

Shrimp farming, a major threat to mangrove and lagoon ecosystem in the Pambala-Chilaw lagoon complex, Sri Lanka

Ofori Samuel A.¹, Arachchilage Sunanda K.², Jayatissa Loku P.², Madarasinghe Sanduni K.³, Gunathilaka Udara V.², Wijesundara Isuru², Thisera Douglas⁴ and Dahdouh-Guebas Farid¹

¹ Écologie des Systèmes et Gestion des Ressources, Département de Biologie des Organismes, Université Libre de Bruxelles (ULB), Avenue Franklin D. Roosevelt 50, Cpi 264/1, B-1050 Bruxelles, Belgium

E-mail: samuel.ofori@ulb.be

² Department of Botany, University of Ruhuna, Wellamadama, Matara, Sri Lanka

³ Department of Physics, University of Ruhuna, Wellamadama, Matara, Sri Lanka

⁴ Sudeesa, Pambala, Kakkapalliya, Chilaw, Sri Lanka

Amongst the several mangrove forests present in Sri Lanka, those in the Puttalam district have suffered the highest level of degradation arising from human activities, particularly shrimp farming. The occurrence and spread of the White Spot Disease (WSD) on shrimps both in shrimp farms and natural waters of Sri Lanka during 1994-1995 caused the abandonment of infested ponds and the cutting down of mangrove forests to create new shrimp farms. In Chilaw lagoon, this situation coupled with pollution by effluents from the shrimp farms has led to the reduced potential of the current mangrove and lagoon ecosystem to provide all potential ecological services. Owing to the existing nearness between the shrimp farms, the lagoon and the surrounding mangrove forests in the Pambala-Chilaw Lagoon complex, the chances of organic contamination occurring across these systems are very high. The continual discharge of effluents from shrimp farms into the Chilaw lagoon since the 1980s has led to the enormous growth of algae and seaweeds at the surface and bottom waters, respectively. The additional consequence has been a high reduction in the population of some fish and shrimp species in the Chilaw lagoon. Moreover, there has been a decline in the population of some bird species that found their habitats around the lagoon and/or in the mangrove forest. Therefore, the objectives of our ongoing research are: (i) To quantify the areal extent of change in the mangrove forest and shrimp farms in the Pambala-Chilaw lagoon complex from the year 1980 to 2020 using very high spatial resolution (VHSR) imagery; (ii) To discriminate between the active and inactive shrimp farms in the Pambala – Chilaw lagoon complex using VHSR satellite imagery; (iii) To measure the physico-chemical parameters of mangrove soil samples, water and sediments samples of the Chilaw Lagoon; (iv) To measure the levels of Nitrates and Phosphates present in mangrove soil samples, water and sediment samples of the Chilaw Lagoon; (v) To assess the sociological impacts of mangrove forest destruction and lagoon water contamination on the fisherfolk communities. This study will therefore serve as a more detailed report on the influence of shrimp farming on mangrove forest and lagoon water in the Pambala-Chilaw lagoon complex and bring to light the extent to which the local community has been impacted.

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