Fisheries New Zealand
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Consultation on further measures to reduce fisheries by catch of hoiho/yellow-eyed penguin

SUBMITTER DETAILS

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Introduction

1. This is a submission on proposed further measures to reduce fisheries bycatch of hoiho (yellow-eyed penguin) as set out in the Fisheries New Zealand (**FNZ**) Discussion Paper No 2025/34 (**Discussion Paper**).

2. The Environmental Defence Society (**EDS**) is an independent not-for-profit organisation conducting interdisciplinary policy research and litigation. It was established in 1971 with the purpose of improving environmental outcomes in Aotearoa New Zealand. EDS published an Oceans Reform Case Study on the Otago Coast in May 2025. This included a review of the status of hoiho.[1]

3. EDS submits that the following further measures need to be implemented to better protect hoiho from fisheries bycatch:

    (a) Set a Fisheries-Related Mortality Limit (**FRML**) of zero.
    (b) Increase the spatial area of the current set-net ban to include the entire foraging range of hoiho.
    (c) Put in place an effective response framework in the event of hoiho by-catch occurring.
    (d) Review the impact of bottom trawling on food sources for hoiho.
    (e) Support the adoption of fishing methods that avoid protected species bycatch.

[1] Peart R, 2025, *Oceans management in a changing climate: Otago oceans reform case study*, Environmental Defence Society, Auckland, p 21-22

The threat

4. Hoiho is classified as Nationally Endangered under the New Zealand Threat Classification system. There are only approximately 143 breeding pairs remaining in the 'northern population' which is located on the South Island/Te Waipounamu and Stewart Island/Rakiura.[2] This is a historic low and a significant reduction from the approximately 480 breeding pairs in the early 1980s (see Figure below).[3]

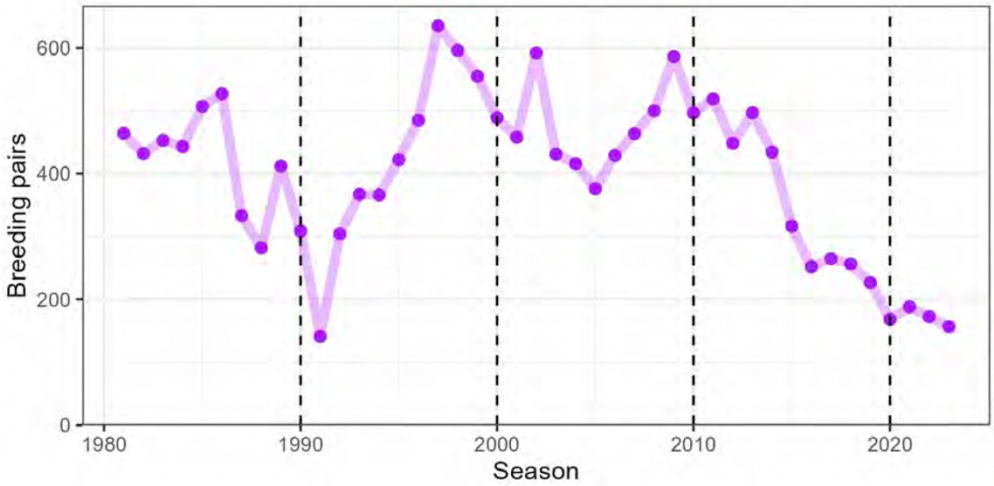

Figure 2: Estimated annual number of breeding pairs of yellow-eyed penguin on the South Island of New Zealand (DOC, unpublished data). This plot does not include Stewart Island for which nest counts are much more sporadic than for the South Island. Here model seasons are labelled using the end year of each breeding season, e.g., '1990' represents the 1989–90 season.

5. This reduction in numbers is despite intensive conservation efforts at breeding sites including habitat restoration, predator control, disease treatment, supplementary feeding and rehabilitation. If current population trends continue, the mainland population could be functionally extinct within 20 to 40 years.[4]

6. The penguins nest in coastal dune vegetation, shrubland and forest. They forage during daylight hours bringing food back to their chicks in the late afternoon. During the breeding season the birds mainly forage on gravelly seabeds, out to 20 nautical miles from the coast, and in waters up to 80 metres deep. They target small (often larval or juvenile) finfish as well as arrow squid.[5]

7. Prey availability is a major determinant of the species' breeding success. Because the birds forage on the seafloor, they rely on an intact benthic ecosystem that supports adequate biodiversity and prey abundance, to sustain local populations. The predominant method of fishing off the Otago Coast is bottom trawling which can impact prey abundance on the sea

