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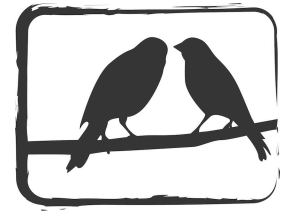
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## Endangered

*Living Lexicon for the Environmental Humanities*

**Simon Pooley**

*Department of Zoology, University of Oxford, United Kingdom*



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I clearly recall sitting in the warm sand next to my father, cradling the large white egg of a crocodile in my small hands. It was a source of wonder that the huge, armour-plated toothy beasts in the enclosure nearby had once been enfolded into this small space, encased within this fragile shell. If I dropped this egg and it cracked, the embryonic individual crocodile inside it would die, its life-sustaining fluids leaking into the thirsty sand of the floodplain.

The reason I was able to handle a Nile crocodile egg was that my father Tony and others (not too many others) were concerned that this species was endangered, and had initiated conservation measures to ensure their survival. Tony had collected the egg from a threatened breeding ground, carefully packed it in grass with a spot marking which end should remain uppermost, and carefully reburied the clutch at the croc centre. When the hatchlings were ready to emerge they began to yelp, and we played 'mother' and unearthed the eggs.<sup>1</sup>

<sup>1</sup> It must be acknowledged that in 'playing mother' we deprived these hatchlings of their experience of parenting by their biological mother, with unknown effects on their development.

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Visitors to this first crocodile centre in Zululand were incredulous that we were protecting crocodiles. Most Europeans in Africa have felt endangered *by* crocodiles. By the 1960s, however, even professional crocodile hunters servicing the booming international leather trade were worried that their livelihoods were being endangered by the growing scarcity of adult crocodiles. A handful of conservationists began to speak out against the decimation of crocodiles, and in 1971 the International Union for the Conservation of Nature's (IUCN) Crocodile Specialist Group<sup>2</sup> was launched to advise on the conservation status and needs of crocodylians.<sup>3</sup>

The concept of "endangered species" has become central to attempts to value and conserve biodiversity on our planet, and is often used without due reflection on the decisions and implications conferring such status implies. The technical definitions of species and categories, and the processes of filtering and ranking species are presented as rigorous and scientific, but are also pragmatic, value laden, imperfect, and have some profound implications.

In 1975, the Convention on International Trade in Endangered Species (CITES) came into force, and has become the most important international mechanism for addressing the loss of species. The Convention defines species as "any species, subspecies or geographically separate population thereof."<sup>4</sup> The focus on trade requires discrete, distinguishable and exchangeable units, and species have provided this "currency" of exchange for regulation.

All crocodylians were classed as "endangered" and listed as not to be traded (Appendix I). This had dire implications for the crocodile skin trade, and the Crocodile Specialist Group came under pressure to downgrade certain species to allow controlled trade (Appendix II).<sup>5</sup> Species surveys were carried out across the world, many funded by industry to try to establish the actual conservation status of crocodile species (how many viable populations of each species survived in the wild). What this revealed was the level of ignorance of crocodile distribution, abundance and behaviour, and how hard it was to count crocodiles accurately.

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<sup>2</sup> The IUCN Species Survival Commission comprises Species Specialist Groups, voluntary networks of scientific experts who advise on species regarded as threatened with extinction in the wild: see <http://www.iucnscg.org/pages/Conservation-Status.html>. Where and what "the wild" and "wildlife" are is much debated. On "the wild" see Sarah Whatmore, *Hybrid Geographies: Natures, Cultures, Spaces* (London: Sage, 2002); and on "wild animals," Harriet Ritvo, *Noble Cows and Hybrid Zebras: Essays on Animals and History* (Charlottesville, VA: University of Virginia Press, 2011), 208.

<sup>3</sup> Simon Pooley, "The Entangled Relations of Humans and Nile Crocodiles in Africa, c.1840-1992," *Environment and History* (2015, in press).

