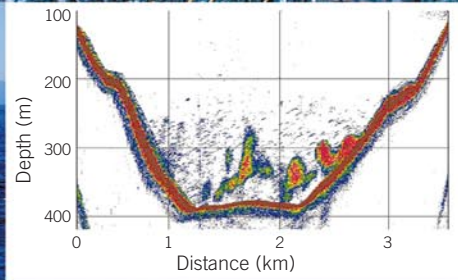




Typical hoki catches on Independent 1.



Independent 1



Collaborating to count hoki

The Hoki Fishery Management Company, NIWA, and individual fishing companies have been developing collaborative research projects, including a recent acoustic survey off the east coast of the South Island. This survey was the first of its kind conducted in the New Zealand hoki fishery.

Spawning hoki in Pegasus Canyon were surveyed in September 2002 from *Independent 1*, a modern 46 m stern trawler. The survey was fitted into time between trawls, without compromising fishing operations. Acoustic data were collected using the vessel's commercial sounder and later analysed using NIWA software. Biological data were also collected from hoki caught during commercial trawls.

There were dense marks from spawning hoki schools in Pegasus Canyon throughout the survey, and the size of the aggregations indicated that Pegasus Canyon might be a significant secondary spawning area for the eastern hoki stock, which also spawns in Cook Strait.

An echogram of hoki schools in Pegasus Canyon on 7 September 2002.

Fisheries & Aquaculture



Helping sustain the toothfish fishery

NIWA research on toothfish biology and the exploratory longline toothfish fishery in the Ross Sea for MFish has contributed to knowledge of catch sampling methods, genetics, age and growth, abundance, and bycatch and seabird mitigation measures.

NIWA staff also contribute to the annual Commission for the Conservation of Antarctic Marine Living Resources fish stock assessment meetings.

The Ross Sea fishery is the southernmost fishery in the world. The catch steadily increased from about 40 t in 1998 to over 1350 t in 2002. The Ross Sea region is unusual because there is considerable overlap in the distribution of Patagonian toothfish and Antarctic toothfish. Both are found down to depths of over 2000 m.

We have developed a validated method for ageing Antarctic toothfish – the first for any toothfish species. The maximum age recorded is 39 years, but there are few fish older than about 30 years caught in the fishery. The fish mature at about age 10.

Most of the diet of adult toothfish is other fish, with rattails and icefish predominating. Other unusual stomach contents included penguins, numerous skate egg cases, and a large quantity of rocks.

Skin care from seafood

The consumer demand for natural products in the lucrative skin care market continues to grow. Estimates of the market for 2000 were US\$6.6 billion in the USA, US\$1.1 billion in the UK, and US\$1.6 billion in France.

NIWA's Te Whatukura a Takaroa: nutraceuticals from seafood programme aims to identify and develop nutraceutical products based on bioactives derived from the

New Zealand seafood industry for the skin care market. The programme is a partnership between NIWA and Ngāi Tahu Seafood. The strong research skills of NIWA and the excellent commercialisation and marketing capability of Ngāi Tahu Seafood provide a partnership that will ensure rapid development and commercialisation of new products. NIWA will identify the products, Ngāi Tahu Seafood will commercialise them.

The search is focused on antioxidants, which help prevent skin ageing, and vasodilators, which help increase blood flow in the skin and thus help remove toxins. The same screen will also identify compounds that decrease blood flow – potentially useful for people who have red skin and wish to reduce their colour. Yet another screen will target compounds which help repair skin.

Ngāi Tahu Seafood provides the raw material primarily in the form of fish byproducts and bycatch. This material is currently thrown away or used for low value products such as fish meal, so its use for skin care products will add considerable value.

Cara Brosnahan and Els Maas



Sally Anderson

The door opens for kingfish farming in New Zealand

More than 30 000 kingfish fingerlings were produced by NIWA during the last summer breeding season. The hatchery success means that kingfish can be commercially farmed in New Zealand, and many of this year's fish were supplied to ongrowers. To come this far in a only a few years of research is an outstanding result for the team at Bream Bay Aquaculture Park because it usually takes many years of research on finfish species before large numbers of fingerlings can be produced economically. The research will now focus on increasing hatchery production and developing ongrowing techniques with industry partners.

Further extensions are being made to Bream Bay Aquaculture Park to help meet demands, and a new 1000 m² nursery building has just been completed. In its first year of operation Bream Bay has supported research on paua, lobsters, kingfish, groper, eels, mussels, Pacific oysters, and Bluff oysters. The site is the base for the largest commercial paua farm and mussel hatchery in New Zealand, and the production also includes Pacific oyster and Bluff oyster seed for the aquaculture industry.

A collaborative project with the Tasmanian Aquaculture & Fisheries Institute (TAFI) is examining skeletal development in larval kingfish. This is a 16 day old larva.

