



2011-12-08 18:30 The impact of alien fish species on feeding behavior and shelter use in Alpine newt

Winandy, L*, *University of Liège*; **Denoël, M**, *University of Liège*;

The introduction of alien fish species in the natural environment is a major and current conservation concern whose main consequence is biodiversity lost. Amphibians are particularly affected by these introductions and are declining worldwide. While previous studies have mainly highlighted population extirpation in presence of fish, the involved mechanisms are little known particularly at the behavioral level. For this purpose, we compared behavioral patterns (shelter use and feeding) of 100 adult Alpine newts (*Mesotriton alpestris*) in a replicated laboratory design (20 aquariums). Half of individuals were in indirect (visual and olfactory) contact with goldfish (*Carassius auratus*). In the presence of fish, significantly more newts were hidden under shelters and less were feeding in comparison with controls. However, food detection latency (i.e., the time from food delivery to the first feeding act) did not differ in the two treatments. These results show that the mere presence of fish, i.e. without direct contact, can alter newt behavior. By reducing their activity level outside shelters, newts have lower access to food in presence of fish. Looking at such behavioral patterns help in understanding of mechanisms of exclusion and coexistence patterns between fish and amphibians. This shows that non-predatory species, such as goldfish, have detrimental effects on newts.

2011-12-08 12:30 From prediction to action - the science of saving species under climate change.

Wintle, B.A., *University of Melbourne*; **Possingham, H.P.***, *University of Queensland*;

Substantial investment in climate change research has led to dire predictions of the impacts and risks to biodiversity; the IPCC Fourth Assessment Report1 cites 28,586 studies demonstrating significant biological changes in terrestrial systems. Yet there is little advice or precedent in the literature to guide climate adaptation investment for conserving biodiversity. Given that there is an impending extinction crisis, we need to move urgently from predictive science to decision science in order to support difficult choices between climate adaptation options under severe uncertainty. Here we present the first systematic ecological and economic analysis of a climate adaptation problem in one of the world's most species rich and threatened ecosystems; the South African Fynbos. We discover a counter-intuitive optimal investment strategy that switches twice between options as the available adaptation budgets increases. We demonstrate that optimal investment is non-linearly dependent on available resources, making the choice of how much to invest as important as determining what to invest in and where. Our study emphasises the importance of a sound analytical framework for adaptation investment that integrates information and tools from ecology, economics, social science and decision science. Our method for prioritising investment can be applied at any scale to minimise the loss of species under climate change. We anticipate that the approach illustrated here will form the basis of future climate adaptation investments.

2011-12-08 15:45 Inter-population variation and sociality of the North Island rifleman (*Acanthisitta chloris granti*): Implications for conservation management

Withers, Sarah Jane*, *The University of Auckland*; **Parsons, Stuart**, *The University of Auckland*; **Hauber, Mark**, *Hunter College, City University of New York*; **Lavery, Shane**, *The University of Auckland*;

Species management strategies are often formulated and carried out after a species has become endangered or threatened. This inevitably leads to strategies which are limited in their scope to collect explorative information related to the ecology and variation present within the species' distribution. Unfortunately this often results in a lack of fundamental knowledge related to that species, particularly in relation to aspects of their biology which may influence the success or failure of particular management strategies. Translocation is a management strategy that is being increasingly utilized as a tool for expanding the range of a declining or fragmented species. However individuals from threatened species are often translocated between populations or into new areas with little knowledge of the variation inherent between meta-populations. Using DNA analysis, bio-acoustic techniques and morphological comparisons, my research focuses on collecting both ecological and genetic data to identify variation between separated populations of the New Zealand North Island rifleman

(*Acanthisitta chloris granti*), a sub-species which is not yet endangered, but is declining and becoming increasingly fragmented. The results of this research have important implications for the definition of appropriate management strategies for the sub-species, particularly with regard to the use of translocation as a tool for future management.