<sup>4</sup> "Convention on International Trade in Endangered Species of Wild Fauna and Flora," Article 1 (a). For a thoughtful critique of CITES, see Jon Hutton, Barnabas Dickson, eds., *Endangered Species, Threatened Convention: The Past, Present and Future of CITES* (London: Earthscan, 2000): the concept of species and its implications goes unquestioned, however.

<sup>5</sup> On the CITES appendices, see: CITES, "The CITES Appendices," accessed 15 October 2015, <http://www.cites.org/eng/app/index.php>. Thom van Dooren argues extinction is not a singular event explicable by market forces, habitat destruction or similar, but is rather "a slow unravelling ... of complex ways of life that have been co-produced and delicately interwoven through patterns of sequential and synchronous multispecies relationships" including humans: see *Flight Ways: Life and Loss at the Edge of Extinction* (New York: Columbia University Press, 2014), 58.

The Crocodile Specialist Group reluctantly concluded that in order to convince people to tolerate large, dangerous reptiles it was best to support sustainable means of rendering them economically valuable. However, sustainable use proved challenging to implement. Some argue that deciding on whether a wild species can be harvested or not requires an estimate of pristine abundance (or biomass), i.e. what the 'natural' population size was before humans began to exploit them, or destroy their habitats. Others dispute that this is possible to estimate (the Red Lists focus rather on absolute extinction risk).<sup>6</sup>

Faced with limited data and resources, conservationists adopted a triage system in which the Red List ranking of a species' level of endangerment was a major factor in determining its chances of becoming a priority for conservation action. Efforts are concentrated on species judged to be critically endangered, endangered, or vulnerable (collectively known as "threatened species"). They are classified using five main criteria which focus on trends in population decline, absolute population decline, and habitat decline (quality and quantity).<sup>7</sup>

In addition, logistical factors and human preferences play important roles. The need for funds and public support means that charismatic species have fared better than those we can't as readily sense, count, or empathise with.<sup>8</sup> Those adopted by charismatic conservationists like Jane Goodall or which feature in films like *Born Free* garner more public attention and funds. In considering endangerment, it is important to remain mindful of the great diversity of beings languishing outside of the bandwidths of our perceptions and empathies in the Red List categories "data deficient" (one-sixth of the >65,000 species assessed by the IUCN<sup>9</sup>) and "not assessed".

Only mammals and birds have comprehensive Red Lists (reflecting human enthusiasms). The number of described species in groups like plants, fungi and invertebrates lags far behind

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<sup>6</sup> Peter Alagona *et al.* outline difficulties with estimating baselines against which to estimate species decline or recovery: "Past Imperfect: Using Historical Ecology and Baseline Data for Conservation and Restoration Projects in North America," *Environmental Philosophy* 9, no.1 (2012): 49–70. Prof. Harry Messel's extrapolations of pristine abundance from surveys of saltwater crocodiles in northern Australia in the 1970s were judged too high by other Australian researchers. Getting saltwater crocodiles downlisted to Appendix II proved a struggle. Historical research and a spate of attacks on humans in 1979/80, contributed to downlisting in 1985. This was a political and a scientific decision: Simon Pooley, "Invasion of the Crocodiles," in *Rethinking Invasion Ecologies from the Environmental Humanities*, ed. Iain McCalman and Jodi Frawley (Abingdon: Routledge Environmental Humanities, 2014), 239–255.

<sup>7</sup> The Red List categories are: extinct; extinct in the wild; critically endangered; endangered; vulnerable; near threatened; least concern; data deficient; and not assessed. See The IUCN Red List, "Categories and Criteria," accessed 15 October 2015, <http://www.iucnredlist.org/technical-documents/categories-and-criteria>. Red List compilers complain that listing is often mistaken for prioritisation—ignoring factors like regional economic, logistical and political constraints. See Georgina Mace and Russell Lande, "Assessing Extinction Threats: Toward a Reevaluation of IUCN Threatened Species Categories," *Conservation Biology* 5, no. 2 (1991): 149–157.

<sup>8</sup> See Jamie Lorimer, *Wildlife in the Anthropocene: Conservation after Nature* (London: University of Minnesota Press, 2015), chapter 2, for a detailed and useful discussion of non-human charisma, and for the limitations of species as a unit for conservation, 67–75.

