

## Editorial

# Sympathy for the Devil

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I remember the first time I saw a Tasmanian devil. It must have been about twenty years ago. I had flown overnight from Tahiti to Sydney, the old slow route across the Pacific, to attend the International Parasitological Congress in Brisbane. We had an eight-hour layover and decided to visit the Taronga Zoo, a fantastic first glimpse of many of Australia's endemic marsupial mammals. The devil was in a small exhibit surrounded by a circular moat. You could stand within twelve feet of him as he stood on a tree trunk, pugnacious, totally self confident, and formidable. He had the demeanor of a cross between James Cagney and Errol Flynn, his fellow Tasmanian, who had grown up on a farm in Tasmania where his father kept caged devils and ultimately became the foundation professor of zoology at the University of Tasmania. The son migrated to Hollywood and global fame as one of Warner Brother's first movie stars (Owen and Pemberton, 2005). The sharp piercing eyes of the zoo devil seemed to see us all as a potential meal, and his formidable forelimbs suggested he would not take long to eviscerate us and enjoy the spoils. This was the image the early settlers of Van Dieman's Land (Tasmania) had of the devil, a ferocious and insatiable carnivore that presented a formidable challenge to their sheep flocks. Subsequent research showed this image to be false; devils are more scavengers than hunters and they do a formidable job removing dead, rotting, and potentially diseased carcasses from the landscape. The nocturnal attacks on sheep flocks that the farmers blamed on devils were more likely caused

by the feral dog population their predecessors had accidentally introduced to island.

Devils appeared again with surreal prescience when I made a subsequent trip to Australia to attend the annual Wildlife Disease Association meeting in Cairns in 2005. There was now a direct flight from Los Angeles to Sydney, fourteen hours of Syrah, Cabernet, movies about dogs that play basketball, and half-read books and magazines about an ill-conceived war. I emerged from a half-sleep to find myself watching an Australian TV documentary about Tasmanian devils starring Menna Jones, an Australian biologist who spent months in the wilds of Tasmania documenting the behavioral ecology of free-living devils. The documentary ended with the chilling revelation that devils seemed to be suffering from a new disease in the wild, a strange syndrome of horrendous facial tumors that progressed to cause the eventual death of the devil.

When I made it to the meeting in Cairns there was a whole session and several break-out groups discussing the Devil Facial Tumor Disease (DFTD). We all wrestled with this as a new concept, a totally novel and very bizarre type of pathogen whose emergence seemed totally unpredictable. "Hmmm, sounds a bit like 'canine transmissible venereal tumour' to me" suggested Frances Gulland over beers one night. Frances is always several steps ahead of the rest of us and this insight proved closer to the truth than most of the other wild guesses kicked around the bar that evening. Several of us were deeply concerned about the likely impact on the devils and what should be done to slow the spread of the disease. The papers gathered in this special section provide key insights into what we now know, two

years later, about Devil Facial Tumor Disease and what needs to be done to save the devils. The papers included in the special section are a superb testimony to the way a small group of dedicated workers have risen to the challenge of understanding the population biology of an endangered species and a newly emerging disease. Those requiring more background knowledge about Tasmanian devils should not hesitate to buy and read *Tasmanian Devil: A Unique and Threatened Animal* by David Owen and David Pemberton. Their book (reviewed in this issue) is an exquisite introduction to the social and natural history of the devils.

The time available to save the Tasmanian devil from extinction is short. If we are to have any realistic chance of saving them, then several things have to be done on a time scale faster than the two years since we sat in Cairns and discussed what might be going on. If we do not act now, the devils could be extinct in the wild in less than the twenty years since I first saw one. The potential options are laid out in the paper by **Jones et al. (2007)** in this issue. It strikes me that the most viable option would be to establish colonies of healthy (disease-free) devils on some of the islands around the coast of Tasmania. These subpopulations should be carefully monitored and any diseased animals swiftly removed. Genetic diversity should be maintained by artificially dispersing young males among islands. This is the least expensive option and I suspect the one with the greatest chance of success. The principal constraints on this option are financial (which I'll return to) and the concern that the presence of devils will be detrimental to the bird communities of these islands. However, there are no bird species endemic to islands large enough to be suitable for devils and all the bird species present have healthy and larger breeding populations at other locations. Although it consistently agonizes the local ornithological community to impact even one colony of birds, I think it is worth making a significant, and likely transient, sacrifice to save one of the world's most primitive and unique carnivore species (Vane-Wright et al., 1991).