[2] Discussion Paper, at 5
[3] Roberts J and D N Webber, 2025, *Spatial risk assessment of threats to yellow-eyed penguin/hoiho* (Megadyptes antipodes), New Zealand Aquatic Environment and Biodiversity Report 370, Figure 2
[4] Peart R, 2025, *Oceans management in a changing climate: Otago oceans reform case study*, Environmental Defence Society, Auckland, at 21
[5] Young M J, L Dutoit, F Robertson, Y van Heezik, P J Seddon and B C Robertson, 2020, 'Species in the faeces: DNA metabarcoding as a method to determine the diet of the endangered yellow-eyed penguin', *Wildlife Research*, 47(6), 509-522

floor.[6] Trawling is known to reduce seafloor biodiversity, and reduce the complexity of benthic communities, so has likely impacted penguin food sources.[7]

8. On top of trawling, warmer sea surface temperatures increases the stratification of the water column, reducing the mixing of the higher nutrient-laden surface waters (enriched by land run-off) with the bottom waters, and thereby also impacting the productivity of benthic areas where the penguin prey is located.[8]

9. Rising seawater temperatures have been identified as a key problem for the penguins, with survival reducing during years with warmer seawater. This is thought to be due to the impact of warmer seas on the abundance of key prey species such as red cod. This climate stress in turn makes the penguin population less resilient to non-climate related impacts such as fisheries interactions, habitat degradation and human disturbance.[9]

10. This impact will almost certainly get worse. Warming of oceans around Aotearoa is accelerating, and over the past three decades, has occurred at a rate 34 per cent higher than the global average.[10] More disturbingly, it is now clear that our oceans are part of an oceanic band (at around 40 degrees South) that is experiencing greater heating than seawater anywhere else on the planet. This is due to a polewards shift of jet streams high up in the atmosphere (and associated storm tracks) which in turn have shifted oceanic currents.[11] On top of this ongoing seawater warming is the more frequent occurrence, and longer duration, of marine heatwaves. These have driven seawater temperatures up to 6°C higher than the norm.[12]

11. Hoiho are also regularly caught in set nets placing further pressures on population numbers. There was an estimated 17 penguin deaths through by-catch during the 2022-23 fishing year alone. Most of these were around the Otago Peninsula.[13]

12. It is not possible to control the impacts of seawater warming on hoiho prey. Strenuous efforts are in place to manage land-based impacts on the breeding population. Fisheries

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[6] Mattern T, S Meyer, U Ellenberg, D M Houston, J T Darby, M Young, Y van Heezik and P J Seddon, 2017, 'Quantifying climate change impacts emphasises the importance of managing regional threats in the endangered yellow-eyed penguin, *PeerJ,* 5:e3272, at 17

[7] Mattern T and U Ellenberg, 2018, *Yellow-eyed penguin diet and indirect effects affecting prey consumptio*n, Eudyptes EcoConsulting, Dunedin, at 22

[8] Mattern T, S Meyer, U Ellenberg, D M Houston, J T Darby, M Young, Y van Heezik and P J Seddon, 2017, 'Quantifying climate change impacts emphasises the importance of managing regional threats in the endangered yellow-eyed penguin, *PeerJ,* 5:e3272, at 14

[9] Mattern T, S Meyer, U Ellenberg, D M Houston, J T Darby, M Young, Y van Heezik and P J Seddon, 2017, 'Quantifying climate change impacts emphasises the importance of managing regional threats in the endangered yellow-eyed penguin, *PeerJ,* 5:e3272

[10] Pinkerton M, M Gall, F Thoral, P Sutton and S Wood, 2024, *Monitoring ocean health: Satellite indicators for surface temperature, productivity and suspended solids*, National Institute of Water and Atmospheric Research Limited, Wellington, at 80-81

[11] Trenberth K E, 2025, 'NZ oceanic ecosystems subject to biggest climate changes', *Newsroom*, 3 May

[12] Pinkerton M, M Gall, F Thoral, P Sutton and S Wood, 2024, *Monitoring ocean health: Satellite indicators for surface temperature, productivity and suspended solids*, National Institute of Water and Atmospheric Research Limited, Wellington, at 9; Lachenheb M, I Noy and V Kahui, 2024, 'Marine heatwaves and commercial fishing in New Zealand', *Science of the Total Environment*, 954, 176558, at 4; Cook K M, M R Dunn, E Behrens, M H Pinkerton, C Law and V J Cummings, 2025, *Marine heatwaves and fisheries in Aotearoa New Zealand: Review of potential effects on marine ecosystems and fishstocks*, New Zealand Aquatic Environment and Biodiversity Report No 352, at 5

[13] Roberts J and D N Webber, 2025, *Spatial risk assessment of threats to yellow-eyed penguin/hoiho* (Megadyptes antipodes), New Zealand Aquatic Environment and Biodiversity Report 370, Plain English summary

bycatch is another stressor that can be effectively managed. It is therefore important that fisheries bycatch is reduced as far as possible to zero.

