

The plight of the Japanese giant salamander: ‘23m years of DNA might die out’



Yukihiro Fukuda's photograph of a male Japanese giant salamander guarding eggs in its den.

Capturing the image took years of preparation and planning. Photograph: Yukihiro Fukuda/

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No one knows how many of these elusive and mysterious creatures are left but time is thought to be running out as artificial barriers fragment their habitat

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Wildlife photographer **Yukihiro Fukuda** first began diving in the cool waters of the Hino River in south-western Japan 15 years ago. But it was not until six years later that he was able to capture the extraordinary image of a male Japanese giant salamander guarding hundreds of eggs, which gained him a place in the finals of the **Wildlife Photographer of the Year** competition, staged by London's Natural History Museum. The salamander was named Fukuda-kun in his honour.

It was the first time the nesting behaviour of these mysterious amphibians, which it is thought **could live up to 100 years** and whose biology has changed little over the last 23m years, had been caught on camera.

But then, for four years, Fukuda-kun was nowhere to be seen. "He got stuck beneath a dam downstream," says Fukuda, before the salamander eventually managed to make his way around the barrier.

The second largest of the world's three main giant salamander species (the others are in China and the US), Japanese giant salamanders (*Andrias japonicus*) can grow up to 1.5 metres in length. The heaviest specimen on record is in Tottori Prefectural Museum and weighs 44.3kg. Despite their size, these creatures face multiple threats, among them the weirs, dams and concrete riverbanks that fragment their habitat in the rivers of central and western **Japan** – the only places where this species lives in the wild.



No one knows how many Japanese giant salamanders are left. Its red list status has been changed from 'near threatened' to 'vulnerable'. Photograph: Yukihiro Fukuda/TopOutImages

The artificial barriers, built for flood control and to improve irrigation for agriculture, prevent them from migrating upstream to reach breeding sites, as well as destroying the natural dens where the salamanders reproduce and hatch their eggs. In some areas it is likely that local populations are already extinct, says Yuki Taguchi, a researcher and member of the Japanese Giant Salamander Society.

In December 2022, the International Union for Conservation of Nature (IUCN) changed their **red list status** from “near threatened” to “vulnerable”. Experts estimate that the population might have declined by 30% to 50% since 1955, but the loss “could be even greater”.

Among those working to secure the salamander’s future is Richard Pearce, an ecotourism consultant from the UK who has lived in Japan for more than a decade. In 2021, he founded the NGO **Sustainable Daisen**, which is building ramps across weirs to allow salamanders to move freely along the Nawa River system that flows from Mount Daisen, the highest peak in the Chūgoku region.



Weirs and other artificial structures fragment the river habitat of the Japanese giant salamander. Photograph: Yukihiro Fukuda/TopOutImages

Ramps and ladders have been built in various locations but they cannot compensate for the sheer number of weirs in Japanese rivers. “Many more ramps are needed,” Taguchi says.



Marine life hit by ‘perfect storm’ as red list reveals species close to extinction

In September, with permission from the local government, Sustainable Daisen built temporary ramps out of stones and wood across four weirs in the Nawa River basin, Daisen town. “We’ve got [them] to admit the weirs are a problem for Japanese giant salamanders and recognise that ramps are a way of remedying it,” Pearce says. The next step is to make the structures permanent and build more.

Pearce does not, however, think public funds will be available for building ramps anytime soon. Convincing citizens and officials that money should be spent on conservation measures is difficult. Like many rural towns in Japan, Daisen has a shrinking and ageing population and declining economy, making financial and human resources scarce. **Conservation** is not a priority.

Plus, throughout Japan, “not enough young people are interested in conservation and if they are, they can’t find jobs in this field”, says Mizuki Takahashi, an associate professor in biology at Bucknell University in the US and a member of the team that evaluated the Japanese giant salamander’s red list status.

The way the Japanese giant salamander is protected is also a problem. A 1952 law established that it cannot be hunted or, for those without a licence, even touched. But the law also designated it as a “special natural monument”, which means responsibility for it lies in the hands of cultural agencies, which are rarely staffed with biologists or wildlife experts.

Pearce and others believe that time is running out to save the Japanese giant salamander. “Twenty-three million years of DNA might die out on our watch,” Pearce says. “I honestly believe that if I don’t do anything in time, no one else will.”



A clutch of Japanese giant salamander eggs. Photograph: Yukihiro Fukuda/TopOutImages

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