Study on frequency, distribution and biodiversity of estuarine and freshwater fishes in Shalmanrud River (the southwestern Caspian Sea basin - Guilan Province)

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Abstract

Understanding the biodiversity of any ecosystem is very important from the conservation perspective. In order to investigate the fish abundance, distribution and biodiversity of Shalmanrood River in Guilan province, seasonal samplings were done by electrofishing equipment during summer 2017 to spring 2018, from 7 sites (with 5 kilometers interval, from altitude of 371 to -28). A total of 978 fish specimens were caught, which were released alive in the same habitat after biometric surveys and photography. A total of eighteen species were identified, belonging to 6 families, including the family Cyprinidae with 11 species, Gobiidae with 3 species, and the families Mugilidae, Cobitidae, Nemacheilidae, and Salmonidae each with 1 species. In terms of species diversity, the highest frequency belonged to *Alburnoides samiii* with 14.72% and *Capoeta razii* with 14.42%. The highest and lowest relative frequencies were obtained in Kahlestan and Daryaknar sampling sites with 20.76% and 5.73%, respectively ($P<0.05$). The highest and lowest relative seasonal frequencies in summer and winter were calculated as 32.01% and 19.43%, respectively. Also, the highest Shannon index in spring in Liarud, Kohlestan and Khorshtam was 0.882, in summer in Khorshtam was 0.908, in autumn in Kahlestan was 0.894 and in winter in Valise recorded as 0.902, which was significant between sampling sites but not significant among the seasons. The highest Simpson dominance index was recorded in spring, summer and autumn in Liaroud at 1.923, 2.536 and 1.811, respectively, and in winter at Bolordkan at 1.618. The mean Simpson dominance index was significantly different among sampling sites and different seasons ($P<0.05$). The presence of endemic species and the significant decreasing of large fishes in Shalmanrud (probably due to overfishing, pollution and toxins) showed that this habitat needs protection.

Keywords: Biodiversity, Caspian Sea, Fish Distribution, Shalmanrud, Guilan Province.