Morphometrics and Length-Weight relationship of five shark species observed in the landing at Karachi Fish Harbour

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This study represents the morphometric counts and length-weight relationships of five shark species observed in the landings at the Karachi Fish Harbour (KFH) during 2014- 2019. At the observation location (KFH), essential morphometric data, including total length (TL) and weight (W), were gathered for five shark species: (1) *Carcharhinus melanopterus*, (2) C. sorrah, (3) *Prionace glauca*, (4) *Rhizoprionodon acutus*, and (5) *Sphyrna lewini*. During the research period, 355 specimens of this species were examined; 193 of these were from *Carcharhinus melanopterus*, with 57.51% male and 42.48% female. A total of 112 *C. sorrah* specimens were observed, with 34.82% male and 65.17% female, 133 Prionace glauca individuals were seen, with 31.57% male and 68.42% female specimens. There were a total of 161 *Rhizoprionodon acutus* specimens, including 55.27% females and 44.72% males. Similarly, 91 *Sphyrna lewini* specimens were identified, with 45.05% male and 54.94% female. Morphometric measures were evaluated using descriptive statistics, whereas length-weight connections were found using linear regression models. According to the study's findings, there were significant disparities in length-weight parameters across shark species that were less well-known. Furthermore, the length-weight connection varied within and between species, indicating major alterations in each specimen's anatomy and growth habits. It is very essential for the fisheries management and sustainable conservational strategies initiatives to understand these relationships between morphometric and length-weight relationships.

[**Keywords:** *morphometrics, sustainable fisheries management, regression, growth patterns, conservational strategies*]

INTRODUCTION

The first group of extant jawed vertebrates in terms of phylogeny were the cartilaginous fishes, which include sharks, rays, skates, and chimaeras. They are a crucial out group for evaluating the process of evolution how bony vertebrates, including teleost fish and humans, evolved and adapted their natural envirnoment (Azab et. al., 2019).

Elasmobranchs, which include sharks, rays, and skates, are found in three distinct categories and are extensively spread. Sharks vary from skates and ray species, which are more difficult to identify and have comparable physical characteristics, in that they have a distinct body form (Nasir & Afsar, 2020). Some of these shark species had physical adaptations that allowed them to exist in a specific ecology, therefore they were larger than other shark species. For effective management targeted at long-term population sustainability, an understanding of the mechanisms controlling the distribution of marine fisheries resources in geography and time is crucial. Elasmobranchs that are highly mobile are not an exception, and the aforementioned research constraints on these captivating yet enigmatic species are especially concerning because of their great susceptibility to population declines even in the presence of minimal fishing mortality (Verissimo et. al., 2017).

While some Indian marine finfish species have published Length–Weight associations, there is insufficient data for elasmobranch species. Fish condition is determined by looking at LWRs, which can help identify whether fish development is allometric or isometric. Additionally, they can be used to convert growth-in-length to growth-in-weight for use in stock assessment models; estimate biomass from length measurements; evaluate an individual's well-being; identify potential differences between individual unit stocks of the same species; compare the life histories of specific species between regions; and properly exploit and manage fish populations. The goal of the 2021 study was to present fundamental scientific data on the LWR characteristics for eight different elasmobranch species found in the Eastern Indian Ocean (Kishore et.al., 2021).

Species population is a crucial factor that managers