

16 February 2026

Tēnā koe

Thank you for your request to the Department of Conservation (DOC), received on 18 January 2026, in which you asked for:

- 1. Has DOC or ORC undertaken, commissioned, or reviewed any analysis of cruise ship or large vessel wastewater discharge patterns in relation to juvenile hoiho foraging zones off Moeraki and into the Canterbury Bight? If so, what were the findings? If not, why has this potential pressure not been examined?*
- 2. Have the bacterial isolates from affected hoiho been genetically typed or source-tracked to determine whether they are consistent with human sewage, agricultural runoff, or marine environmental strains? If this has not been done, is there a plan to do so?*
- 3. Have cumulative discharge effects from shipping (including treated wastewater, grey water, and food waste) been assessed in relation to sensitive species in this region, rather than compliance with individual discharge rules alone?*
- 4. Are sediment and prey-species (fish) sampling being undertaken in known hoiho foraging areas to assess chronic bacterial or nutrient loading? If not, will this be considered in light of the current mortality pattern?*
- 5. What overseas case studies of penguin or seabird population collapses associated with wastewater or shipping activity have been reviewed, and how are those lessons being applied here?*

We have considered your request under the Official Information Act 1982 (the OIA).

Your questions and our responses are listed below:

- 1. Has DOC or ORC undertaken, commissioned, or reviewed any analysis of cruise ship or large vessel wastewater discharge patterns in relation to juvenile hoiho foraging zones off Moeraki and into the Canterbury Bight? If so, what were the findings? If not, why has this potential pressure not been examined?*

DOC has not undertaken such analysis as we don't consider it to be a priority for hoiho based on currently available information. We will continue to assess the value of a review as part of work planning. Your request for findings is therefore refused under section 18(e) of the OIA, as the information is not held. Regional councils are responsible for managing discharges to the marine environment (coastal marine area)

in their regions. We suggest you contact the ORC for more information on the information they hold.

2. *Have the bacterial isolates from affected hoiho been genetically typed or source-tracked to determine whether they are consistent with human sewage, agricultural runoff, or marine environmental strains? If this has not been done, is there a plan to do so?*

Yes, this has been done when appropriate and useful to do so. It is not prudent to do this for every case, however if a pattern emerges (e.g. several cases with the same bacterial species) or a pathogen of concern is identified (e.g. some Salmonella species or possible exotic strains), then this is investigated, typically using molecular and genetic techniques. An example of one such recent case is described below, and this may be the septicaemia cases you refer to in your query.

For context, when a hoiho dies or is found dead, and is in suitable condition (i.e. fresh), it is sent to Wildbase Pathology for a full necropsy. Septicaemia is diagnosed via histology, and this would be reflected in the necropsy report. If the pathologist suspects bacterial involvement (including septicaemia) samples are typically sent to a commercial veterinary laboratory for bacterial culture and sensitivity. If bacteria are successfully cultured, each isolate is then typed using either MALDI-TOF (Matrix-Assisted Laser Desorption/Ionization-Time of Flight) or VITEK® systems (depending on the laboratory). This typically identifies each isolate to the species level (with some exceptions). However genetic testing is not routinely carried out, and is not typically available through commercial veterinary laboratories.

As well as oversight by the pathologist, all necropsy reports and culture results are reviewed by the hoiho veterinary coordinator who is contracted by DOC. If either of them have any concerns, further work is carried out. An example of this was the case series of hoiho mortalities due to *Pasteurella multocida*. Between April 2023 and February 2024 six hoiho died from septicaemia, including five hoiho of varying ages from North Otago. This pattern was identified and further investigated via collaboration between DOC, MPI and Massey University. The results of this investigation were published (Taylor et al. 2025) if you would like more detail – but in summary full genetic typing and source tracking (via comparison with known isolates in Multi-locus Sequence Typing databases) was conducted. Unfortunately, the isolate did not match any other isolates in the database, indicating a new sequence type, and a source was not determined.

In your correspondence to us, you refer to this season's fledgelings all presenting with high bacterial loads in their blood. We are not aware of any other case series of septicaemia in hoiho. However, if there is one we would very much like to know about it so we can investigate it further. For instance, was this based on histological findings of septicaemia (which infers bacteria in the blood), or did these birds receive blood culture (this would be unusual) to diagnose bacteria in the blood? Or perhaps you are

referring to high White Blood Cell (WBC) counts? High WBC counts may be an indicator of septicaemia, but can result from other causes such as localised infections. Because high WBC counts are a non-specific change they must be interpreted in light of the clinical picture. Any further information that you may be able to provide would be appreciated.

Taylor HS, Foxwell J, Jauregui R, Webster T, Eames M, Bennett P, Schultz H, Watts J, Argilla L, McInnes K, O'Connell J, Hunter S. *Pasteurella multocida* Infections in Yellow-eyed Penguins (Hoiho; *Megadyptes antipodes*) in Otago, New Zealand: Case Series of Mortalities due to Avian Cholera. *J Wildl Dis.* 2025 Jul 1;61(3):736-742. doi: 10.7589/JWD-D-24-00174. PMID: 40294904.

3. *Have cumulative discharge effects from shipping (including treated wastewater, grey water, and food waste) been assessed in relation to sensitive species in this region, rather than compliance with individual discharge rules alone?*

Please refer to my response regarding Council responsibilities under 1.

4. *Are sediment and prey-species (fish) sampling being undertaken in known hoiho foraging areas to assess chronic bacterial or nutrient loading? If not, will this be considered in light of the current mortality pattern?*

This is not currently being done by DOC. There would have to be strong evidence for septicaemia being a major source of mortality in hoiho to justify the expenditure. Please also refer to our response to your second question above.

5. *What overseas case studies of penguin or seabird population collapses associated with wastewater or shipping activity have been reviewed, and how are those lessons being applied here?*

We have not undertaken any specific reviews that can be identified. However, it is not possible to rule out that staff may have, at times, consulted or reviewed such work as part of their day-to-day work. To assist you, we have performed a quick literature research for seabird population collapses associated with bacterial infections linked to wastewater, and also consulted with the hoiho veterinary coordinator. While we have not seen anything to suggest that this is or could happen, we can't exclude this as a theoretical possibility. That said, sewage from a cruise ship seems an unlikely source for pathogens for hoiho - the right pathogen would have to be present, it would then be diluted when discharged and would need to survive and come into contact with a hoiho at an infective dose. If this were to happen, one would also expect other seabird species in the vicinity to be affected (it wouldn't only affect hoiho). You can read more about this topic in the following published papers:

Messenger, A. M., Barnes, A. N., & Gray, G. C. (2014). Reverse zoonotic disease transmission (zooanthroponosis): a systematic review of seldom-documented human biological threats to animals. *PloS one*, 9(2), e89055.

Al Noman, Z., Tasnim, S., Masud, R. I., Anika, T. T., Islam, M. S., Rahman, A. M. M. T., & Rahman, M. T. (2024). A systematic review on reverse-zoonosis: global impact and changes in transmission patterns. *Journal of Advanced Veterinary and Animal Research*, 11(3), 601.

Please note that this letter (with your personal details removed) may be published on DOC's website.



Nāku noa, nā



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