

What Role Do Threatened Species Lists Play in New Zealand Conservation?

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THREATENED species' lists have been consistently reviewed as easily misused, inappropriately applied, counterproductive, and reflecting changes in knowledge more often than changes in threat status (Burgman, 2002; de Grammont and Cuarón, 2006; Possingham *et al.*, 2002; Seminoff and Shanker, 2008). However, with limited resources to deal with endangered species, effective conservation decision-making needs a means of determining where priorities lie. The EDGE list of the world's most "Evolutionary Distinct" and "Globally Endangered" amphibians ranks New Zealand's endemic Archey's Frog *Leiopelma archeyi* at the top of its list (www.edgeofexistence.org/amphibians/top_100.php). What role should this ranking or any other threatened species list play in determining conservation priorities in New Zealand?

The EDGE list ranks species based on their evolutionary history, as well as their present conservation status (Isaac *et al.* 2007). It is a novel method of listing, as the rankings are calculated not only on the likelihood of the species being lost, but also on its irreplaceability. All four of New Zealand's native frogs are in EDGE's top 40. In conjunction with the release of the first EDGE list of mammals in 2007, the Zoological Society of London initiated a programme to draw attention to the unique and distinctive EDGE species not already identified as of high priority for conservation (www.edgeofexistence.org). Despite being the number one EDGE Amphibian species, Archey's Frog is not one of them, presumably because it (and the other native frogs) is already a priority for attention and resources from New Zealand's Department of Conservation (DOC), universities and community groups.

Inclusion of its frogs on the EDGE list has not therefore, influenced New Zealand conservation's response, nor provided information not already known. Perhaps the value of EDGE lies in its global exposure of New Zealand fauna, and the chance it might generate additional international support.

The best-known threatened species list is the World Conservation Union (IUCN) Red List. Assignment to one of seven categories of threat, ranging from "Extinct" to "Least Concern", is based on quantitative and objective criteria that are designed to be easily and widely understood (IUCN, 2001). The Red List is published on-line (www.redlist.org) as a searchable list and currently holds information on over 50,000 species and subspecies. Its limitations are also well documented. For example, it demands detailed population and life history information, and the criteria require familiarity and training to ensure consistent assessments (Possingham *et al.* 2002; Robbirt *et al.* 2006). However, its supporters advocate that the appropriate role of the list is not as a stand alone dictum of conservation priorities, but to provide accurate information for priority lists (Lamoreux *et al.* 2003; Rodrigues *et al.* 2006).

A priority list acts as a determinant for the allocation of available conservation resources. It can give weight to factors such as taxonomic distinctiveness, cultural values, financial capacity, threat status, and conservation achievability. Therefore, a species that is ranked highly on a threat list may not be a high priority for conservation action, perhaps because it is already using resources, it is too expensive to eliminate perceived threats, or it has a small population that has been stable for a number of years. Even the IUCN

points out that the category of threat is not necessarily sufficient to determine priorities for conservation action (IUCN 2001). Threat lists inform priority lists because the extinction risk faced by a species is generally viewed as a crucial factor. They also inform other conservation management issues, such as monitoring the effectiveness of management efforts, support for habitat protection, and aiding in natural resource decisions (Townsend *et al.* 2008). Thus, the Red List, due to its objectivity and quantitative criteria is widely viewed as a useful decision-assisting tool (Miller *et al.* 2007; Rodrigues *et al.* 2006).

How useful then is the EDGE or Red List to New Zealand's threatened species conservation decision-making? Since 1992, New Zealand's Department of Conservation has been assessing conservation priorities using its own unique system (Molloy and Davies 1992). In 2002, it implemented a system similar to the IUCN Red List, but based on categories and criteria tailored specifically for New Zealand's environment and biota, the New Zealand Threat Classification System (TCS) (Molloy *et al.* 2002). DOC managers decided against adopting the IUCN system because of several perceived shortcomings when applied to islands with distinct biota and which had evolved in the absence of terrestrial mammals (Molloy *et al.* 2002). For example, the Red List was unable to distinguish between species that are naturally uncommon and those uncommon because of human activities, and could not identify species that were in decline, but not yet threatened. Further, its level of classification was not sensitive enough to the within-species genetic diversity present in New Zealand's biota. The TCS is intended to complement the Red List, and at the same time provide a more sensitive classification

for species with naturally restricted distributions and small numbers as a result of insular rarity (Townsend *et al.* 2008). Like the EDGE list and the Red List, the New Zealand list also places Archey's Frog in its highest risk category — "Nationally Critical" (Hitchmough *et al.* 2007). Therefore, the role of the EDGE and Red Lists in New Zealand conservation is restricted. However, information about New Zealand biota should be updated regularly on the Red List, as it is the most well-known international system of threat categorization.

Several crucial aspects make the TCS a good threat listing system. First, not only does it have complete taxonomic coverage (it can be applied to terrestrial, freshwater and marine species), it also takes a liberal view of taxonomic status as it extends to taxa not yet formally described. Second, it uses three of the main characteristics considered by de Grammont and Cuarón (2006) as important: 1. it has risk categories rather than a scale or continuum; 2. the categories have explicit definitions without a subjective element; and 3. the categories are based on criteria that are not ambiguous and relate to the condition of the species. There are concerns about the system; the current taxa bias of the TCS towards vertebrates and vascular plants needs to be addressed, and future iterations should be subject to peer-review and unaffiliated to any government department.

How is the TCS used? Like the EDGE and Red Lists it helps inform priority-making decisions. Whereas other considerations, usually financial ones, will actually determine which species are given priority, the TCS provides the raw data for decision-making. The TCS could also be viewed as a direct measure of the difference funding can make, where changes in a species' threat status is attributable to the amount of funding it received (CM Miskelly, pers. com.). While this may be a convenient correlation for those controlling government purse-strings, such conclusions should be avoided as they vastly oversimplify the issues involved in successful threatened species conservation.

The TCS provides a scientifically robust and accurate assessment of the threatened status of New Zealand

species. Therefore its role in New Zealand conservation is to inform priority decision-making and management issues. This role has the potential to be a fundamental one, because the criteria are specifically tailored to New Zealand as well as objective and quantitative. Realizing this potential requires awareness about the purpose of the TCS as an accurate source of information, and not a stand-alone directive of priority and policy.

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