IMPACTS OF THE RECENT TSUNAMI ON THE LUNAMA-KALAMETIYA WETLAND SANCTUARY

by

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INTRODUCTION

The inter-connected Lunama and Kalametiya lagoons are located in the south-eastern Sri Lankan coastline, in the Hambanthota District, about 200 km away from Colombo (Figure 1). The Lunama lagoon is smaller, covering 192 ha, while the Kalametiya lagoon is about 606 ha in extent. They fall within the Dry Zone of Sri Lanka, receiving an annual rainfall within the range of 1000-1250mm. An area consisting of 700ha, including the two inter-connected lagoons and their surrounding natural environment forms the Lunama-Kalametiya Sanctuary, administered by the Department of Wildlife Conservation (DWC). The Kalametiya lagoon is connected to the sea by a narrow man-made outlet, while it is connected to the adjoining Lunama lagoon through a shallow man-made channel of about 2 km. These two shallow lagoons (mean depth < 1m) are fed by the Kuchchigal Ara, and are surrounded by fringes of marsh and mangrove vegetation.

The sanctuary consists of a mosaic of terrestrial and wetland habitat types, including sand dunes, salt marsh, mangrove, lagoon, scrubland and grassland. The mangrove bordering the Kalamatiya lagoon is dominated by *Sonneratia caseolaris*, while those in Lunama is dominated by *Excoecaria agallocha*. Patches of scrublands are also located around the lagoons, dominated by thorny species such as *Flueggea leucopyrus* and *Dicrostachys cinerea.* A total of 312 species of vertebrates have been recorded from the Lunama-Kalametiya area, of which 14 species (4%) are endemic, while 27 species (8%) are nationally threatened (IUCN Sri Lanka, 2004). The complex system of wetlands and terrestrial habitats in the Lunama-Kalametiya sanctuary area has contributed to a rich bird diversity, including many species of migratory birds as well.

A total of 182 species of birds were recorded by IUCN (2004). These include 129 residents, and 63 winter migrants. Among the resident birds, two species are endemic, while 5 species are nationally threatened.

TSUNAMI RELATED IMPACTS ON THE LUNAMA-KALAMETIYA SANCTUARY

A rapid environmental assessment was conducted in the Lunama-Kalametiya Santuary on the 11th and 12th of January 2005, to gather information on the damage caused to the sanctuary and its biodiversity due to the tsunami. Qualitative observations were made on the structural damage caused to the habitats/vegetation types of the Lunama-Kalametiya Sanctuary, and information was also gathered from DWC managers and the local communities living around the Sanctuary.

In general, the Lunama-Kalametiya Sanctuary and the adjoining villages have been well protected from the tsunami waves by a broad, mature and stabilized sand dune running parallel to the coastline. The level of incursion of sea water resulting from the tsunami waves, including the areas subjected to damage in the Sanctuary is indicated in Figure 1.

The following observations were made in the Lunama-Kalametiya Sanctuary, subsequent to the recent Tsunami.

- The gentle sea-shore vegetation and certain patches of Pandanus stands in the beach have been destroyed by the Tsunami waves.
- The 2 lagoons and surrounding areas contained patches of debris deposited fromn the Tsunami waves.
- Clumps of the invasive alien Prickly-Pear Cactus (*Opuntia dillenni*) was observed in new areas of the Sanctuary, being transported inland by the tsunami waves.
- The Tsunami waves had penetrated the Kalametiya area through the manipulated sand dune and lagoon outlet, closer to the Kalametiya fishing

villages, causing severe damage to the village. This has resulted in the deposition of marine sludge and sand in a salt marsh and grassland habitat (approximately 8 ha) bordering the lagoon, resulting in the destruction of vegetation in these habitats.

- Funneling of sea water from the lagoon outlet and artificial canal has damaged the *Sonneratia* dominant mangrove tree line bordering the lagoon. However, the damage caused to the extensive stand of mangrove around the lagoon is about 10% of the original cover.

- The thick stands of invasive alien cattail reed (*Typha angustifolia*) in the Kalametiya lagoon had been destroyed completely due to the rise in salinity of the lagoon. Similarly, the invasive alien water hyacinth (*Eichhornia crassipes*) that covered a considerable area of the lagoon had been reduced up to 90% of the cover compared to what was observed a year ago.

- According to information gathered from fishermen, many species of freshwater fish species that occurred in the Kalametiya lagoon had been subjected to mass mortality.

- Other dead animals documented from the sanctuary include a land monitor (*Varanus bengalensis*), a soft-shelled terrapin (*Lissemys punctata*) and several species of freshwater and terrestrial mollusks.

- Compared to observations made prior to the Tsunami on the species richness and abundance of birds and butterflies in the Sanctuary, a considerable reduction of these two groups was observed.

OBSERVATIONS AND REMARKS ON NATURAL RECOVERY OF AFFECTED HABITATS AND SPECIES

The eroded beach stretches bordering the Lunama-Kalametiya Sanctuary would be able to recover naturally over a short period of time (1-2 years), by the sand carried

out to the ocean by the Katchigal Ara irrigation system. The gentle sea-shore vegetation in the affected beach would also be able to recover naturally from the remaining vegetation, within 1-2 years. Specimens of Green Turtle and the Olive Ridley Turtle were observed feeding in the near-shore areas of the Lunama-Kalametiya Sanctuary.

