Tawaki Project – automatic monitoring of penguins in Milford Sound

The Fiordland penguin / tawaki is one of the world's most elusive penguin species. The species breeding in some of the least accessible regions of the New Zealand mainland, i.e. Southwestland, Fiordland and the Foveaux Strait region. The penguins' preference for nesting in deep rock crevasses, impenetrable vegetation and even sea caves only accessible at low tide, makes them extremely difficult to survey and count. As a result, we have no solid information about the species' population trends. Some reports claim that the species is undergoing dramatic declines while more recent surveys conducted by the Tawaki Project and the West Coast Penguin Trust suggest that tawaki may be considerably more numerous that previously thought. However, if due to a population increase or greater survey effort remains unclear.

Because of their cryptic breeding habits, it will probably never be possible to get robust estimates of tawaki numbers. So, an alternative approach is required to assess population trends.

For the past four years, the Tawaki Project has been working with penguins from Harrison Cove in Milford Sound/Piopiotahi. During this period 40 of the resident penguins have been marked with Passive Integrated Transponders (PIT tags or "microchips"). Considering that the breeding population in the cove generally consist of 17-20 nests, we can assume that more than half of the breeding population is marked. With the project continuing its research efforts at that site in the coming years, the population will continue to be marked. This combined with the fact that most penguins access the breeding colonies via a single access track provided a unique opportunity to establish a new monitoring approach that may be more suitable to assess population trends going forward.

In February 2019, with the help of the Birds NZ Research Fund, we established an Automated Wildlife Monitoring System in Harrison Cove. This consists of a transponder gate through which the penguins pass on their commute between nest site and ocean. A set of light barriers activate an automatic transponder reader which identifies marked birds and records their movement direction and time in a locally deployed data logger. The system is powered by a solar panel and operates continuously throughout the year.

Over time, the recorded data will – amongst other things – provide us with information about survival rates of individual birds as well as recruitment of young birds into the local population. This, in turn, allows us to model population trends more accurately than any other ground-based survey.

The tawaki transponder gate in Harrison Cove (above) and a penguin having crossed the gate in March 2019.