

# Sustainable fishing in light of Omega-3 demand

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Finding a more eco-friendly way to boost the amount of healthy fats in fish bred for human consumption is the main aim of a new Flinders University PhD project.

As part of his thesis, School of [Biological Sciences](#) student Andrew Scholefield is investigating whether Southern Bluefin Tuna can convert plant-based oils to omega-3 fatty acids, resulting in a more sustainable way of integrating healthy fish fats into [human diets](#).

"Omega-3 fish oils have been shown to reduce cardiovascular disease, fight certain cancers, assist in [childhood development](#) and relieve arthritis," Mr Scholefield said.

"The easiest way to increase the quantity of omega-3 in fish is to get it into their diets but you need to feed at least 10 kilograms of [sardines](#) to a tuna for it to gain just one kilo of weight," he said.

"While there are many health benefits in fish oil, getting it into the tuna diet drives up the harvest of fish in the wild – which is already at capacity – so we need to find an alternate way of feeding the fish which are bred in [aquaculture farms](#) without taking more from the ocean."

Using cells from the Southern Bluefin Tuna, Mr Scholefield is now testing the theory that the [marine animal](#) can convert two main plant-based oils into healthy omega-3 fish oils.

While most aquaculture nutrition trials are conducted on a large-scale using a large quantity of live fish, Mr Scholefield is cultivating the tuna cells in the lab to determine how well they respond to certain diets, including their growth rate and dietary uptake.

The results will be determined over the coming months, however Mr Scholefield said preliminary findings looked promising.

"Whenever an animal or human eats the body converts that food into fat, protein or energy so we're looking to see whether tuna – when fed a diet of predominantly plant-based oils – can convert it to [fish oil](#)," Mr Scholefield, whose research is funded by the Australian Seafood Cooperative Research Centre, said.

"The goal is to retain as much of the human health benefits as we can from tuna but at the same time use plant-based oils to make it more sustainable – it's about finding a balance.

"I don't think we'll ever get to the point where tuna diets are 100 per cent plant-based but if we can get some plant-based oils into their diets we will move towards a more sustainable future.

"Considering tuna farming is an industry worth more than \$100 million annually, it's important we look for alternative nutrition sources."

Provided by Flinders University

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