Laying the foundations for Australia's giant freshwater prawn future

An Indigenous-led collaboration plans to develop Australia's first commercial giant freshwater prawn industry in Far North Queensland, combining ancient knowledge with modern hatchery science to create jobs and food security.

Key points:

- Hope Vale Foundation is seeking to develop Australia's first commercial giant freshwater prawn industry
- Through the Queensland Government-funded Regional University Industry Collaboration program delivered by CSIRO, University of the Sunshine Coast researchers are developing breeding methods for giant freshwater prawns – removing a key barrier that has held back commercial production in a large global market
- The project creates pathways for Indigenous-led enterprises, regional employment and sustainable protein production across northern Australia.

In the University of Sunshine Coast's aquaculture facility, giant freshwater prawns (Macrobrachium rosenbergii) from Cape York rivers are being bred to develop a new commercial opportunity.

These prawns represent the foundation of an exciting opportunity: a giant freshwater prawn aquaculture industry in Far North Queensland, led by the Indigenous communities who've known these waters for millennia.

"We are leading a first-of-a-kind, Indigenous-led aquaculture revolution focused on scaling up giant freshwater prawn production, right here in Far North Queensland," said Tony Matchett from Hope Vale Foundation, the community development organisation driving the initiative.

"Our focus is commercialising Australia's native giant freshwater prawn — a climate-adapted protein with global demand exceeding USD $5 billion — yet we have no commercial production in Australia."

The Macrobrachium species thrives in northern Australian waterways and supports major aquaculture operations across Asia and other regions. Yet, it has never been farmed commercially in Australia because a fundamental barrier remains — hatchery protocols have not been successfully deployed or adapted to local conditions.

Hatcheries are the starting point for aquaculture, supplying young prawns that are later raised to market size on farms. Without reliable methods for breeding and raising prawn larvae through their complex life stages, commercial production cannot proceed – no matter how promising the market or how abundant the wild populations.

That's where the partnership with the Hope Vale Foundation comes in.

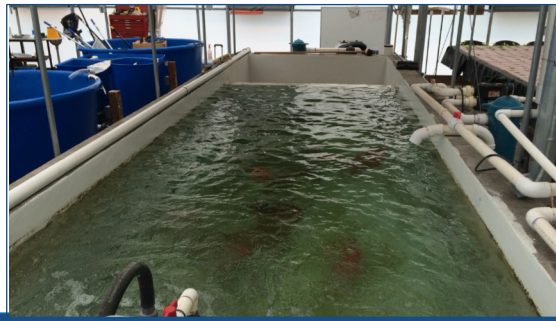
Associate Professor Tomer Ventura leads the technical work at the University of the Sunshine Coast. He brings seven years of hands-on experience with the species from his graduate research, including co-inventing a patented technology for all-male production — a significant breakthrough for commercial efficiency.

He's now adapting that expertise to Australian environmental conditions, systematically developing the protocols that will make commercial hatcheries viable.

In the facility's carefully monitored tanks, Dr Ventura's team observes how the broodstock from Cape York respond to different water conditions. They're testing feeding regimes, tracking growth rates, and documenting survival through metamorphosis from larvae to post-larvae to juvenile prawns.

Every data point becomes part of the blueprint for future hatchery operations.

"This is detailed, patient work," Dr Ventura explained. "We're establishing optimal temperatures, salinity levels during larval stages, and the right nutrition at each phase. These aren't just academic questions — they're the operational manual for commercial producers."



Building more than an industry

For Tony Matchett and the Hope Vale Foundation community, the research represents far more than technical protocols.

"We are solving two major problems: the looming global protein supply gap, and food insecurity in remote communities. By blending ancient wisdom with cutting-edge agtech, we're building a scalable hatchery-to-grow-out model that's low-emission, water-efficient and culturally grounded," he said.

The vision extends across three interconnected goals:

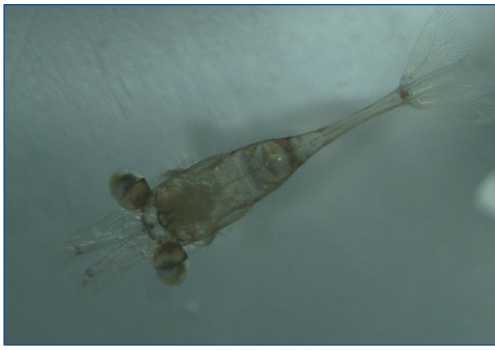
1. De-risking production by establishing proven methods that enable commercial scaling of an Indigenous-led sector across northern Australia.
2. Creating training and career pathways for an emerging aquaculture workforce, with emphasis on inclusive development that supports local prosperity.
3. Contributing to improved economic and food security outcomes for Indigenous and regional remote communities.

The species' natural adaptation to tropical freshwater conditions offers practical advantages for regional expansion.

Once hatchery production is established, the model could extend across northern Queensland, the Northern Territory and Western Australia, with juvenile prawns supporting grow-out operations in pond and recirculating aquaculture systems.

Luke Deacon, Senior Facilitator – RUIC said the program is designed to bring Queensland businesses and regional universities together around a clear innovation challenge.

"By supporting early scoping and connecting teams with the right research capability, we help collaborations like this move from ambition to an evidence base that industry can build on."



Looking toward 2032

Hope Vale Foundation maintains commercial leadership, while accessing scientific knowledge and infrastructure that would otherwise remain out of reach.

As the protocols take shape and validation data accumulates, the team is building the foundation for strategic partnerships and commercial scaling decisions. Training frameworks are being developed alongside the technical work, ensuring the knowledge translates into regional capability.

"This RUIC project, with the support of the University of the Sunshine Coast, CSIRO, and the Queensland Government, will close the life cycle, de-risk scaled production, and validate the market opportunity," said Mr Matchett.

"It will amplify our visibility to attract strategic partners and help us scale nationally — so by the 2032 Olympics, when the world comes to Queensland, we'll be ready to serve Australian native freshwater prawns on the global stage."

In the meantime, the brood stock continue establishing in their Sunshine Coast tanks, each breeding cycle adding to the knowledge base that will enable northern Australia to produce its own climate-adapted, sustainable protein — led by the communities with the deepest connection to the land and water where giant freshwater prawn have always lived.

A follow-up case study will document outcomes once the RUIC project is completed.

Regional University Industry Collaboration Program

CSIRO

Queensland Government

University of the Sunshine Coast Australia

Building a Brighter Future for Hope Vale

HOPE VALE FOUNDATION