Sinbad Skink Annual Survey, Sinbad Gully Alpine Cirque.

February 2013.

A team of four (James Reardon, Jo Carpenter, Eric Edwards and Simon Ralph) spent two days in the Sinbad alpine cirque for 23rd and 24th February.

Objectives were to continue the monitoring of Sinbad skinks at the established monitoring site, service three stoat traps and to begin removal of mouse trapping and monitoring infrastructure that is no longer in use.

The monitoring protocol for Sinbad skinks is extremely course and intended to indicate catastrophic population change only, whilst also providing data on detection probability with regard to climate and environmental variables.

We also wished to extend our herpetological and entomological survey efforts a little wider. Simon Ralph, head chef at the Blue Duck Café in Milford Sound joined the team on behalf of Southern Discoveries and participated in both skink monitoring and the retrieval of mouse monitoring equipment (fig1.).

Fig. 1. Simon Ralph and James Reardon at the Sinbad skink monitoring site (photo: E. Edwards)

Results

Sinbad skink monitoring: Our survey site was monitored by the team for a total of 46x 15minute intervals over the two days. Basic results indicate no significant change in the population status of the skinks and therefore no emergency management required. The maximum observed number of skinks was three adults and one juvenile. This is the same maximum number recorded in any one survey session in 2012. All individuals were photographed without capture to enable future evaluation of site fidelity of individuals.

The continued survey of wider habitat detected a Sinbad skink some >80m from the rock wall and the known habitat of the species. The individual was a mature male and from the amount of scat sign surrounding the small rock area occupied, the skink had been in residence for most of the summer season. No other individuals were observed at the site.

During the retrieval of the mouse monitoring tunnels a cryptic skink was also located some distance away from the rock wall. Also two weka families were observed both with near-fledged offspring.

Pest control and monitoring: All three stoat traps were serviced and re-baited. The lower trap had caught a stoat since the re-baiting in December 2012.

Two of the four chew tags showed signs of possum gnawing and a possum was observed during night surveying for invertebrates. Possum sign has been recorded previously in the Sinbad alpine cirque in June 2010.

A moderate amount of browsing was also observed presumably caused by chamois, although none were observed on this trip.

Conclusions and discussion

Sinbad skink: The monitoring is crude but adequate to indicate the persistence of the only known population of the species.

The observation of the mature male maintaining a territory some significant distance away from the rock wall is significant and potentially lends weight to the hypothesis that the Sinbad skink is restricted to the known site not because of highly specialised niche requirements but because of the impacts of invasive pest impacts from stoats and mice. The location of the skink fortuitously coincides with one of the locations monitored for climate variables in 2010-2011 and so we know that whilst not significantly different in mean thermal properties, that the site did experience a greater frequency of below-freezing hours during the monitoring period. Thus, this observation lends credibility to proposals to investigate management of the Sinbad

skink at lower more accessible sites via translocation providing that rodent and stoat management is achieved and demonstrated. This prompts us to question whether we have sufficient data on the abundance of rodent and mustelids within the core skink habitat, and whether there are opportunities to replicate these dynamics through achievable management.

The fact that the cryptic skinks seem to be in a similar situation, occurring away from the rock wall but in apparently low numbers is encouraging for the same reason. The cryptic skinks also offer us an indicator species likely to be able to recover under suitable pest suppression more quickly than the Sinbad skink.

It also seems timely to suggest that some form of molecular estimation of population size should be factored into the assessment of threat for this species. We are not referring to the analogue methods of mark-recapture analysis (Miller 2005) but rather the estimation of effective population size (EPS) that can be achieved from a molecular sampling of the population (Kuhner et al. 1995). Using these methods researchers are able to estimate the effective (e.g. female) population size using mitochondrial DNA variation. If a species is declining or threatened then one would expect the observable population estimate to appear significantly smaller than the estimated effective population. This is because the genetic variability reflected in the calculation of EPS are a reflection of recent evolutionary history for the population and so if the population is naturally small and rare, this would be reflected in the analysis. Limitations in the approach are the logistics and cost of sample collection as well as laboratory costs and also the degree to which the data would contribute to our capacity to lever greater conservation support for the species.

Pests: The detection of possum in the alpine cirque does not necessarily indicate a change in their occupancy of the site as they are likely to be present at low levels of abundance throughout such country. However, because of their low abundance and the fact that they are likely to be under some resource pressure in that habitat it should not be difficult to remove individuals settling in the alpine crique and we recommend considering spotlighting for the duration of future fieldwork in the cirque targeting the slope and base of the rock wall. Trapping for possum in the cirque habitat would put kea and weka at unreasonable risk.

References

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Kuhner M.K., Yarnato J. and Felsenstein J. 1995. Estimating Effective Population Size and Mutation Rate From Sequence Data Using Metropolis-Hastings Sampling. Genetics 140: 1421-1490.