IRCF REPTILES & AMPHIBIANS
CONSERVATION AND NATURAL HISTORY

CONSERVATION RESEARCH REPORTS

Origin and Spread of Invasive Lizards in New Zealand

Globalization and the resultant movement of animals beyond their native range creates challenges for biosecurity agencies. Limited records of unintentional introductions inhibit an understanding of the trade pathways, transport vectors, and mechanisms through which hitchhiking organisms are spread as stowaways. **Chapple et al.** (*Evolutionary Applications*, published online on 3 September 2012 before inclusion in an issue) adopted a phylogeographic approach to determine the source and human-mediated dispersal pathways of New Zealand's only invasive lizard, the Metallic or Delicate Skink (*Lampropholis delicata*), intercepted by biosecurity agencies in New Zealand. Biosecurity agencies correctly predicted the source region of 77% of stowaways, which were usually solitary adults arriving via air or sea pathways during the cooler months that had evaded initial border checks and were alive when detected. New arrivals from Australia comprised 16% of detections, with all originating from the region between Brisbane and Sydney. The remaining 66 animals were from established populations already present in New Zealand; of those, at least 23 had moved beyond the known distribution of the species in the country, with human-mediated dispersal driving the spread of these lizards. Propagule pressure was substantially greater for *L. delicata* compared with the noninvasive, congeneric Common Garden or Grass Skink (*L. guichenoti*). Results highlighted the transport pathways, spread mechanisms, and stowaway characteristics of *Lampropholis* lizards entering New Zealand, all of which should enhance current biosecurity protocols and prevent the establishment of additional lizard species.

Metallic or Delicate Skinks (*Lampropholis delicata*) are native to eastern Australia. They have become established in Hawaii (where this photograph was taken) and are invasive in New Zealand, where they occupy habitats similar to those used by the native Copper Skink (*Cyclodina aenea*). Photograph by Kenneth L. Krysko.

Christmas Island Reptiles in Decline

Christmas Island in the Indian Ocean is home to a terrestrial reptilian community that includes five endemic species, the Christmas Island Gecko (*Lepidodactylus listeri*), Christmas Island Giant Gecko (*Cyrtodactylus sadleiri*), Christmas Island Whiptail Skink (*Emoia nativitatis*), Bluetailed Skink (*Cryptoblepharus egeriae*), and Christmas Island Blind Snake (*Ramphotyphlops exocoeti*), and one native species, the Littoral Whiptail Skink (*Emoia atrocostata*). Over the last 30 or so years, five of the six species have declined to near extinction with the remaining species, *C. sadleiri*, still reasonably common. A further five species are exotic introductions, the most recent being the Asian Wolf Snake (*Lycodon capucinus*) in the 1980s. **Smith et al.** (2012. *Herpetological Conservation and Biology* 7:206–218) documented the declines in the native species and discussed possible causal factors in view of the available knowledge. They concluded that predation by introduced species is likely to be the key factor in the declines of the native reptiles, but other processes, such as inter-specific competition, may also be important. They briefly described the current management efforts and suggest several additional management actions that could be useful to conservation of the Island's terrestrial reptile community.

Predation by introduced species, such as the Asian Wolf Snake (*Lycodon capucinus*), is likely to be the key factor in the declines of endemic and native reptiles on Christmas Island. Photograph by L. Lee Grismer.

California Kingsnakes on Gran Canaria

The California Kingsnake (*Lampropeltis getula californiae*) was introduced to Gran Canaria (Canary Islands) by the accidental or deliberate release of individuals bred in captivity. In 2007, its naturalization was confirmed in the eastern part of the island. California Kingsnakes become an important environmental problem due to the enormous social alarm and the damage caused to many endemic reptilian species. Until 2011, this snake was known to occur in two areas in the northwestern and eastern portions of Gran Canaria (55 km^2) and some subsequent sightings and captures have been reported beyond these areas. From 2007 to 2011, **CABRERA-PÉREZ ET AL.** (2012. *Aliens: The Invasive Species Bulletin. Newsletter of the IUCN/SSC Invasive Species Specialist Group.* (32):20–29 <www.issg.org/pdf/aliens_newsletters/A32.pdf>) collected 1,064 snakes in Gran Canaria, mainly by visual searching and hand capture. Traps were ineffective, but artificial covers (e.g., wooden boards) had some success in catching snakes. Data show that the California Kingsnake is highly adaptable and is likely to spread to all of the island. These snakes could possibly extirpate native reptilian populations, especially in areas with higher snake densities. The Life+ Lampropeltis project and new regulation regarding invasive species could reduce the California Kingsnake population and lead to its gradual eradication in Gran Canaria.

Color patterns of California Kingsnakes (*Lampropeltis getula californiae*) found on Gran Canaria (Canary Islands): A. striped albino pattern, B. banded albino pattern, C. striped pattern, and D. banded pattern (some aberrant color patterns have also been found in a lower percentage). In Telde-Valsequillo, albino snakes prevail (68%), whereas in Gáldar most snakes show striped and banded patterns (96%). The number of albinos is around 4% in Gáldar. Photographs by Ramón Gallo Barneto (striped patterns and banded pattern) and José Miguel Sánchez Rivero (banded albino pattern) (figures from the original document).