

Photos from the field: diving with Tasmania's rare and elusive red handfish

July 6 2022, by John Turnbull and Jemina Stuart-Smith



Credit: John Turnbull, Author provided

On the surface, it looks like any other bay near Hobart. But beneath the calm waters live a small population of one of the rarest and most

endangered fish in the world: the red handfish.

I was diving in early 2020 with a small crew of some of the best handfish hunters on the planet, people who had monitored and nurtured knowledge of this tiny creature over recent years.

We laid out a series of "swim lanes" using survey tapes, which we would then search painstakingly in our wetsuits and SCUBA gear. We would take perhaps an hour to drift along each 50 metre lane, carefully moving seaweed and peering into each little nook for [elusive handfish](#).

Towards the end of my first lane, I found one. Nestled between two seagrass plants, the little fish with its seemingly oversized hands stared up at me.

I marked it with a bright yellow flag so the research team could record the little critter in all its glory. This involved collecting essential scientific information, such as length and photographs of both sides of the fish, all the while avoiding disruption to it and its environment.

There are just two small areas near Hobart, and therefore in the world, where the red handfish is known to still live, amounting to a wild population of around 100 adults.

Earlier this year, the species was thankfully earmarked for [federal conservation funding](#), but more must be done to stop this otherworldly creature from continuing to vanish.



Here you can see the swim lanes we marked out using survey tape. Credit: John Turnbull, Author provided

Red handfish are cryptic and bizarre

Red handfish (*Thymichthys politus*) are a contradiction—this species is just several centimetres long, partly camouflaged yet trimmed by flashes of bright red. They are cryptic, and use their enlarged [pectoral fins](#) resembling [human hands](#) to walk across the seafloor, rather than swimming in the water column.

Handfish are a type of anglerfish. They are ambush predators, which means they prefer to sit and wait among seaweed, sponges and other

cover for their prey to swim past, before they strike.

To help attract their prey—such as small fish and invertebrates—they have a fluffy lure on their forehead.

With so few left, the red handfish is extremely vulnerable to any pressures impacting the two areas it's found in.

This includes [habitat loss](#) (driven largely by a boom in native urchins overgrazing seaweed), pollution and other urban impacts.



In this photo, you can clearly see the fluffy lure on the red handfish's head.
Credit: John Turnbull, Author provided

Direct disturbance by humans such as boating, anchoring and possibly diving are also potential threats, particularly during breeding season. And climate change impacts, such as warming waters, also play a big role in the decline of the species.

The red handfish aren't Australia's only handfish, with the southeast of the continent home to 14 different species.

One, the [Ziebell's handfish](#), lives deeper than the red handfish and we know even less about its conservation status. Another, the [spotted handfish](#), lives in the Derwent estuary and nearby, with a population of fewer than 3,000 individuals.

Both of these species, along with the red handfish, are critically endangered.

How we're protecting them

Recent government funding will help build resilience against threats to wild red handfish populations. This conservation effort includes rebuilding wild populations through a captive-rearing and release program known as "head-starting".



This is another species of anglerfish, called the Bare Island anglerfish (*Porophryne erythroductylus*), which is endemic to a small region of NSW. Credit: John Turnbull, Author provided

This strategy involves collecting eggs from the wild, and nurturing the young in captivity. There, they have unlimited food, and they're protected from predators and harsh conditions.

Once big enough, handfish are released back into the wild, and monitored through dive surveys which identify individual fish through their unique pattern of spots, similar to the way we use fingerprints.

As well as using this finger-printing technique, we're also using ultra-sound to help us identify fish gender, which we're otherwise unable to do

by sight alone. This information will help us implement a captive-breeding program so we can continue our re-wilding program, and will also allow us to establish a captive insurance population.



A red handfish manifesting warrior yoga pose as it navigates its complex reef habitat. Credit: Jemina Stuart-Smith, Author provided

We're also working on restoring the fish's habitat and mitigating direct disturbances through a SCUBA diver/snorkeller education and awareness program, called Handfish Guardians.

Early habitat restoration efforts have included working with divers to remove urchins, but we now plan to couple this with seaweed restoration trials. Through these efforts, researchers hope to halt the decline of red

handfish.

But to truly safeguard this species from extinction and increase their numbers, we need longer-term efforts. This includes ongoing mitigation of urban impacts and restoration of ecosystem balance that can only be achieved through improved habitat management.

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Provided by The Conversation

Citation: Photos from the field: diving with Tasmania's rare and elusive red handfish (2022, July 6) retrieved 24 April 2024 from <https://phys.org/news/2022-07-photos-field-tasmania-rare-elusive.html>

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