Ranking wildlife for conservation efforts

According to the International Union for Conservation of Nature's (IUCN) Red List, extinction threatens over one third of all species on our planet. This dire fact has resulted in increasing calls for biologists to assign conservation priorities by weighing the relative benefits and costs of saving a given species. Some have argued that an objective way to do this lies in the study of the genetic code, the common currency for all life on Earth. Dr. Arne Mooers and Dr. Dave Redding have recently established a new conservation metric using genetic information to measure "evolutionary distinctiveness". The principle of evolutionary distinctiveness is that while some species are relatively new and possess many cousins, others are much older, possess far fewer living relatives, and are therefore more "evolutionarily distinct". Under this principle, for example, the loss to biodiversity stemming from the extinction of the ostrich is argued to be far greater than the loss of one of the world's many finch species. By comparing large groups of organisms, initially over 9500 species of birds, Mooers and Redding were able to mathematically capture evolutionary distinctness and easily assign numeric relative values for any number and type of species. Multiplying these numbers with a corresponding "probability of extinction" value estimated from the IUCN's Red List, final rankings of conservation relevance were obtained. Surprisingly, their rankings matched up closely with the original IUCN rankings in terms of the species to protect. However, the two lists differed dramatically in terms of conservation prioritization. Mooers and Redding attribute this difference to the fact that their estimate incorporated more evolutionary history and may therefore be a better indication of the overall genetic value for a given species. By establishing evolutionary distinctiveness as an important parameter for conservationists to consider, Mooers and Redding hope to help conserve species that possess important genetic information that might otherwise be overlooked, information that may help better conserve biodiversity in the future. Their approach has already inspired a major new conservation effort by the Zoological Society of London's Evolutionary Distinct & Globally Endangered (EDGE) program.

To learn more:

Redding, D.W., Hartmann, K., Mimoto, A., Bokal, D., Devos, M. and A.O. Mooers. 2008. Evolutionarily distinct species capture more phylogenetic diversity than expected. Journal of Theoretical Biology 251:606-615

Redding, D.W. and A.O. Mooers. 2006. Incorporating evolutionary measures into conservation prioritisation. Conservation Biology 20:1670-1678

Dr. A. Mooers' web site: http://www.sfu.ca/~amooers/index.html