



National Oceanic & Atmospheric Adm
Office of Protected Resources
1315 East-West Highway
Silver Spring, MD 20910

Berne, 15 October 2023

RE: Endangered and Threatened Wildlife and Plants; Proposed Protective Regulations for the Threatened Banggai Cardinalfish (*Pterapogon kauderni*): federalregister.gov/d/2023-17492

Dear Sir, dear Madam

We would like to express our support the US proposed regulation: The Banggai Cardinalfish (*Pterapogon kauderni*) BCF is an endemic species to Indonesia and restricted to the shallow waters of 34 islands in the Banggai Archipelago covering a total inhabitable area of 23km². The species was re-discovered by a biologist and shortly after by the international aquarium industry in the early 1990s and has suffered significant declines since the beginning of its exploitation, with surveys indicating a reduction of ~90% with respect to the historical baseline. It was listed as “endangered” by the IUCN Red List in 2007. The surveys conducted by **Dr. Alejandro Vagelli for the Foundation Franz Weber in 2015** which was also used in parts for proposal **CoP17, Prop. 46**, indicated **a further 36% reduction of its population since its inclusion in the Red List as an endangered species** (the 36% is the difference between 2.2 M, the calculated total population -species- in 2007, and 1.4 M the calculated total population in 2015).

During these surveys no population was found with a density near to the one considered the baseline for the species, i.e., ~0.6 ind./m². The mean density of all censused populations had declined to 0.05 ind./m², and to an estimated 0.06 ind./m² of all survey sites. Of the 43 populations surveyed, 33 showed abundance conditions from “vulnerable” to “critical” (i.e., with densities of about 0.11 to <0.01). Of the 13 populations that did not show a significant variation in abundance from the prior survey, 10 (77%) remained to a condition ranging from “vulnerable” to “critical”. In 2015, the mean number of groups per census site was ~27% lower than in the previous survey (2007), and the mean group size showed a ~ 39% reduction. There has been a severe and widespread (79% surveyed sites, representing 90% of the species range) decline in abundance of sea urchins, critical substrates of *P. kauderni*.

The last comprehensive assessment of the species conservation status, prior to the 2015 survey, was conducted in **2007**. It was a broad assessment that included all populations evaluated in previous years (i.e., 2001, 2002, and 2004). In addition, it expanded the census work to new sites in Bangkuru, Limbo, and Masoni Islands, and to a new island (Seku). In 2007, the calculated mean density of all censused populations was 0.08 ind/m² (range: 0.001-0.22). The most significant findings during the 2007 surveys were:

- A dramatic reduction of the population occurring off west-central **Masoni**. It declined to ~40 individuals in the census site plus an adjacent area of ~one half its size. A search around the entire island uncovered only ~150 fishes.

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- A virtual eradication of the population that inhabits off Southeast **Peleng**. Only 27 individuals were found at the census site.
- The non-recovery of the two populations living off the small **Bakakan Is.** from the dramatic decline suffered between 2001 and 2004. About 200 fish were found in Bakakan North, while only about 20 fish in Bakakan South.
- The non-recovery of the small population off south-west **Limbo** (almost eradicated in 2004). A total of only four specimens were localized at the census site.
- The decline (from ~0.6 to 0.47 ind./m²) of the population inhabiting the “**Pearl Farm**” site, off southwest Banggai. This was the only known population of *P. kauderni* that had been off limits to fish collectors since before its capture/trade began in the late 1990s. However, collection activities in this site began to take place after 2005.
- The populations with the highest densities were those occurring off South **Bokan** (0.22 ind./ m²), North **Bangkuru** (0.21 ind./ m²), Northeast **Seku** (0.1 ind/ m²), Southwest **Bangkuru** (0.19 ind./ m²), Southwest **Banggai** (0.15 ind./ m²), and Southeast **Labobo** (0.1 ind./ m²).

The unique reproductive characteristics including very low fecundity (max 60 eggs), reduced fertility rate, advanced degree of parental care with direct development and oral incubation period of 28 days, absence of larval period and therefore no planktonic dispersal (Vagelli 2011), make this species highly vulnerable to over-exploitation. The species also experiences high early post-recruitment mortality. The absence of egg and larval dispersal and a highly attached and sedentary adult behavior lead to this species having highest degree of population subdivision documented in a marine fish, with genetic diversity varying significantly over distances as small as 2 km (Vagelli, 2011).