<sup>9</sup> L.M. Bland, *et al.*, "Predicting the Conservation Status of Data-Deficient Species," *Conservation Biology* 29, no.1 (2015): 250–259.

estimates of global species richness.<sup>10</sup> Summary statistics for 2015 indicate that 44% of known species of reptiles were evaluated, 39% of fishes, 7% of plants, 1% of invertebrates, and 0.04% of fungi and protists.<sup>11</sup>

What about the individual crocodile I cradled in my hands as a boy? Conservationists aim to manage on the level of populations, where the suffering and death of individuals cannot (and need not necessarily) be avoided. Instead, the fate of the (reified) species can be managed through statistical tracking of population fluctuations, with the application of remedial management interventions where necessary.<sup>12</sup> Many animals are sacrificed for the purposes of research in the interests of better understanding and conserving their species. Thousands of captive crocodiles are killed annually in order (it is hoped) that others may survive in the wild.<sup>13</sup> We must retain our sense of connection and empathy with those animals kept in captivity so that others may thrive in the wild. And at what point do conservation concerns become justifications for commercial slaughter—or, indeed, irrelevant to commercial exploitation of a species? The Red Lists and CITES offer no guidance. These are moral, and not technical or scientific considerations.

Decisions made about the sustainable use (killing) of particular species are not purely objective scientific ones. They are shaped by our values and attachments. Although turtles are biologically very similar to crocodiles, and equally commercially valued, turtle experts and activists have repeatedly rejected attempts to sustainably harvest these charismatic species for commercial purposes. Turtles are physiognomically appealing to humans, appear touchingly clumsy and vulnerable on land, have no teeth and are not harmful to us, in strong contrast to the larger crocodylians.<sup>14</sup>

Conservation is the science and art of the possible, but when we decide what is endangered, and prioritise conservation action, we should be reflexive about the limitations of our fixation on species, and the role of our values in shaping our choices. So many living beings remain unclassified and beyond both our scientific comprehension and our ethical consideration. Essentialist conceptions of species may elide our interrelatedness and conceal our culpability in endangering life on our planet.

In a period described as the Sixth Great Extinction, we should acknowledge the deeply entangled relations of humans and all other living beings and ecosystems. The decision to

<sup>10</sup> For further comment, and attempts to redress this, see ZSL, “The Sampled Red List Index,” accessed 15 October 2015, <http://www.zsl.org/science/indicators-and-assessments-unit/the-sampled-red-list-index>.

<sup>11</sup> The IUCN Red List, see <http://www.iucnredlist.org/about/summary-statistics>.

<sup>12</sup> Challenges include different definitions of species, the transgressions of species boundaries by genes, and microbial life is entirely excluded. Lyn Margulis’s theory of endosymbiosis suggests that symbiosis (at the cellular level) is a more important driver of evolution than competition between distinct units: Lyn Margulis and Dorion Sagan, *Acquiring Genomes: A Theory of the Origins of Species* (New York: Basic Books, 2003). There is a contradiction in trying to preserve species purity while also promoting species diversity: protecting integrity while promoting adaptability. See Christine Biermann and Becky Mansfield, “Biodiversity, Purity, and Death: Conservation Biology as Biopolitics,” *Environment and Planning D: Society and Space* 32 (2014): 257–273.

<sup>13</sup> See Thom van Dooren’s conception of “violent care,” *Flight Ways*, 116.

<sup>14</sup> On turtles and endangered species, see Alison Reiser, *The Case of the Green Turtle: An Uncensored History of a Conservation Icon* (Baltimore: Johns Hopkins University Press, 2012), 2–11.

develop Red List criteria for ecosystems initiated in 2008 is surely a step in the right direction, and it is a challenge for the environmental humanities to motivate for the inclusion of the human dimensions of those systems.<sup>15</sup>

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<sup>15</sup> D.A. Keith, et al., "Scientific Foundations for an IUCN Red List of Ecosystems," *PLoS ONE* 8, no. 5 (2013).