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New Zealand penguin to be studied by millions in global citizen science project

Tens of thousands of time-lapse images recording the comings and goings at tawaki/Fiordland penguin nests from Jackson Head, Milford Sound/Piopiotahi and Codfish Island/Whenua Hou will be added to the successful [Penguin Watch citizen science project](#). Hosted by the [Zooniverse platform](#) a collaboration between Oxford University, New Zealand Penguin Initiative and University of Otago will investigate nesting behaviour and breeding success of one of the least known penguin species in the world.

Tawaki/Fiordland penguins are one of the most elusive penguin species in the world. Breeding only along the inaccessible coastlines of southwestern New Zealand, mostly in underground passages, caves and impenetrable vegetation, tawaki are notoriously difficult to study.

“In terms of knowledge, tawaki are at the bottom of the list of penguin species. We know more about Antarctic penguins than one of the species that practically lives in our backyard”, says Dr Thomas Mattern, scientific director of the New Zealand Penguin Initiative and research fellow at the Zoology Department of the University of Otago.

“On one hand, this is because here in New Zealand there is comparatively little research happening on most of our species. On the other hand, tawaki are certainly the most difficult of them to work with.”

To get basic information about core breeding parameters of such secretive species, scientists must think outside the box.

“How can you examine a species’ breeding success if it breeds in burrows that are often deep underground?”, asks Dr Ursula Ellenberg, who together with Mattern initiated the [Tawaki Project](#) which is studying the penguins breeding biology and foraging ecology. “In other seabird you visit the nest a few times throughout the breeding season and record number of chicks that fledge. But in tawaki, you often need contortionists’ skills just to have a look at a tawaki nest, let alone determine what’s in there.”

working towards evidence-based conservation of NZ penguins

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To complicate things, at three weeks of age tawaki chicks are very mobile and tend to explore their surroundings, often only returning to their nest for only a few minutes to be fed every night.

“You need 24-hour surveillance to catch a glimpse of chicks”, says Mattern. “That’s where Penguin Watch comes in.”

Penguin Watch is a web-based platform that enlist the help of citizen scientist who help to analyse time-lapse photography of penguin colonies.

“We have a large array of time-lapse cameras installed all around Antarctica”, explains Dr Tom Hart of the Zoology department at Oxford University. “The cameras record thousands of time-lapse images of penguins. Using these data, an ever-growing online community of volunteers helps us to keep count of nests and penguins.”

Originally intended to survey entire colonies, the system will now add time-lapse images recorded by cameras installed at tawaki nests. Penguin Watch users will get close-up and personal with individual tawaki families that were recorded at 5-minute intervals throughout the breeding period (August-December).

“These nest data will help us to get a better understanding of tawaki breeding success”, says Dr Ellenberg. “The online community will help us to determine when chicks hatch, when they start exploring their surroundings, how often they are fed, and when they fledge.”

Penguin Watch, hosted by the Zooniverse platform that has more than a million of registered users, has an average 10,000 penguin images analysed by citizen scientists per day. Users click on penguins, chicks and eggs they see in an image.

“It’s a bit like the popular clicker games on mobile”, says Dr Hart. “With the added bonus that these clicks help to advance our knowledge about penguins. Just one warning: it’s mildly addictive.”

On World Penguin Day, 25 April 2020, more than 150,000 tawaki nest images will be added as a dedicated project to Penguin Watch.

Says Hart: “With many countries still in lockdown due to the Covid-19 pandemic more and more people are turning to Penguin Watch. We will have the tawaki data analysed in now time.”

And in the process will give thousands of people a chance to get up and personal with one of the least known penguins species in the world.



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The Tawaki Project

Initiated in 2014, the Tawaki Project (<https://www.tawaki-project.org>) aims at gaining a better understanding of the little known tawaki/Fiordland penguin, one of four endemic penguin species in New Zealand. Thought to undergo significant declines, research conducted by the project found that there are a lot more penguins than previously thought, with a population increase possible. The Tawaki Project focusses on aspects of the species' biology crucial for effective conservation management, their breeding biology and foraging ecology. Satellite tracking revealed that tawaki travel enormous distances outside the breeding season which earned them the title of "Marathon penguins". That the birds can afford such extraordinary journeys suggests that their population is doing a lot better than other penguin species in New Zealand. Understanding what makes tawaki so successful may prove crucial to develop conservation strategies for other New Zealand penguin species.

New Zealand Penguin Initiative

NZPI (www.penguin-conservation.nz) is an initiative of T-Gear Charitable Trust and Birds NZ. The organization aims at improving conservation of New Zealand's penguin species. Established in 2019, NZPI has already significantly [advanced knowledge of tawaki, Erect-crested, and Little blue penguins](#). Future projects to examine population trends and climate change impacts on New Zealand's subantarctic penguin species are in development.

Penguin Watch

Penguin Watch (penguinwatch.org) is a citizen science project where the public can review webcam and drone footage across the world to count penguins in remote regions to help scientists understand their lives and environment. The project has proven especially popular during the Covid-19 pandemic lockdown because it is internet based and can be used in home schooling (currently available in English, Spanish, Mandarin, French and Czech). It has seen nearly two years' worth of traffic in the first weeks of April 2020.

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