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Master Thesis Defense

Entitled

*GENETIC DIFFERENTIATION ANALYSIS BETWEEN WESTERN AND EASTERN POPULATIONS OF
SOCOTRA CORMORANT (PHALACROCORAX NIGROGULARIS) IN THE UAE*

By

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Abstract

Understanding the genetic structure of threatened and endangered species is important in management and conservation efforts. Measuring the pattern and scale of genetic variation within and among populations is important for understanding population dynamics. It helps us improve our understanding of the ecological and genetic relation between the populations. The current research looks at the population structure of the endemic seabird of the United Arab Emirates (UAE), the Socotra cormorant (*Phalacrocorax nigrogularis*). The lack of genetic information, increased threats, and small breeding habitats of the Socotra cormorants, makes it important to investigate the genetic population structure in the UAE. The aim of this research is to assess the level of genetic variation and structure within Eastern and Western Socotra Cormorant populations, using descriptive molecular genetic analysis. Using known mtDNA and nDNA primers of avian and cormorant species, we investigated the genetic differentiation and structure of the Socotra cormorants and assessed their genetic diversity. The results revealed that the Western and Eastern populations have low genetic differentiation and high gene flow. Also, they have low genetic diversity across all populations, which might indicate that the UAE population is recovering from a long-term bottleneck or an event of selective sweep. Now we have a closer insight into their genetic diversity, a further study of whole genome sequence (WGS) is required to get a better understanding of the population's genetic history and dynamics. This will enable us to additionally understand the Socotra cormorant global population and their connectivity.

Keywords: Genetic variation, Socotra Cormorant, mtDNA and nDNA markers, genetic diversity, genetic differentiation, population genetics, genetic structure.