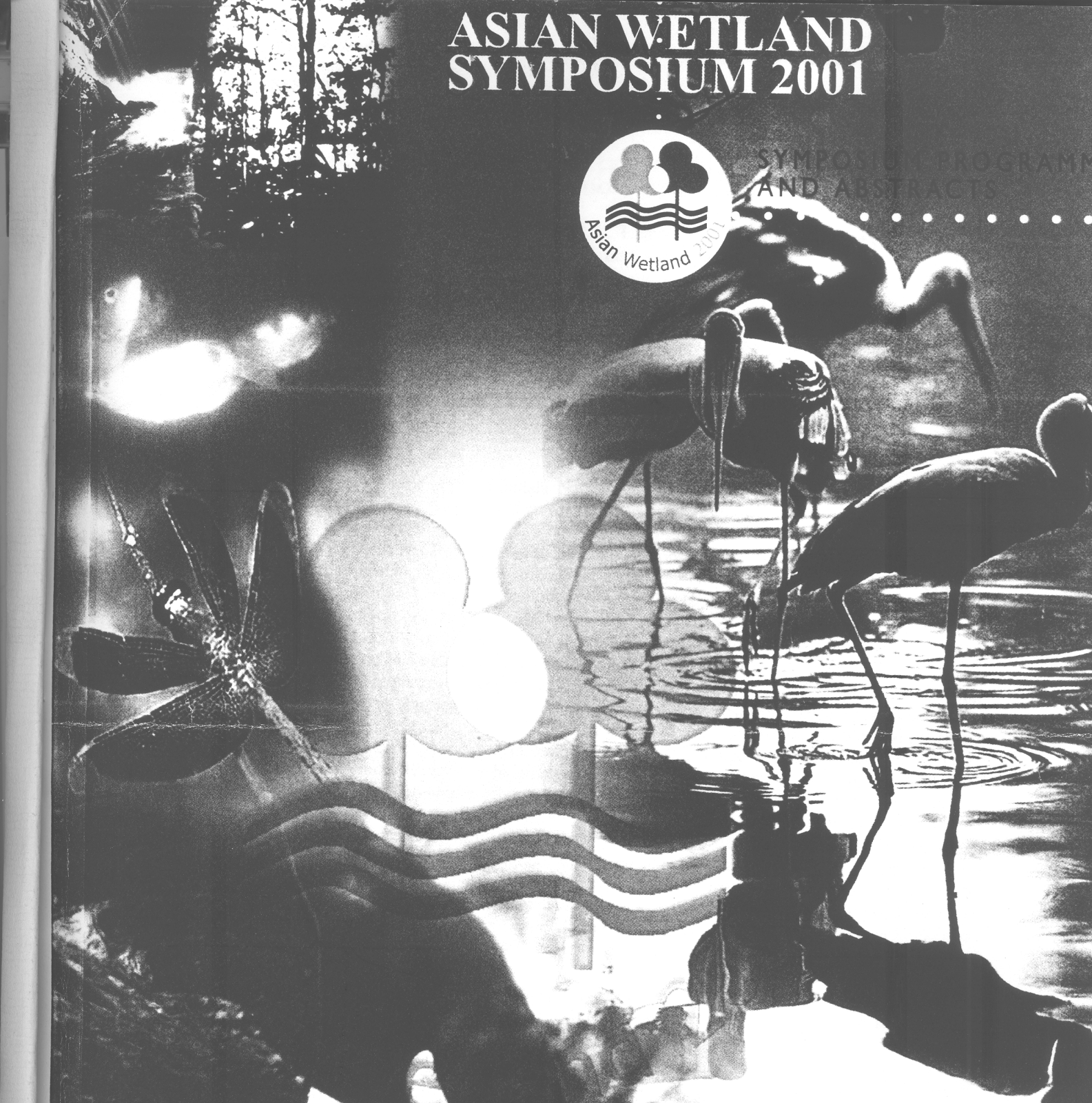
ASIAN WETLAND SYMPOSIUM 2001

SYMPOSIUM PROGRAMM
AND ABSTRACTS



BRINGING PARTNERSHIPS INTO GOOD WETLAND PRACTICES

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SESSION 9

IMPACT OF IRRIGATION ON WATER QUALITY, FISH AND AVIFAUNA OF THREE COASTAL LAGOONS IN SOUTHERN SRI LANKA

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Abstract

The coastal lagoons of the Bundala National Park (a RAMSAR Wetland) in southern Sri Lanka are important feeding and resting sites for migratory and resident water birds. Since 1989, drainage water from a 2,560 ha. extent of the 10,540 ha. upstream Kirindi Oya rice irrigation system has flowed directly into two lagoons (Embilikala and Malala), but not into the nearby Bundala lagoon. We studied the water quality, finfish, shellfish and birds of these 3 lagoons during a 4 month period in October 1999 – January 2000 which coincides with the main bird migration season. The salinity of the two affected lagoons as been reduced substantially, to the point that one of them (Embilikala) is virtually a freshwater lake. The Bundala lagoon has retained a high salinity level. The lagoons were mesotrophic-eutrophic for nitrate and hypertrophic-eutrophic for phosphates. Twenty two finfish species comprising a mixture of true brackish water as well as salt-adapted freshwater species ere recorded in fishermens' cast-net and gill-net catches. A previously thriving shrimp fishery had collapsed after irrigation inflows affected the Embilikala and Malala lagoons, but the study showed that the fishery could be revived by managed inflows of sea water. A total of 73 water bird species (including 36 winter migrant species) were recorded. More than 70% of bird species were common to the three lagoons, and overall, there were significantly more species per observation day, and more bird numbers per observation day recorded from the irrigation-diluted Embilikala and Malala lagoons than from Bundala lagoon. Shannon-Weiner diversity also was significantly higher in the former two lagoons than at Bundala. Thus, dilution of the lagoons did not seem to have affected water birds in general, but specifically brackish-water adapted species such as the greater flamingo did not use the irrigation-affected lagoons as much as they did the unaffected lagoon. Bird numbers per se, as well as the number of species observed, were significantly negatively correlated with water levels in the Bundala and Embilikala lagoons, but not at the Malala lagoon. One of the major impacts of irrigation water could be the raising of water levels in the lagoons that could make feeding sites unavailable for many water birds.

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