

Relationship Between Length of Food Chain of the South-west Caspian Sea and the Abundance of Captured Fish

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(Received: 19. June-2015; Accepted: 7. May-2017)

Abstract

The fishery activities affect the lives of millions of people who live near the south of Caspian Sea, where the aquatic stocks have sophisticated ecological relationships. In this study, carbon and nitrogen stable isotope technique was applied as an ecological tool to interpret the fish catch values of different areas in relation to food chain. The average values of Captured bony fishes in six regions of Guilan province, including Astara, Hashtpar, Anzali, Kiashahr, Langroud and Chaboksar, were compared. For calculating food chain length using nitrogen stable isotope; *Cerastoderma glucaum* was considered as primary consumers for baseline values and two species *Sander lucioperca* and *Alosa braschnokowi* as top predators. The results showed that stable isotope ratios of $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ varied in different regions. The $\delta^{13}\text{C}$ value was the lowest and the highest in Astara and Chaboksar (-21.7 ‰ and -20.1 ‰, respectively) while the $\delta^{15}\text{N}$ value was the highest (5.7 ‰) in Astara and the lowest (4.2 ‰) in Chaboksar and Kiashahr. The highest calculated food chain length among the regions belonged to Kiashahr. Although a schematic correlation was observed between the abundance of Captured fish and the length of food chain in different regions, the role of releasing millions of fish fries annually is also crucial in fish stock rehabilitation.

Keywords: Stable isotope, Carbon and nitrogen, Trophic level, Fishing.

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