

Aquaculture & Marine Natural Products

great science

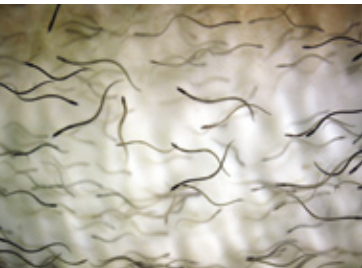
Business blossoms at Bream Bay

NIWA's Bream Bay Aquaculture Park is New Zealand's largest facility for marine aquaculture R&D and commercialisation. Here, industry and scientists work side by side every day. Our focus is on conducting commercially relevant research and successfully transferring the results all the way to commercial-scale production. The world-class facilities include large-volume seawater pumping and filtration systems, live-feed production rooms, specialist finfish and shellfish hatchery and nursery areas, and a pathology unit.

Greenshell mussels on a broodstock conditioning tray as part of a Technology for Business Growth project between NIWA and Sealord Shellfish Ltd. Sealord Shellfish have established the largest commercial greenshell mussel hatchery in the world on site.



NIWA is operating a mini commercial-scale **eel** farm at Bream Bay to test the aquaculture potential of shortfinned eels. These elvers have been recently weaned and are part of research into ongrowing techniques. The work is funded by the Foundation for Research, Science & Technology.



Robyn Marsden of OceanNZ Blue Ltd with **paua** approaching market size. OceanNZ Blue run the largest commercial paua farm in New Zealand on site.



NIWA has achieved commercial scale production and transport of **kingfish** fingerlings.

Our kingfish broodstock recently attracted the attention of a high level delegation from French Polynesia, who visited Bream Bay to discuss how new aquaculture species could boost economic growth.

From left to right: Cathy Allgaier (NZ Trade & Enterprise, Business Development Manager for French Polynesia), Andrew Jeffs (NIWA General Manager Aquaculture), Allen Jones (Chief Executive, New Zealand Yachts Ltd), Hon Keitapu Maamaatuaiahutapu (French Polynesia Minister of the Sea), Louis Tane Savoie (French Polynesia Society for Finance and Development), Ian Cameron (NIWA Bream Bay Hatchery Manager).

One of our **yellowbelly flounder** broodstock. In a world first, we have successfully spawned and weaned yellowbelly flounder for a consortium of investors, Bream Bay Flounder Ltd. In the background are Cea Smith, one of our aquaculture researchers, and Yann Gublin, a recently appointed larval finfish specialist from Norway.



Lobster diet to boost export returns

Lobsters love our muesli bars! We worked with Ranchman's Pet Food to develop an artificial diet that maintains the condition of lobsters so fishers can earn thousands of dollars more.

About 90% of lobsters caught under quota are exported live, and fishers like to hold their stock for the best price. This strategy is hampered by the fact that wild-caught lobsters don't feed readily on most pelleted diets, and feeding them trash fish fouls the water. In practice, therefore, most lobsters are held without food. The results: lobsters lose weight; more animals die during transport; and cannibalism.

The loss to the industry is substantial. For a unit holding 10 tonne of lobsters, the fisher effectively loses 828 kg of lobster weight by holding them for 60 days. At peak market price, this equates to over \$41,000 in lost earnings.



For that 10 tonne unit of lobsters held for 60 days, the NIWA/Ranchman's lobster food would cost \$9,000. That means fishers could make an extra \$32,000 from that unit by using the diet.



Hitting cancer with a sponge

A marine sponge with anti-tumour properties could become a lucrative aquaculture crop.

The bioactive compound Peloruside A works in the same way as an anti-cancer drug which is currently worth NZ\$9 billion a year. Peloruside A was found in the sponge *Mycale hentscheli* during a joint project between Victoria University and NIWA, funded by the Foundation for Research, Science & Technology.

We are growing the sponge for drug testing by the American biotech firm Reatta Pharmaceuticals off mussel lines belonging to Marlborough Mussel Company Ltd. It takes about 1 kg of sponge (wet weight) to produce 10 mg of Peloruside A. As clinical trials advance, the Americans will need more compound, and our work with Marlborough Mussel Company aims to lay the foundation for high-value, commercial aquaculture of the sponge.

Not all specimens produce the bioactive compound, and we are working on developing high yielding sponge cultivars and selecting the best sites to grow them. We have been getting exceptional growth rates on the lines, with up to a 33-fold increase in sponge biomass over 14 months.