A STUDY ON DIEL VARIATION IN TRAWL CATCHES IN THE EDREMIT BAY (NORTH-EASTERN AEGEAN SEA)

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Abstract

Diel variability in bottom trawl catches carried out by R/V K. Piri Reis during two 24-h surveys conducted in 1-2 and 30 September 1999 in the Edremit Bay (North-eastern Aegean Sea) were analysed. Maximum total catch was observed in the early morning and tended to decrease progressively towards the night period in 1-2 September 1999. While small variations were observed in total catch rate during the day, the minimum catch was observed at midnight in 30 September 1999.

Keywords : Trawl Surveys, Fish Behaviour, Aegean Sea.

Trawl surveys are used worldwide to estimate the abundance of demersal fish species [1]. Efficiency of trawl surveys depends on the ability of the gear to catch the available fish and further, the availability of target species to the trawl [2]. The occurrence and distribution pattern of a species in a given habitat depend on factors such as food availability, salinity, temperature, time of the day, and light intensity. These factors may change throughout a 24-h period [3]. Consequently, studying diurnal variation in bottom trawl catches, allow us to understand behavioural ecology of demersal organisms and also to estimate the abundance more accurately.

This is the first study to examine diel variation in the bottom trawl catches from the Eastern Aegean Sea.

Trawl catch data were collected with R/V K. Piri Reis during two 24-h surveys conducted in 1-2 and 30 September 1999 in the Edremit Bay (North-eastern Aegean Sea). This particular area has been closed for commercial trawlers since 1995. In each survey, a total of 8 trawls were hauled consecutively in the same area with 3 h intervals at depths from 40 to 80 m. Trawl duration was 20 min but standardised to 1 h for subsequent calculations and evaluations.

Hake, *Merluccius merluccius,* red mullet, *Mullus barbatus*, and poor cod, *Trisopterus luscus capelanus*, were the dominant fish species in most of the trawl compositions. They were also the main target fishes for the demersal trawl fishery in the region.

A total of 46 species were sampled during 1-2 September 1999. Hake (20.7%, mean: 5.8 kg/h, min: 1.3 kg/h, max: 10.3 kg/h and SD: 3.14 kg/h), red mullet (11.5%, mean: 3.2 kg/h, min: 0.4 kg/h, max: 6.0 kg/h and SD: 2.35 kg/h), and poor cod (7.05%, mean :1.96 kg/h, min: 0.91 kg/h, max: 3.47 kg/h and SD: 0.85 kg/h) constituted 39.2% of the total catch during the 24 h sampling survey period. Total catch rate varied between 8 and 56 kg/h. Maximum total catch rate was observed in the early morning and tended to decrease progressively towards the night period (Fig 1).

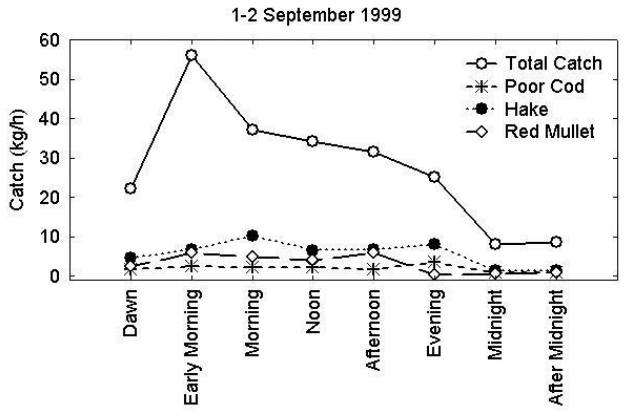

Fig. 1. Diel variations in catch rates on 1-2 September 1999.

In 30 September, 50 species were caught in the sampling area. Hake (32.9%, mean: 21.6 kg/h, min: 11.3 kg/h, max: 29.7 kg/h and SD: 5.56 kg/h), red mullet (13.5%, mean: 8.9 kg/h, min: 4.4 kg/h, max: 15.9 kg/h and SD: 2.35 kg/h), and poor cod (5.1 %, mean: 3.3 kg/h, min: 1.9 kg/h, max: 5.5 kg/h and SD: 1.11 kg/h) constituted 51.5% of the total catch. Total catch rate was higher than the previous sampling and ranged between 31 and 80 kg/h. Small variations were observed in the total catch rate during the day period (Fig 2). A similar distributional pattern was also determined for the dominant fishes, especially for hake.

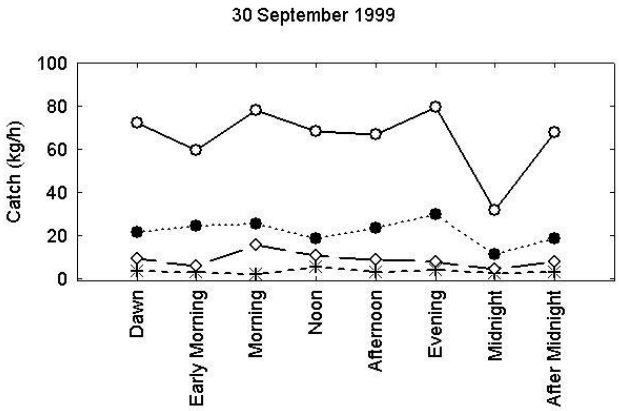

Fig. 2. Diel variations in catch rates on 30 September 1999.

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