2011-12-06 17:00 Conservation on private lands: the need for a science-based framework

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Private lands are playing an increasing role in the conservation of endangered species. Recently, conservation efforts on private lands have expanded in scope and scale, including ambitious initiatives such as the creation of entire National Parks. Private conservation efforts at large spatial scales, however, are more likely to be accompanied by drastic changes in management. Despite the best intentions of managers, such changes can be risky and, at least in the short term, lead to unanticipated negative outcomes. Here we report on the unintended consequences of removing >30,000 domestic sheep for the viability of endangered huemul (*Hippocamelus bisulcus*) deer during the establishment of the future Patagonia National Park, Chile, on a privately owned Estancia. Following the removal of sheep, predation of huemul fawns and adults from native predators increased dramatically, threatening the viability of one of the endangered species that the Park was intended to protect. Based on these results, we highlight the need for a science-based framework for conservation efforts on private lands to ensure that such initiatives will meaningfully contribute to conservation efforts. Key components of a science-based framework are transparency, accountability, independent assessment, incorporation of sound management practices, and consideration of all relevant ecological processes and interactions.

2011-12-06 12:15 Taxonomy, population genetics and conservation of the Critically Endangered Southern Bent-wing Bat (*Miniopterus schreibersii bassanii*)

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It is integral to the effective long-term management and conservation of populations that taxonomic relationships are understood and resolved. This research aims to clarify the taxonomy and population structure of the Australian complex of the Large Bent-wing Bat (*Miniopterus schreibersii*) with a particular focus on the Critically Endangered Southern Bent-wing Bat (*M. s. bassanii*). Using mitochondrial, microsatellite and nuclear genetic markers, investigation into historical and contemporary population structure has provided insight into the interactions and evolutionary relationships within and between populations of the two southern forms, *M. s. bassanii* and *M. s. oceanensis*. Despite the overlapping ranges of these two taxa, the genetic, morphological and ecological differences observed indicate that they may in fact be reproductively isolated, thereby warranting recognition as distinct species. A major concern for *M. s. bassanii* is not only their declining populations but also the low genetic variation observed. As this is likely to have a long-lasting impact on their viability in the long-term, efforts should focus on promoting habitat quality and demographic stability, at least in the short-term. The importance of this research in establishing the taxonomic status and population structure of *M. s. bassanii* is emphasized by the continued decline of populations and the imminent need for their effective management and conservation.

2011-12-09 17:15 Science Narratives: Inspiring participation in large landscape conservation

Wyborn, C*, *Fenner School of Environment and Society, ANU*;

Large landscape 'connectivity conservation' initiatives are rapidly gaining prominence across the world. They are motivated by a desire to halt biodiversity decline and preserve ecosystem processes in the face of climate change and habitat fragmentation. At the heart of these initiatives is the motivation and ability of individuals, agencies and institutions to collaborate across multiple scales, land tenures and land uses. Drawing on the concept of ecological connectivity, proponents claim to be 'connecting