Management response

13. Section 9(b) of the Fisheries Act 1996 (**Act**) states that 'biological diversity of the aquatic environment should be maintained'. The impact of fisheries bycatch, on top of other stressors on the hoiho northern population, indicates that this statutory requirement is not currently being met.

14. There is currently a set net ban along the South Island east coast, extending seawards between four and 12 nautical miles to protect the hector's dolphin. This is not sufficient to protect the hoiho, as the birds forage further out to sea than the dolphins.

15. On 16 September 2025, the Minister for Oceans and Fisheries put in place a three month emergency closure, extending the set netting prohibition around Otago Peninsula out to approximately eight nautical miles. On 10 December 2025, this was extended for a further nine months, until 16 September 2026.

16. The following additional management options have been proposed by FNZ in the Discussion Paper:

    (a) Option 1a: Extend the set net prohibition around Otago Peninsula from four to approximately eight nautical miles.
    (b) Option 1b: Extend the set net prohibition out to approximately eight nautical miles around the Otago Peninsula and the northern Otago coast (from Karitāne to Hampden).
    (c) Put in place an escalating response framework in the event of hoiho bycatch.
    (d) Setting a FRML of four (or alternatively three).

17. EDS considers that neither Option 1a or 1b are sufficient to reduce bycatch to a level that will enable the hoiho northern population to persist (and therefore meet the legal test of section 9(b) of the Act) because the closures do not cover the entire hoiho foraging area which extends out to 20 nautical miles from the coast.

18. FNZ should present the Minister with an Option 1c which is a set net prohibition covering the entire hoiho foraging range. The northern population is now in such a perilous state that, coupled with the projected increase in seawater warming and frequency of marine heatwaves, a complete elimination of fisheries by-catch is required.

19. EDS supports the establishment of an FRML and an escalating framework in the event of hoiho bycatch. However, setting the FRML at four (or three) is too high, given the fragile state of the hoiho northern population and in EDS's view this should be set at zero.

20. The other fishing-related impact that is currently unmanaged is the impact of trawling on the health of the benthic environment off the Otago coast. As highlighted above, hoiho forage on the seafloor and therefore rely on an intact benthic ecosystem that supports adequate biodiversity and prey abundance. EDS therefore urges FNZ to undertake an urgent review of the impacts of trawling on hoiho food abundance.

Impacts

21. The Discussion Paper contains information about the potential impacts of set net closures on the fishing industry. Significantly, it indicates that vessels set netting in the area are already using other methods of fishing including trawling and potting.[14] This means that they will be able to continue fishing with set net closures in place and would potentially have the flexibility to use other methods to catch species currently targeted by set net.

22. The Discussion Paper also states that the economic value of the set net fisheries in the area of the proposed Option 1b closure is around $544,000.[15] We note that this figure is dwarfed by the economic value of hoiho to the tourism industry (not taking into account the enormous cultural, social and environmental value of the birds).

23. A 1987 study valued each pair of hoiho as worth $250,000 to the tourism industry. This would value the 17 birds caught as fisheries bycatch during the 2022-23 fishing year alone at $4.25 million in 2007 dollars. Interestingly, at the time of the study, hoiho viewing on the Otago Peninsula was found to generate twice the revenue of the Royal Albatross centre, highlighting the popularity of the penguin with tourists[16] This is further reinforced by hoiho being named the 2024 Bird of the Year.[17]

Conclusion

24. It is of great importance to the nation (including to the tourism industry and the jobs and economic value it creates) that the northern population of hoiho is rebuilt. Avoiding fisheries bycatch is an important mechanism (and requirement under section 9(b) of the Act) to help achieve this in the face of increasing climate warming impacts on the birds.

[14] Discussion Paper, at 30
[15] Discussion Paper, at 31
[16] Tisdell C, 2007, *Valuing the Otago Peninsula: The economic benefits of conservation*, Economics, Ecology and the Environment Working Paper 145, University of Queensland, Brisbane, at 7
[17] Radio NZ, 2024, 'Bird of the year: Hoiho yellow-eyed penguin named 2024 winner', *Radio NZ*, 16 September