

A New Zealand yellowtail kingfish land-based farming prototype: current status, challenges and outlooks

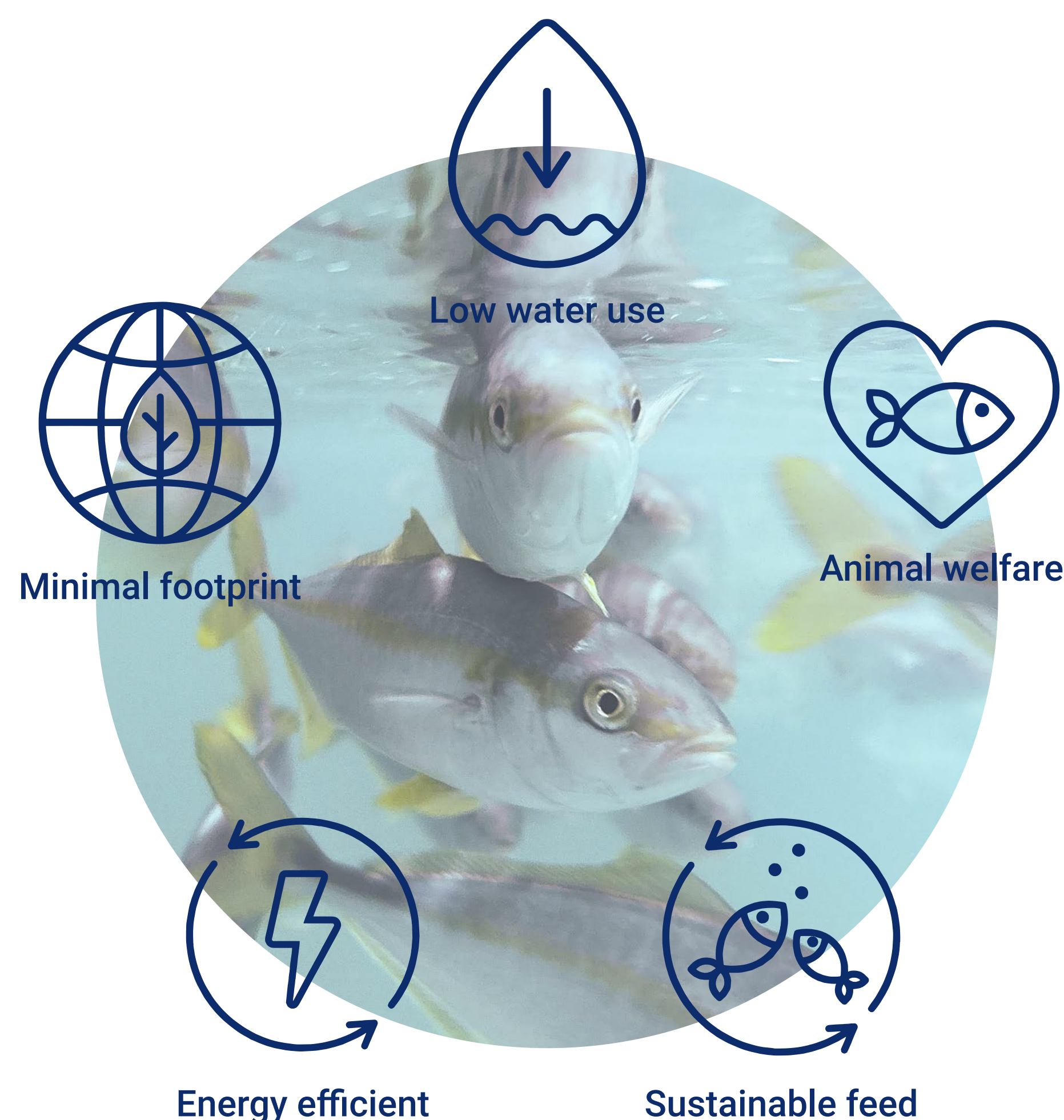
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Background

There is an increasing global demand for yellowtail kingfish (*Seriola lalandi*) as a premium quality seafood product. This species is also highly amenable to intensive recirculating aquaculture system (RAS) production. The National Institute of Water and Atmospheric Research (NIWA)'s Northland Aquaculture Centre (NAC) built a commercial-scale prototype RAS farm for kingfish production to demonstrate the viability of high-value seafood farming on land. The experience of the daily running of a farm-scale operation will provide keys to unlocking practical applications for sustainable and profitable yellowtail kingfish aquaculture. If successful, the private sector will draw on the knowledge to invest in larger RAS operations in Northland and nationwide.

Challenges

- Refining production steps to maintain the quality of postharvest flesh suited for the premium taste experience.
- Sustainable and ethical operation of production system and supply chain to ensure superior fish health and welfare.
- Higher efficiency in conversion of raw materials and energy, waste capture and treatment to generate low environmental footprint.



Farm Facts

- Chosen over sea cages to enable precision and mitigate rising threats from climate change
- Located at NIWA's Northland Aquaculture Centre in Ruakākā, North Island, this project is a collaboration between NIWA and the Northland Regional Council
- High-quality seawater is channelled into the farm using pipelines originally constructed for cooling a former power station
- Besides catering to domestic high-end food service, 2024's harvest was also exported
- Juveniles are obtained from NIWA's yellowtail kingfish captive-spawning and nursery operations, followed by farm grow out to 3kg as harvesting size.

Future outlooks

- Continuous improvement of existing genetic selection breeding program
- Achieving circularity through extended waste management
- Cooperation with feed manufacturers to develop cost-effective RAS-specific feed emphasizing better feed conversion, product quality and lower carbon footprint
- Availability of RAS-selected seed for export supply to other farms.

12 months

Egg to market size (3kg)

600 tonnes

Current target of annual harvest

350 m³

Size of each circular tank, total of 8 tanks

35000 m²

Total site area



22 years

NIWA's research on yellowtail kingfish biology and production

3 awards

Culinary taste competition

20 million

Total project investment

3 billion

New Zealand's aquaculture target

2002

NAC research on fish life cycle



2018

Auckland Best Taste Award



2021

Construction of farm



2022

Completion of Farm



2024

First commercial harvest



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Learn more about RAS



RAS survey