Analysing the home range and habitat use of western weka (Gallirallus australis australis) in the alpine environment of Secretary Island.

Clare Gunton, MSc candidate at University of Otago, with supervisor Dr. Jo Monks, co-supervisor Dr. Jo Carpenter (Manaaki Whenua Landcare Research), and collaborating with Post Graduate Diploma student Connor McNicholl

Weka are one of New Zealand's native avian predators and also play an important role in our ecosystems as omnivorous scavengers and seed dispersers. However, the introduction and impact of invasive mammalian predators into New Zealand has disrupted the natural predator-prey balance. Consequently weka are often omitted from restoration projects, particularly in mainland or offshore predator-free sanctuaries, due to the concern that they may negatively affect more vulnerable species via predation. There is a lack of knowledge about weka ecology in systems without invasive mammals, particularly in the alpine zone. One of the main purposes of my study is to evaluate the home ranges and habitat use of western weka (Gallirallus a. australis) in the alpine environment of Secretary Island, a largely predator-free island (only a small number of stoats remain) along the coast of Fiordland National Park, in order to better understand weka ecology in the alpine zone. In the middle of my study period (summer 2022/23) Nationally Endangered Sinbad skinks (*Oligosoma pikitanga*) will be translocated to a release site in the alpine zone of Secretary Island. The other main purpose of my study is to assess any interactions between weka and skinks to better understand the potential impact of weka on low-density prey populations.

The possible weka and skink interactions will be recorded via trail cameras placed around the release site as well as personal observation, and will hopefully provide valuable information for conservation managers as to potential weka impacts on lizard species in a predator-free environment, and how this can be managed. The Birds NZ Research Fund, along with supplemental funding from the Department of Conservation, will allow me to purchase VHF transmitters and GPS loggers to attach to weka with backpack harnesses. The utilisation of GPS loggers in particular will provide high-resolution data by collecting location points of weka every 30-60 minutes for a four-month period. Weka can be active at any time of day or night, so this constant data collection will better display their complete home range and habitat use in such a remote, undisturbed location. A fellow student, Connor McNicholl, will also be utilising the GPS data for his Postgraduate Diploma in Science research project to answer aligned research questions, so that the information potential of the GPS data is fully harnessed.

A western weka in Sinbad Gully, Fiordland. Photograph: Clare Gunton