Abstract

Linking ecology, environment and society to the present and future of Caspian seal conservation

Effective conservation needs a strong evidence base to make informed management choices, but also depends on having the social and political will, and resources for implementation. Having declined by around 90% against abundance at the start of the 20th Century, the Caspian seal (*Pusa caspica*) is now listed as Endangered by the International Union for the Conservation of Nature. Here I review how our recent work has provided insights into the ecology, and the conservation actions needed for the species. I also suggest the Caspian region provides an interesting case study in the development of transboundary biodiversity management for newly emergent nations with complex socio-political histories, nascent environmental governance frameworks, and limited resources.

The main driver of decline of Caspian seals through the 20th Century was commercial hunting, and human caused mortality is still the most significant threat. Entanglement in nets from sturgeon poaching and illegal hunting causes mortality of at least several thousand individuals per year. Habitat loss is also a major cause for concern. Most historical coastal haul out sites across the Caspian are now abandoned, while shipping and offshore industry impinges on habitat used for foraging, breeding, migration and resting. Other potential threats include infectious disease, pollution, and ecosystem change due to invasive species. However these mostly lack sufficient data to fully evaluate their consequences.

The main conservation priorities are to safeguard key habitats through protected areas, and most crucially, reduce human caused mortality. In principle these measures are under direct control, but in practice are only achievable by engaging at multiple social levels, from communities to governments. In particular, tackling bycatch will require helping communities develop alternative livelihoods and other incentives to move away from illegal or unsustainable resource extraction.

High intrinsic growth rates for most phocid seal populations, should mean Caspian seals have potential to make a good recovery given successful conservation measures. However due to climate change, by 2100 there could be a reduction in sea level by 5 to 20m and the ice sheet seals depend on for breeding will be smaller, and more unpredictable. Therefore the long term question is whether Caspian seals can survive the dual hit of climate and human impacts.

Bio

Simon Goodman is based at the School of Biology, University of Leeds, and works at the interface between population/evolutionary genetics, disease ecology and conservation biology. He is particularly interested in disease impacts on endangered species, molecular epidemiology and evolution of parasites, and marine mammal conservation.

Dr Goodman undertook his PhD in the Department of Genetics, University of Cambridge and then moved to a post-doctoral position at the University of Edinburgh. This was followed by a Research Fellowship at the Institute of Zoology, Zoological Society of London, before joining the University of Leeds in 2004.