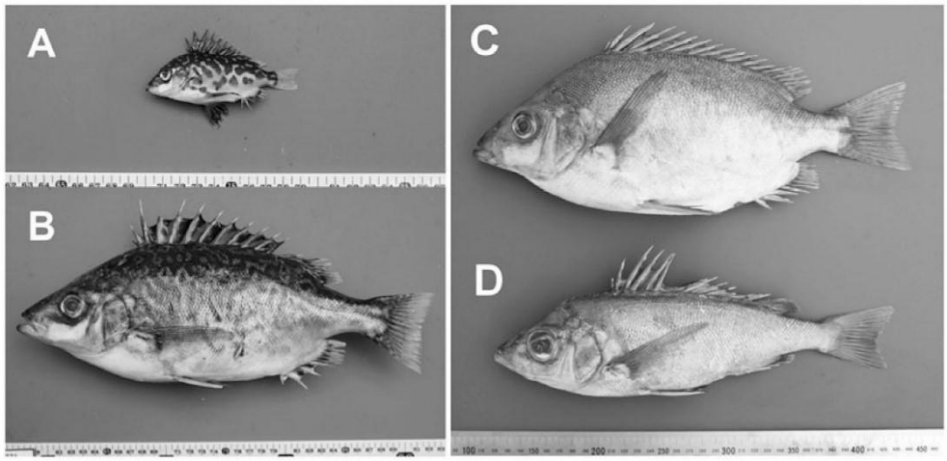

Figure 1: Photographs of North Pacific armorhead. A) Pelagic juvenile, B) pelagic subadult, C) demersal adult (fat type), D) demersal adult (lean type) (from Kiyota et al. 2016)

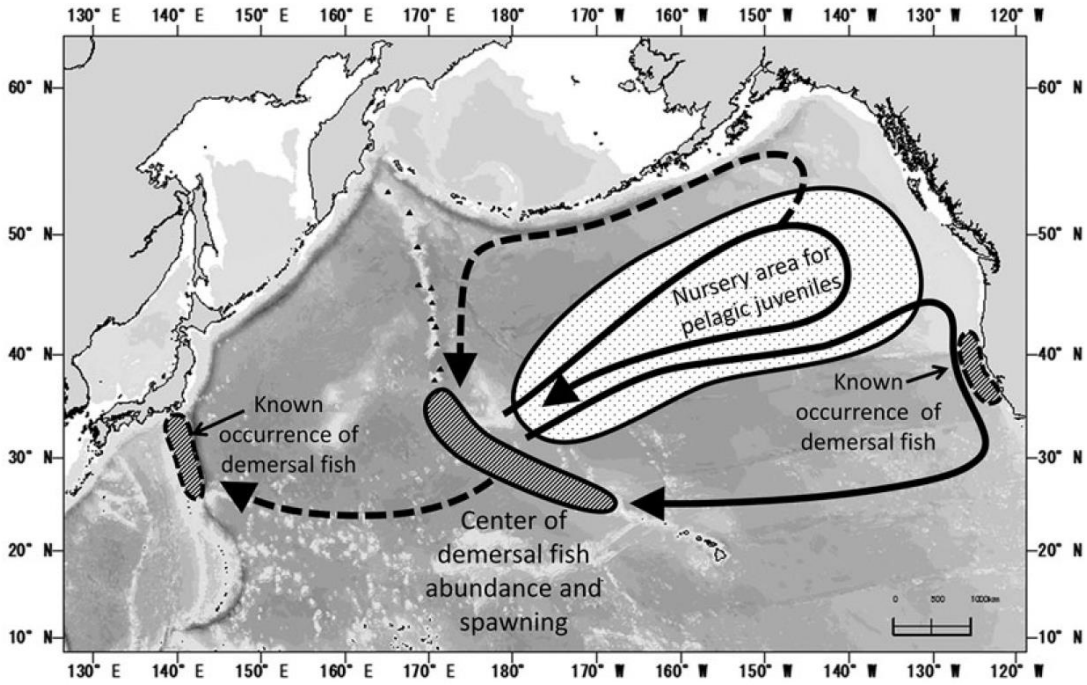

Figure 2: Known demersal habitats and hypothesized pelagic migration routes of North Pacific armorhead (Kiyota et al. 2016 Figure 4, modified from Boehlert and Sasaki 1988).

