

STRUCTURE OF JUVENILE FISH ASSEMBLAGE IN LOPUD BAY, STRUCTURE OF JUVENILE FISH ASSEMBLAGE IN LOPUD BAY, ISLAND OF LOPUD, SOUTH-EAST ADRIATIC SEA

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Abstract

From May 1998 till June 1999, 1740 juvenile fish specimens, belonging to 14 families and 45 species were caught in Lopud bay. Fish from families Mugilidae (44.02%) and Sparidae (16.03%) dominated the catch. Species *Oedalechilus labeo* (25.45%), *Atherina hepsetus* (15.22%), *Chelon labrosus* (8.44%), *Liza aurata* (8.33%) and *Pagellus acarne* (6.43%) represent 63.90% of total catch. Other species contributed from 0.05% to 6.43%. The overall value of richness (D) was 2.92, ranging from 1.97 in September to 4.74 in July. The overall diversity value (H) was 1.52, ranging from 0.71 in September, to 2.21 in July. Evenness (J) values were 0.27 in September and 0.72 in May, with an overall value of 0.53. Total number of caught species was highest in July (28) and lowest in September (14).

Keywords : biodiversity, coastal waters, fishes, Adriatic Sea

Introduction

There are very few publications on ecology and biology of juvenile fish in the eastern part of Adriatic sea. Previous fish studies conducted in this region are primarily related to taxonomy and general fisheries problems (1), while biology of different species [1, 2] and studies of juvenile fish in middle Adriatic sea [3, 4, 5] received little attention. The present study provides the preliminary data on juvenile fish composition in the Lopud bay, island Lopud near Dubrovnik.

Materials and methods

Sampling of qualitative-quantitative composition of juvenile fish in Lopud Bay (south Adriatic; 17°55'E, 42°39'N) was conducted bi-monthly in the period from May 1998 till June 1999. Samples were collected with modified beach seine net, 50 m long and 5 m high at the central part with central bag. Mesh size was 8 mm at outer wings and 4 mm at central part of the net. Working depth was from 4 to 0 m. Collected material was fixed in 4% formaldehyde. Species were identified according to publications by Jardas [1] and Soljan [6]. Total length to the nearest 0.1 cm (Lt in mm) and total weight to the nearest 0.01 g (W in g) was measured for each specimen. The community structure was specified by species richness (D), diversity (H) and evenness (J), using the equations proposed by Margalef [7], Shannon [8] and Pielou [9].

Results

During present study total of 1740 juvenile fish specimens, belonging to 14 families and 45 species were caught. The most abundant were Mugilidae (44.02%) and Sparidae (16.03%). From other commercially interesting species, most abundant were *Atherina hepsetus* (15.22%), *Pagellus acarne* (6.43%), *Mullus barbatus* (6.32%), and *Diplodus vulgaris* (4.48%). The most dominant, from commercially less interesting species, were *Coris julis* (5.45%), *Symphodus cinereus* (2.24%) and *Symphodus roissali* (1.78%). The overall value of richness (D) was 2.92, ranging from 1.97 in September to 4.74 in July. The overall value of diversity (H) was 1.52, with 0.71 in September, to 2.21 in July. Evenness (J) values were 0.27 in September and 0.72 in May, with an overall value of 0.53. Total number of caught species was highest in July (28) and lowest in September (14).

Discussion

Shallow bays have important role in fish early life cycle as places where growth and development occurs prior to departure for deeper waters. These areas provide adequate food quantities, shelter and protection from predators. First fish entrance to shallow bays in south east Adriatic sea occurs in fry stage and only few adult specimens were found in the study area. Higher species number was noted in July and September when temperature conditions are suitable, as opposed to warm summer and cold winter. Similar observation was already noted by Dulcic *et al.* (3, 10). According to Jardas (1) spring and summer are reproductive seasons for largest number of fish species in east Adriatic sea. A great ranges of richness (D=1.97 to 4.74), diversity (H=0.71 to 2.21) and evenness (J=0.27 to 0.72) values are similar to values obtained in studies in other bays and estuaries [3, 10]. This relatively wide range of values reflects a differential utilisation of Lopud Bay habitats by various fish species. A wide range of richness values is considered as an indicator of the nursery function of a specific area [10]. So, we can suppose that the overall high richness values of fish assemblages in Lopud Bay underline the importance of the area as a nursery ground for several species.

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