Habitat loss due to destructive fishing practices (cyanide and dynamite use) and siltation as well pollution runoff from land clearing, poor agricultural practices and overexploitation of sea urchin are also a threat (Ndobe et al., 2019)

The species does not receive international protection and is loosely monitored in the US (ESA 'threatened') and in Europe through the Trade Control and Expert System and a listing in Annex D (COMMISSION REGULATION (EU) 2021/2280 of 16 December 2021) with very few entries from traders.

The national protection consists of a ministerial decree formally establishing a marine protected Area MPA for the BCF as well as a provincial regulation. The MPA mentioned in these documents contain core zones where BCF should not be captures are not in the main area of distribution of the species and the utilization zone are adjacent to the core zone which will make capture in the no-take zone very probable. Most core zones are not protecting fringing reefs where BCF live. (The designated control site does, in our opinion, not make any sense, as in the control site the population was introduced through the aquarium trade and can therefore not be compared to the endemic, native populations).

There does not seem to be effective protection of the microhabitat in place and sea urchins and anemones are collected in great numbers.

For what resulted in **CoP17, Prop. 46**, submitted by the EU, we had surveyed the populations at 52 sites whereas Indonesia's surveys “T0 to T2” were only conducted at 24 sites. Due to Covid a T3 survey in 2020 did not happen and it is unclear if it has happened since. Furthermore, we are



very concerned that some populations show declining trends but only the stable and upward trends are mentioned in AC31, Doc. 31. rev. 1. We appreciate that Indonesia plans to prohibit capture during reproductive seasons. But having a lunar reproductive cycle with major spawning and juvenile release peaks during full moon, the BCF can potentially breed all year round and not only during the months of February, March, October, and November as mentioned in AC31, Doc. 31.

This species can be susceptible to high mortality during capture, in transit and prone to disease such that these impacts should be taken into consideration. When trade started in late 1990s an estimated 600,000-700,000 individuals were collected each year by local fishers prior to 2001 for sale in international aquaria markets. Peak harvest volumes have reached 700,000-900,000 per year and total collection pressure was believed to be even greater due to high mortality during collection, holding, and transport to USA, Europe and Asia. **The EU has imported at least 195,294 specimens between 2014 and 2017 (Biondo and Burki, 2019) and over 150,000 specimens between 2018-2021 (Biondo et al., 2023, submitted for publication).** The EU might be importing more since one third of imported specimens are not registered at species level (Biondo and Burki, 2019).

The trade in this species is not a significant source of income for the population of the Banggai region. The local economy has not traditionally depended on trade of BCF since its collection and exports did not begin until the late 1990s. The vast majority of Banggai people make a living through agriculture, seaweed culture and traditional (food) fisheries. There is a 1000-fold gain from fishermen who receive 0.05 US\$ per fish if it reaches Bali alive to the species costing 50 US\$ in consumer countries.

With regards to CITES, we are of the opinion that this species does fully meet the criteria for Appendix II-listing (RC 9.24 (Rev. CoP16), Annex 2 a), paragraph B: internationally trade is having a detrimental impact on wild populations, Annex 5.; wild populations already decimated; limited range; low population size; high demand; low fecundity; high juvenile mortality; specialized habitat requirements; habitat loss and degradation; high genetic subdivision and isolation; IUCN Red List: Endangered. In fact, it is even our conviction that the species would meet the criteria to be listed on CITES Appendix I.

We will continue collaborating with and be supporting Dr. Vagelli further research for the safeguard of this iconic species.

Thank you for considering our comments.

Yours sincerely

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Head of Research and Conservation



References

- Biondo M.V., Burki, R.P. 2019. Monitoring the trade in marine ornamental fishes through the European Trade Control and Expert System TRACES: Challenges and possibilities. *Mar Policy*. 108. Doi:10.1016/j.marpol.2019.103620.
- Ndobe, S., Moore, A., Yasir, I., & Jompa, J. 2019. Banggai cardinalfish conservation: Priorities, opportunities, and risks. IOP Conference Series: Earth and Environmental Science, 253(1), 012033. Doi: 10.1088/1755-1315/253/1/012033
- Vagelli A.A. 2011. The Banggai cardinalfish: natural history, conservation, and culture of *Pterapogon kauderni*. Hoboken (NJ, USA): Wiley-Blackwell.