Fishery

Historical catches by Russia and Japan from the combined Emperor Seamounts were high and reached 100 thousand tons in 1970s, followed by a crash (Figure 3). Currently North Pacific armorhead is caught by Japan and Korea on the Emperor Seamounts using bottom trawls and gillnets. This fishery is a potential source of significant adverse impacts on vulnerable marine ecosystems due to bottom contact gear.

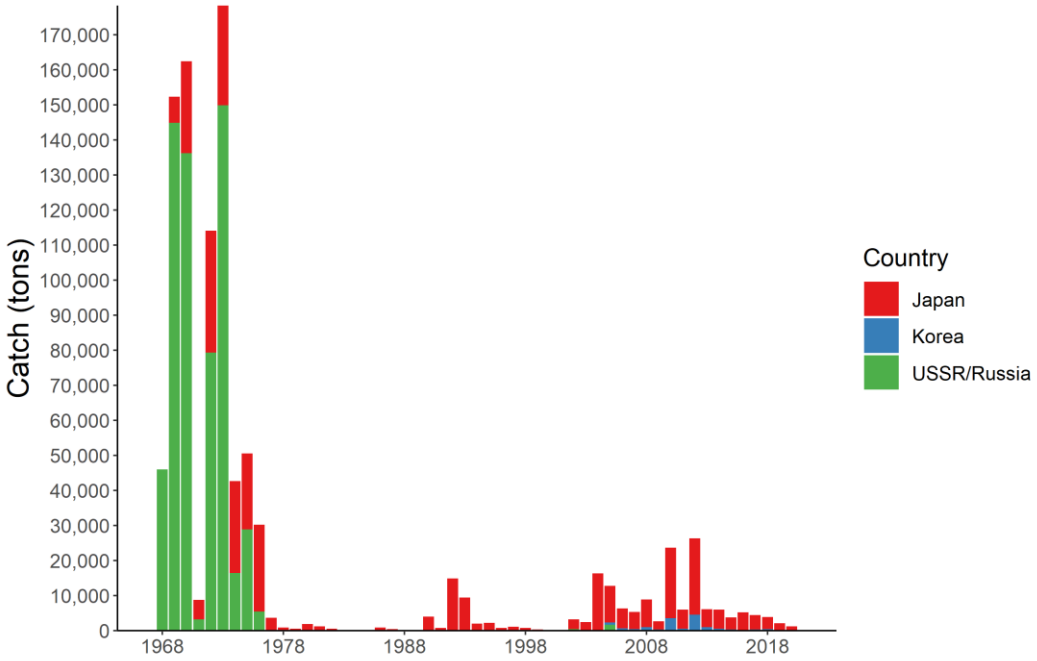

Figure 3: Historical trends of North Pacific armorhead catches in NPFC waters. The annual amounts of catch by each country are shown by the bar plot.

