

**Report to** Ōhiwa Harbour Implementation Forum  
**Date** 23 February 2021  
**Report from** A/Professor Kura Paul-Burke, Dr Matt Miller, Dr Mat Cumming  
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**Pātangaroa hua rau: the economic potential of collagen and bioactives from eleven-armed sea-star to manage over populations in Ōhiwa harbour.**

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## **1.0 Summary**

This report provides an update overview of the newly funded project, Pātangaroa hua rau: investigating the economic potential of collagen and bioactives from eleven-armed sea-star to manage over populations in Ōhiwa harbour. The project commences in March 2021 – June 2023 and is funded by the Ministry of Business Innovation and Employment, National Science Challenge Sustainable Seas Innovation Fund. The project is a collaborative investigation with Te Rōpū Kairangahau, Cawthron Institute, Waikato University, and Plant and Food Research.

The intent is to trial the economic potential of seastars as a natural bio-active cosmetic or nutraceutical product. The project targets a bio-circular approach advocating for zero waste stream philosophy and implementation. It is anticipated that any financial returns of a potential product would then be returned to the harbour to contribute to the management of pātangaroa populations for the long term. The pātangaroa project is a complimentary extension to the Awhi Mai Awhi Atu program.

## **2.0 Report**

An over-abundance of pātangaroa (*Coscinasterias muricata*, eleven-armed sea-star) are depleting shellfish stocks and causing management issues in coastal areas of Aotearoa NZ, in particular the Ōhiwa harbour. Pātangaroa are voracious predators of shellfish, causing a decline in populations of mussels, pipi and cockles. As a result, this co-developed project seeks innovative ways to assist the management of pātangaroa.

Presently there is no economic value for harvesting pātangaroa and population management comes at a high cost. Low-value products such as fertiliser and protein for animal feeds have previously been suggested as possible uses for this bioresource. Pātangaroa are a potential bioactive resource, particularly as a source of marine collagen which is in high demand for cosmetics. There is a growing body of evidence that, due to their ability to regrow lost limbs, they have properties/bioactivities that would aid wound healing and skin health. The aim of this project is to identify the bioactive potential of pātangaroa, including unique collagens and marine bioactives, and estimate their economic potential.

This project will work with te rōpū kairangahau representatives to determine the bioactives found in pātangaroa to aid in its management and create a novel blue economic model. The ultimate goal is to co-develop a small-scale economic opportunity that could fund the management of the pātangaroa and aid an ecosystem-based model for the harbour and surrounding coastline that aligns with localised kaitiakitanga values.



Figure 1- Over-abundance of pātangaroa (left; *Coscinasterias muricata*, eleven-armed seastars) in a pipi bed in Ōhiwa harbour (August 2019) and excessive reef star (right; *Sticaster australis*) in the coastal marine areas of Ngāti Awa (site adjacent to Ōhiwa harbour; March 2010).

### 3.0 Recommendation

**That the Ōhiwa Harbour Implementation Forum under its delegated authority:**

1. Receives the report, Pātangaroa hua rau: the economic potential of collagen and bioactives from eleven-armed sea-star to manage over populations in Ōhiwa

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