

Population Structure of Olive Ridley Turtle (*Lepidochelys olivacea*) Nesting on Southwestern Coast of Sri Lanka

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Olive ridley turtle, *Lepidochelys olivacea* is one of the five marine turtle species that nest solitarily on Sri Lankan beaches. Although it is the most abundant marine turtle species globally, it is important to study the population structure and determine the genetic connectivity of the local nesting population with other populations for conservation and management efforts. This study analysed the mtDNA of the olive ridley turtle population nesting in the southwestern coast of Sri Lanka to determine population differentiation on a regional-scale. Twenty hatchlings were sampled from five turtle hatcheries scattered across ~70 km of coastline in one nesting season. The genomic DNA was extracted from tissues using DNeasy® Blood and Tissue Kit. The two primers *LTEi9* and *H950* were used to amplify the ~880bp fragment of the mtDNA control region using PCR. The genetic diversity was calculated by Arlequin version 3.5. The population was characterized by two new haplotypes: MW221480 (25%) and MW221485 (5%), and three previously reported haplotypes: Lo1 (50%), Lo5 (10%), and K (10%). Genetic diversity was highest in terms of the mean haplotype diversity ($h = 0.7000$), nucleotide diversity ($\pi = 0.007908$), and conventional F_{ST} and Φ_{ST} tests at $p < 0.05$, compared to other regional and global rookeries *viz* Southeast India ($F_{ST} = 0.54398$, $\Phi_{ST} = 0.83345$), Malaysia ($F_{ST} = 0.14138$, $\Phi_{ST} = 0.00513$), Atlantic Ocean ($F_{ST} = 0.63570$, $\Phi_{ST} = 0.42963$), Costa Rica ($F_{ST} = 0.27147$, $\Phi_{ST} = 0.44086$), northern Australia ($F_{ST} = 0.06048$, $\Phi_{ST} = 0.14917$) and the previously sampled Sri Lankan population ($F_{ST} = 0.54398$, $\Phi_{ST} = 0.83345$). The phylogenetic analysis contributes to position the newly identified haplotypes in the turtle phylogeny. Evidently, the olive ridley turtles nesting in Sri Lankan beaches are genetically distinct to those in other rookeries emphasizing the importance of developing conservation strategies to conserve this distinct olive ridley turtle population.

Keywords: Marine turtles, Olive ridley turtles, mtDNA, Population differentiation