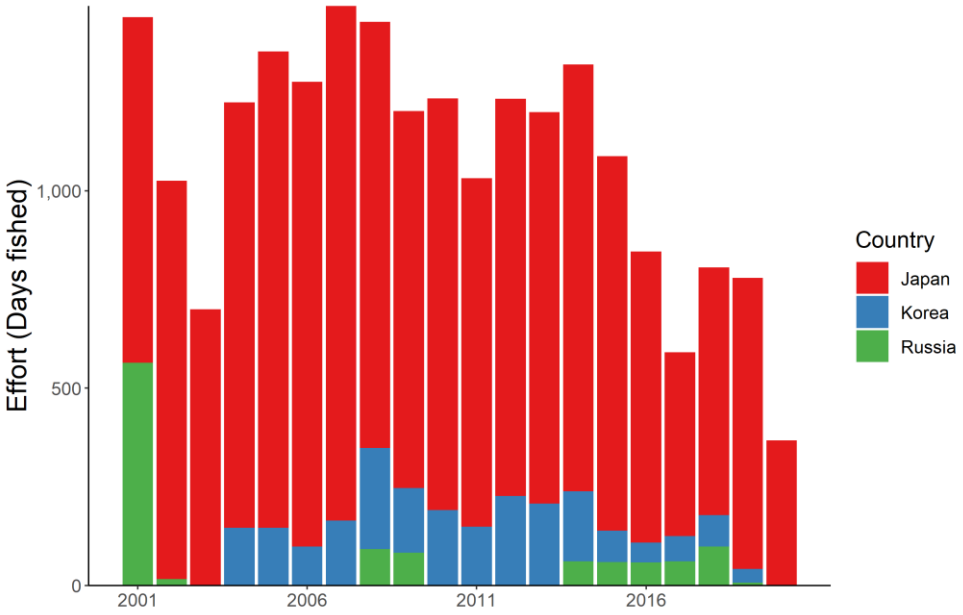

Figure 4. Historical fishing effort for North Pacific armorhead. The annual fishing efforts by each country are shown by barplot. The efforts are calculated by the total fishing days operated during the year

Assessment

There is no current or accepted assessment for North Pacific armorhead.

There are no biomass estimates available for this species in NPFC waters. An age- or length-structured stock assessment is unlikely to be feasible given the life history of North Pacific armorhead. Data limited approaches may be examined in the future.

Management

Active Management Measures

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

- CMM 2021-05 For Bottom Fisheries and Protection of VMEs in the NW Pacific Ocean
- CMM 2019-06 For Bottom Fisheries and Protection of VMEs in the NE Pacific Ocean

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

Item	Status	Comment
Biological reference points	Not accomplished	Not established
Stock status	Unknown	Status determination criteria not established
Catch limit	Intermediate	Upper limit: 15,000 tons (only for Japan), No operation from November to December
Harvest control rule	Not accomplished	See below
Other	Intermediate	No expansion of fishing beyond established areas, No operation in the designated areas, No more increase in the fishing vessels, Restriction of trawl mesh size

In 2019, an adaptive management plan was implemented for North Pacific armorhead (NPFC-2019-SSC BF02-WP05, CMM 2019-05). This plan specifies data collection via an annual monitoring survey to be conducted in March-June each year on Koko, Yuryaki, Kammu and/or Colahan Seamounts. If the survey finds evidence of strong recruitment (see CMM 2021-05 and NPFC-2019-SSC BF02-IP01 for details) some areas in the Emperor Seamounts are closed and a 12,000 ton catch limit is encouraged. In low recruitment years, a 700 ton catch limit is encouraged.

Data Summary

Catch data

Data	Country	Source	Fishery	Year	Comments
Annual catch	Japan	Commercial	Trawl	1969-present	
		Commercial	Gillnet	1990-present	
	Korea	Commercial	Trawl	2004-2019	Catches are collected by electronic reporting system since 2015. Catches before 2015 are from the fishing catch provided by the fishery company
	Russia	Commercial	Trawl	1970-1987; 1997; 2001-2002; 2005-2006; 2011; 2013	Data coverage details to be reviewed
CPUE	Japan	Commercial	Trawl	1970-present	Possible impact by misreporting (NPFC-2018-TCC03-Final Report), Digitization of old (before 1989) data has not been completed
		Commercial	Gillnet	2008-present	

		Survey	Trawl	2019-present	Preliminary surveys in 2018 not included
	Korea	Commercial	Trawl	2013-2019	One fishing vessel. Standardzation?
	Russia	Commercial	Trawl	2001-2002; 2005-2006; 2011; 2013	Data coverage details to be reviewed
		Survey	Trawl	1997	Data coverage details to be reviewed

Biological data

Data	Country	Year	Comments
Length	Japan	2009-present	Protocol revised (see NPFC-2018-SSC BF01-WP03)
	Korea	2013-2019	Data coverage review
	Russia	NA	Data coverage details to be reviewed
Age	Japan	NA	A preliminary daily ring analysis for ca. 300 fish
	Korea	2013-2017, 2019	Details to be reviewed
	Russia	NA	Data coverage details to be reviewed

Maturity	Japan	2013-present	
	Korea	2013-2019	Data coverage review
	Russia	1970-1987; 1997; 2011; 2013	Data coverage details to be reviewed

References

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