The aquatic birds (including natives and migrants) observed in the lagoons, and the butterfly fauna associated with the terrestrial habitats should recover within s short period of time.

The terrestrial habitats inundated by sea water may be subjected to a rapid invasion by the invasive alien Mesquite (*Prosopis juliflora*), as it spreads well in saline soils.

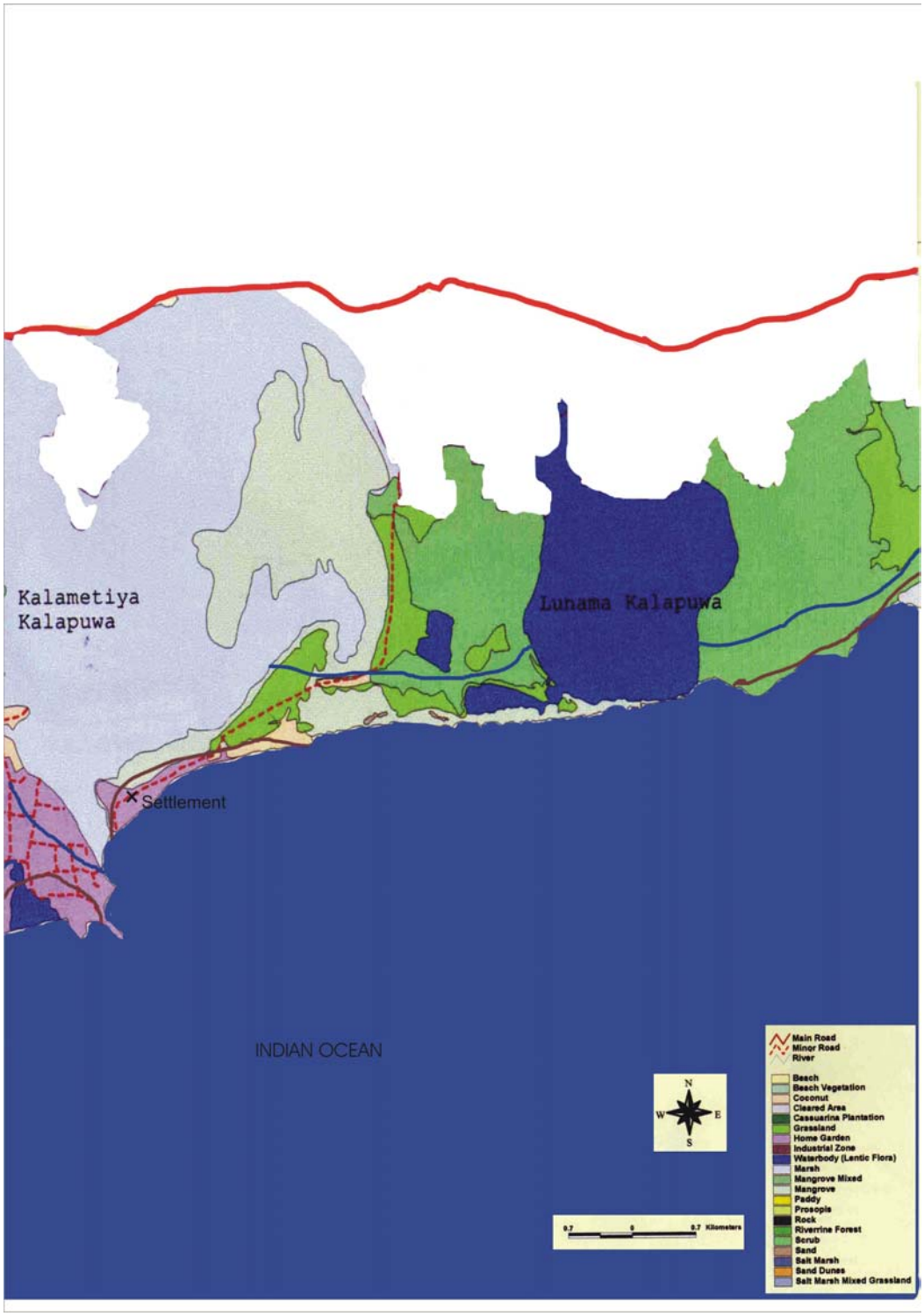
RECOMMENDATIONS FOR ACTION

- Propagules of the invasive alien Prickly-pear cactus transported to inland areas by the Tsunami waves should be collected and destroyed.

- Non-biodegradable material scattered in the lagoons and surrounding areas should be collected and destroyed.

- Monitor the spread of Mesquite (*Prosopis juliflora*) in areas inundated with sea water resulting from the Tsunami waves.

- Monitor the spread of Water Hyacinth (*Eichhornia crassipes*) in the Lunama-Kalametiya Lagoons.



Water penetration limit

Damage limit (property & ecosystem)

Figure 1: A sketch map of affected areas of the Lunama-Kalametiya Sanctuary

References

IUCN Sri Lanka (2004). The Environmental Profile of Rekawa, Ussangoda and Kalametiya (RUK) Coastal Ecosystems. Coast Conservation Department, Colombo.VIII+148pp.