The remaining populations of devils on the main island of Tasmania should also continue to be monitored. Here it is particularly important that we know more about the etiology of DFTD and its ecology. The calculations on the rate of spread and impact of the pathogen developed in the paper by **McCallum et al.** (this volume) provide an important set of guidelines that match those used in studies of other emerging diseases of wildlife, for example, Ebola virus in gorillas and conjunctivitis in

house finches (Dhondt et al., 2005; Hosseini et al., 2006). The calculations contrast with those of most studies of emerging infectious diseases in that they make predictions about the future course of the epidemic outbreak. These will certainly be modified as the epidemic progresses, but they provide a benchmark that guides local management and should also be adopted in other studies of emerging disease.

The prognosis for the devil is ultimately extremely gloomy and could get worse. Localized loss of the devil already suggests that it plays a more important role in maintaining the health and diversity of the Tasmanian wildlands than was previously appreciated. In particular, feral dog and cat populations have begun to expand in areas where the devil has declined, as have the abundance of mesocarnivores such as Quolls. This may lead to increased rates of attacks on sheep or increased pathogen transmission from sick to healthy animals; both would reflect hidden ecosystem services undertaken by the devils. This would echo a pattern that was observed when wolves were reintroduced into Yellowstone National Park, where one of their key impacts was to reduce the size of the coyote population that harassed the sheep farms on the western edge of Yellowstone (McNamee, 1998; White and Garrott, 2005). A deeper worry here is that some deeper form of trophic collapse may take place once the devils are gone. The classic example of this is provided by John Terborgh's study of islands in Lago Guri in Venezuela (Terborgh et al. 2001). In that case loss of top predators led to eruption of herbivores that overgrazed the edible plants to a level where they were replaced by inedible species which support almost no herbivores. Hopefully, DFTD will eventually die out and devils might be reintroduced from the island stock to prevent this form of disaster from unfolding. However, this assumes we can preserve healthy island populations.

Who will pay for all of this? Tasmania is certainly not the wealthiest part of Australia, but its local economy is increasingly dependent upon ecotourism. While some of these tourists come to eat home-grown lamb, others come to view the wildlife, so accessible island populations of devils could prove financially useful. However, the initial rapid push to capture devils and move them to islands requires a big cash donation. Has anyone ever made a financial killing on the devils? Well, Warner Brothers did incredibly well with its cartoon character "Taz!" (Owen and Pemberton, 2005). After long drawn out deals for a percentage of sales on Taz Dolls, it looks as if some of the profits from these sales will find their way to Tasmania to

help save the species that inspired the highly successful cartoon series.

Come on! I thought we were continuously hearing about the “Greening of Hollywood” in each year’s “Green” issue of *Vanity Fair*; so is this the new-Green or the old green-backs? While I strongly applaud Warner Brother’s genuine efforts to help with the Tasmanian devil rescue, it really would be nice if Hollywood more proactively stepped up to the plate and helped out with environmental problems. It is virtually impossible to call for a boycott of their products. The only viable alternative is to ignore their call not to buy DVDs and music on the black market. I have few moral qualms about this (like much of Hollywood, I have few moral qualms!). But if Hollywood does not have the moral integrity to more generously support their sources of inspiration, why should we honor their plea for intellectual property rights? Ultimately, when so little is put back into the natural world that drives creativity in the entertainment business, then it may be best to shame them in the domain where they still feel greenest!

I am suddenly back on another plane and see that devil in the Taronga Zoo winking at me with an insouciant Errol Flynn grin. I think Hollywood’s original Tasmanian devil knows how easy it would be for the entertainment industry to bankroll a rescue of Tasmanian devils. They could do it easily enough on the royalties his old movies generate for them, let alone the royalties on the Taz cartoon reruns. In the absence of this form of inspiration, we would all be doomed to endless airline flights filled with movies about dogs that play baseball,

old TV reruns, and interviews with barely literate sports icons. Please find me another planet!

## ACKNOWLEDGEMENTS

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The author humbly apologizes to M. Jagger and K. Richards for partially plagiarizing their song title. It is done from 40 years of huge respect for their work and mutual sympathy for the devil.

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