

Ecology and Evolution Seminar Series 2012

Who: Roan D. Plotz, VUW SBS

When: Thursday, 7 June, 12:00 – 1:00 p.m.

Where: HULT 119

The rhino's blood-thirsty guard: black rhinoceros and red-billed oxpeckers in a novel parasitic-mutualism

Mutualisms can be defined as mutually beneficial interspecific interactions in which each species receives a net benefit from the interaction. Despite net increases in the reproduction and/or survival of each partner, these reciprocally beneficial interactions also involve costs. The apparently mutualistic oxpecker (*Buphagus* sp.) – multiple ungulate sp. relationship is part of African folklore yet tests produce conflicting conclusions i.e., parasitic birds prefer blood over ticks and inconclusive evidence of sentinel behaviour. I quantified the complex relationship between red-billed oxpecker (*B. erythrorhynchus*) and the critically endangered black rhinoceros (*Diceros bicornis*) that is mediated by specialized rhinoceros ecto- and endo-parasites and large predators of rhinoceros, particularly humans. I show experimentally that (1) oxpeckers acted as sentinels for rhinoceros against human predatory threat and so (2) rhino tolerated parasitic oxpeckers that (3) fed almost exclusively at the large haemorrhaging lesions on rhino caused by a parasitic filarial nematode (*Stephanofilaria dinniki*). Thus, I demonstrate that a novel parasitic-mutualism relationship between black rhinoceros and oxpecker is made possible by other parasitic and predator biodiversity relationships. Significantly, I provide strong evidence to show that the virtual extinction of black rhino by humans (i.e., > 1 million c. 1850 to about 4, 000 today) might have triggered a rapid evolutionary adaptive response by black rhino to oxpecker's anti-human alarm calls. Interspecific interactions, such as apparent cleaning symbioses and probably many other apparently mutualistic relationships may therefore not be definable with a single label as has often been the case.

