

*Stephens Island is home to one of the world's most fascinating reptiles, the tuatara. Situated at the northwestern entrance to Cook Strait, this remote and inaccessible wildlife sanctuary provides a refuge for a number of rare and endemic New Zealand animals, including giant weta, the Stephens Island gecko, and Hamilton's frog. But without a doubt, the tuatara is the most famous of its inhabitants. Scientists Alison Cree and Michael Thompson here describe the research they have been carrying out on tuatara reproduction.*

For the last three years, scientists from Victoria University of Wellington's Tuatara Research Programme have been studying the tuatara on Stephens Island. While we have been focussing on reproductive biology, other scientists from New Zealand, Australia and the United States have joined the programme to participate in studies of genetic variation, water balance, thermoregulation, parasitism and juvenile ecology.

### International Attention

Why should this cold reptile attract such international attention? One reason why biologists study the tuatara lies in its unique evolutionary position. The sole survivor of an order with equal ranking to the other three groups of living reptiles (turtles, crocodilians and squamates – the lizards and snakes), the tuatara retains distinct similarities to fossil reptiles from the Age of the Dinosaurs. For example, the tuatara's skeleton is remarkably similar to that of a reptile called *Homeosaurus*, which lived in Europe approximately 140 million years ago. Tuatara also have distinct differences from modern lizards, which they otherwise superficially resemble. Male tuatara are unique, for instance, in lacking a copulatory (intromittent) organ.

A second and equally important reason for current research on the tuatara is to assist with conservation. The tuatara was apparently present on the New Zealand mainland until last century, and despite having had legal protection for the past 100 years, island populations continue to become extinct. Although the population on Stephens is remarkably large, numbering many thousands, populations on the remaining 30-odd tuatara islands are smaller and several, which comprise predominantly older animals, are unlikely to survive without assistance. Predation (especially by rats) and habitat changes are likely causes of at least some population declines.



*Stephens Island is a cliff-bound and isolated wildlife sanctuary in Cook Strait. Grants from WWF-NZ and the Department of Conservation have been instrumental in funding transportation costs of current research.*

Photo: M Simons

## Unravelling the Mysteries of Tuatara Reproduction



*Tuatara are abundant on Stephens Island in both grazed sheep paddocks and in remnant native forest (inset). Recent observations indicate that sheep paddocks provide favoured areas for nesting because the soil there is several degrees warmer than in the forest. Photos: A. Cree*