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ABSTRACTS



Society for Conservation Biology
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164. Experimental habitat rehabilitation for the Philippine Cockatoo *Cacatua haematuropygia* in Palawan, Philippines
Widmann, IDL*, *Katala Foundation*; **Widmann, P**, *Katala Foundation*
165. Is forest disturbance always harmful to forest ecosystem? Evidence from Sal (*Shorea robusta*) forests in Nepal Terai
Sapkota, IP*, *Ministry of Forests, Nepal Government*
166. Unintended consequences of conservation actions: managing disease in complex ecosystems
Chauvenet, Alienor*, *Institute of Zoology, ZSL, London NW1 4RY, UK*; **Durant, Sarah**, *Institute of Zoology, ZSL, London NW1 4RY*; **Hilborn, Ray**, *School of Aquatic and Fishery Sciences, University of Washington, Seattle, WA 98195-5020, USA*; **Pettorelli, Nathalie**, *Institute of Zoology, ZSL, London NW1 4RY*
167. Molecular biodiversity inventory of the ichthyofauna of the Czech Republic
Mendel, J*, *Institute of Vertebrate Biology, v.v.i., Czech Republic*; **Papoušek, I**, *Institute of Vertebrate Biology, v.v.i., Czech Republic*; **Vetesník, L**, *Institute of Vertebrate Biology, v.v.i., Czech Republic*; **Halacka, K**, *Institute of Vertebrate Biology, v.v.i., Czech Republic*; **Bartonova, E**, *Institute of Vertebrate Biology, v.v.i., Czech Republic*; **Sanda, R**, *National Museum, Czech Republic*; **Urbankova, S**, *Institute of Vertebrate Biology, v.v.i., Czech Republic*; **Konickova, M**, *Institute of Vertebrate Biology, v.v.i., Czech Republic*
168. Taxonomic and systematic revision of species of the genera *Gobio* and *Romanogobio* in the light of frequent hybridization
Urbankova, S*, *Institute of Vertebrate Biology, v.v.i., Czech Republic*; **Mendel, J**, *Institute of Vertebrate Biology, v.v.i., Czech Republic*; **Vasileva, E**, *Zoological Museum, Russia*; **Nowak, M**, *University of Agriculture in Krakow, Poland*; **Stefanov, T**, *National Museum of Natural History, Bulgaria*; **Sanda, R**, *National Museum, Czech Republic*; **Kosco, J**, *University of Presov, Slovakia*; **Halacka, K**, *Institute of Vertebrate Biology, v.v.i., Czech Republic*
169. Evidence of inbreeding depression in a self-pollinated thistle
Sefton, Leah*, *Central Michigan University*; **McCann, Kelly**, *Central Michigan University*; **Dannenhoffer, Joanne**, *Central Michigan University*; **Swanson, Bradley**, *Central Michigan University*
170. The impact of alien fish species on feeding behavior and shelter use in Alpine newt
Winandy, L*, *University of Liège*; **Denoël, M**, *University of Liège*
171. How to mitigate the impacts of the deforestation on the vertebrate fauna in the Brazilian Amazon?
Prist, P.*, *Sao Paulo University*; **Michalski, F**, *Amapa Federal University*; **Metzger, J.P.**, *Sao Paulo University*
172. Reduced gene flow in ringed seals (*Pusa hispida*) caused by Hudson Bay
Jacob J. Burkhardt*, *Central Michigan University*; **Stephanie Sell**, *Central Michigan University*; **Ole Nielsen**, *Fisheries and Oceans, Manitoba, Canada*; **Brendan P. Kelly**, *National Science Foundation*; **Bradley J. Swanson**, *Central Michigan University*
173. Habitat selection of the endangered Hawaiian goose: a multi-scale approach
Christina Cornett*, *Tropical Conservation Biology & Environmental Science, University of Hawai'i, Hilo*; **Steven C. Hess**, *Pacific Island Ecosystems Research Center, U.S. Geological Survey, Kilauea Field Station, Hawai'i National Park, HI*
174. Challenges in conserving the endangered and endemic Cochabamba Mountain-Finch in a rural Bolivian Andean landscape
Huanca, N. E.*, *Asociación Civil Armonía, Santa Cruz de la Sierra - Bolivia*; **Cahill, J. R. A.**, *Centro de Biodiversidad y Genética, Universidad Mayor de San Simón, Cochabamba - Bolivia*; **Vázquez, C. A.**, *Asociación Civil Armonía, Santa Cruz de la Sierra - Bolivia*; **Davis, S.**, *Asociación Civil Armonía, Santa Cruz de la Sierra - Bolivia*
175. House mouse research on Saddle Island, New Zealand: Population and invasion biology
MacKay, JWB*, *School of Biological Sciences, University of Auckland*; **Murphy, EC**, *Department of Conservation, New Zealand*; **Hauber, ME**, *Hunter College, City University of New York, USA*; **Clout, MN**, *School of Biological Sciences, University of Auckland*
176. Wood density variation in an altitudinal gradient: a key component for determining above-ground biomass
Mireia, Torello Raventos*, *James Cook University*; **Bird, Michael**, *James Cook University*; **Saiz, Gustavo**, *James Cook University*; **Lloyd, Jon**, *James Cook University*; **Dan Metcalfe**, *CSIRO*
178. Habitat requirements and spatial occurrence patterns of specialist and generalist beetle species in a managed boreal forest landscape
Rubene, Diana*, *Swedish University of Agricultural Sciences*; **Wikars, Lars-Owe**, *Swedish University of Agricultural Sciences*; **Ranius, Thomas**, *Swedish University of Agricultural Sciences*
179. Gene flow and differentiation in the alpine archipelago of the New Zealand rock wren (*Xenicus gilviventris*)
Weston, K.A.*, *University of Otago*; **Robertson, B.C.**, *University of Otago*; **Jamieson, I**, *University of Otago*
180. Biological Diversity in a Brazilian Hotspot
Sevilha, AC*, *James Cook University and Embrapa Genetic Resources & Biotechnology*; **Williams, SE**, *James Cook University*; **Pressey, RL**, *James Cook University*; **Colli, GR**, *Universidade de Brasília*; **Constantino, R**, *Universidade de Brasília*; **Marinho-Filho, J**, *Universidade de Brasília*; **Marini, M**, *Universidade de Brasília*; **Tidon, R**, *Universidade de Brasília*

