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Overview of Vol.4, No.3 – Asia and Africa

Overview of Restoration Reviews on Africa and Asia

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The papers presented here cover a large and diverse area, ranging from as far afield as the Seychelle Islands in the southern Indian Ocean (Geurts), to the Middle East (Kostreba), and into the heart of Eurasia (Crandall). Three of the papers—Jacobson, Paulson, and Harikrishnan—discuss projects in India, whose extreme population and economic pressures complicate all restoration efforts. What stands out about the efforts discussed is the uniqueness of the challenges each faces; whether the challenge stems from the particular nature of the target species, as in the cases of large animal introductions, or the complexity of social and economic forces that must be considered in the large scale ecosystem restorations.

Three of the papers (Geurts, Jacobson, Paulson) discuss restorations of large animals, and of these Paulson treats the most fabled creature, the Asiatic lion.*Panthera leo persica* is the lion of antiquity. It is the lion in whose den Daniel was thrown and whose strength Herakles could match. *Panthera leo persica*'s range at one time extended from India to North Africa to Greece (CSG, 1999). Hunting by humans and habitat loss once drove its population down to only eighteen individuals (Paulson). Today the lions' enormous range has been reduced to the Gir forest of northwestern India where 284 lions lived in 1994 (Paulson). In his paper Paulson reviews the attempts to ensure the survival of this most endangered of the large cats, efforts that center on protecting and restoring the lions' existing habitat, reducing human/lion conflicts, and researching areas for future translocations.

Jacobson discusses another effort in India; a large-scale species restoration of the Mugger crocodile, which has suffered from hunting and habitat loss. The range of *Crocodylus palustris* is throughout Asia, extending from Pakistan to Bangladesh and Sri Lanka (Jacobson). In 1975 the Indian Government with help from the United Nations began efforts to increase the population of the Mugger crocodile, primarily through captive breeding and translocation (Jacobson). The efforts to increase the population have been successful, but species and habitat fragmentation is still a concern.

Another large animal species that has suffered from predation and habitat loss is the Aldabra giant tortoise, *Geochelone gigantea*. The tortoise's population is currently confined to three islands of the Aldabra atoll, which is part of the Seychelle Islands (Geurts). In her paper, Geurts reports on the efforts to reintroduce*Geochelone gigantea* to Curieuse Island, another island in the Seychelles chain. Geurts reveals some of the unforeseen problems that can occur when reintroducing species to a habitat that has changed significantly since they last inhabited it.

Two of the papers of this section, Crandall and Kostreba, treat what can only be described as ecological catastrophes. Crandall shows how extensive the damage can be when environmental considerations are ignored when implementing agricultural and economic policies. In this case, the Aral Sea, formerly the world's fourth largest inland sea, has lost nearly two-thirds of its

volume due to irrigation diversion, resulting in a tremendous loss of wetlands, a growing pollution hazard from the wind transportation of salt and chemicals from the dry sea bed, and a loss of many fish species, to name a few of the consequences (Crandall). The condition of the Aral Sea has become even more concerning with the revelation in a *New York Times* article of June 2, 1999, "At Bleak Asian Site, Killer Germs Survive," that an island in the Aral Sea whose soil still contains living organisms from Soviet germ warfare efforts is in danger of being linked with the mainland due to the falling water level. Scientists are concerned that with connection to the mainland these potentially disastrous germs could be disinterred and spread widely by the digging of rodents and lizards. Crandall discusses the almost accidental efforts to restore the northern portion of the Aral Sea, an area that has become very distinct from the larger southern portion as the waters have receded.

If the disaster of the Aral Sea seems unique to the political and social conditions that produced it, Kostreba discusses a catastrophe that is unsettling in its ability to occur anywhere—a calamity caused by the destructive power of modern warfare. From August 1990 to February 1991 240 million gallons of oil were spilled in the Arabian and Persian Gulfs and the Kuwait desert as a result of the Persian Gulf War. This constituted the largest oil spill in history (Kostreba). In the Kuwait desert alone, forty-nine square kilometers were polluted, some areas with standing oil lakes two meters deep (Kostreba). In her paper Kostreba reviews the many soil remediation experiments that have taken place since the war and discusses their results

Finally, Harikrishnan reports on efforts to restore several mangrove ecosystems in India. Mangroves are a form of coastal forest found along protected shorelines and whose constantly changing conditions, especially aquatic, have made it a home for a number of species with unique adaptations (Hutchings and Saenger 1987). Mangroves are an important resource source for grazing, firewood, timber, fruits, and aquaculture, and they are an important breeding and nursery ground for a multitude of aquatic and avian species (Harikrishnan; Hutchings and Saenger 1987). Harikrishnan review the restoration efforts of seven different mangrove systems on both coasts of India, including one in the city of Bombay.

References

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