

Small pelagic fishery and research in Albania

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Abstract

Information on past and present small pelagic fishery and research in Albania is reported. Data on small pelagic fishery mostly targeting on sardine (*Sardina pilchardus*) have been collected since 1951 in the Albanian Adriatic sea. Maximum fishery production was obtained in the 1980s, during the 1990s small pelagic fishery almost disappeared due to socio-economic factors.

1. Fishery

Small pelagic fishing activity, especially that concerning the most important species, the sardine (*Sardina pilchardus*), began in 1951 in the area of the Gulf of Valona. Total production in this year was 266 t, experience was gained and from 1952 both the fleet and the level of fishing activity were increased. The years which followed showed appreciable development of the small pelagic fishery (Figure 1).

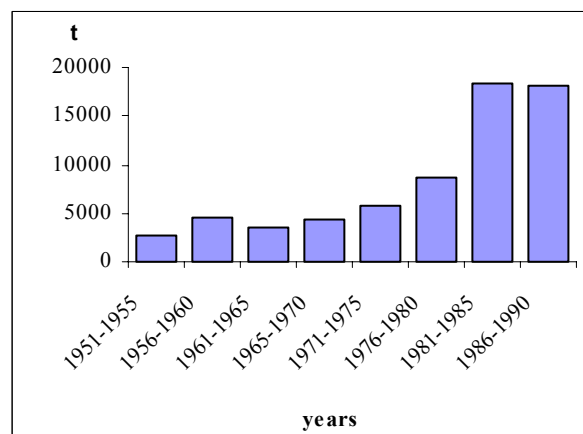


Figure 1. Albania small pelagic fishery landing in the 1951-1990 period.

Until the 1980s small pelagic fishery was based on capture with surrounding nets using 80–300 hp vessels, averaging 140–160 days of fishing activity per year. Average daily production fluctuated between 0.3 and 0.5 t. After this, with the improvement of capture methods, mechanization and the use of various light sources (“lampara” fishing) it was

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possible to carry out the fishing up to a depth of 120 m. As a result of greater production within the 100 m isobath, overall catch was doubled (Figure 2).

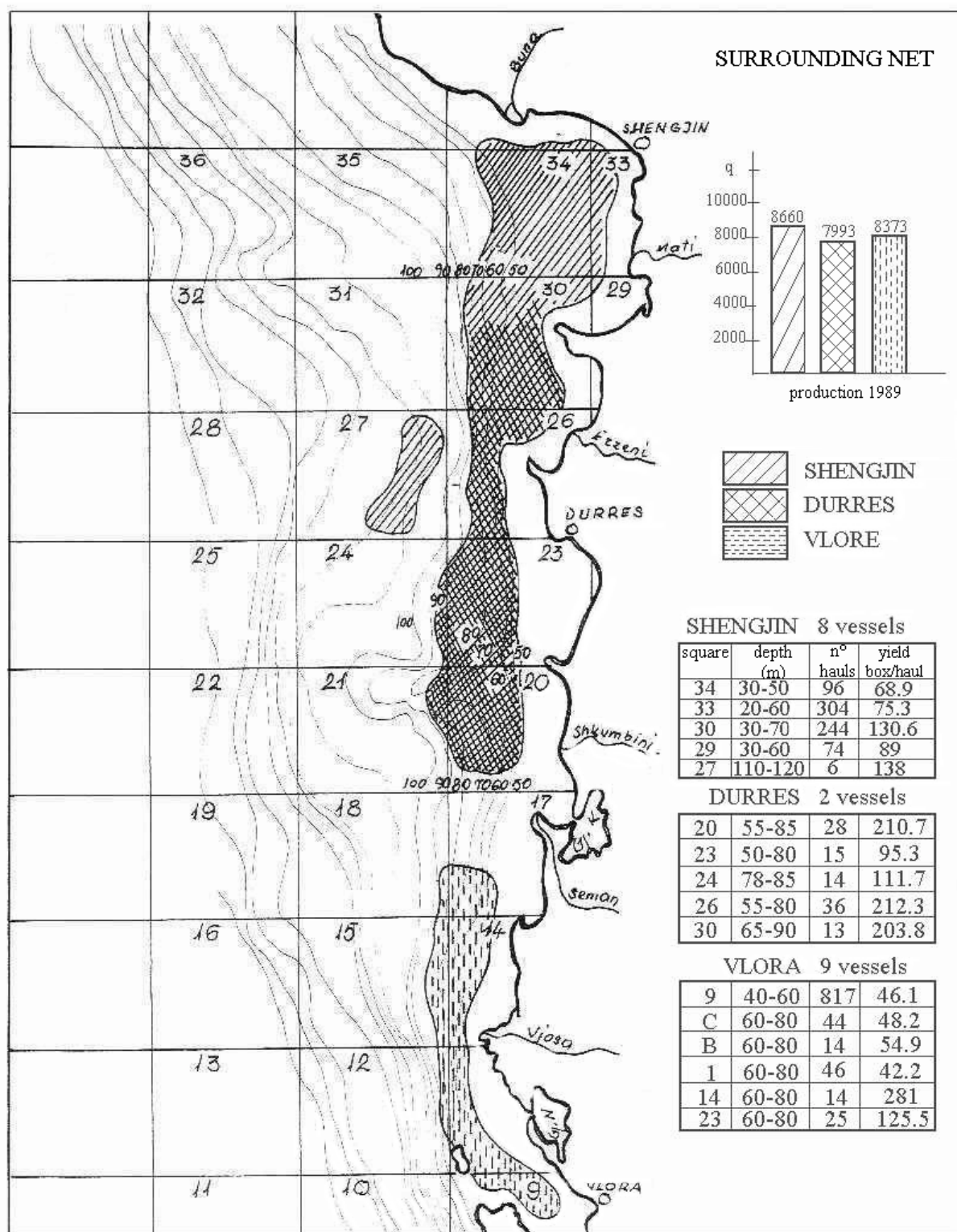


Figure 2. Fishing grounds of Albanian small pelagic fishery (surrounding net), 1989 landed quantities by fishing port are also indicated together with CPUEs.

As advanced methods started to be used, such as capture using pelagic trawl, so the conditions were established for capture at great depths. Thus the possibility to double and triple production was created. Applying these fishing methods 40% of the country's small pelagic catch was guaranteed (Figure 3).

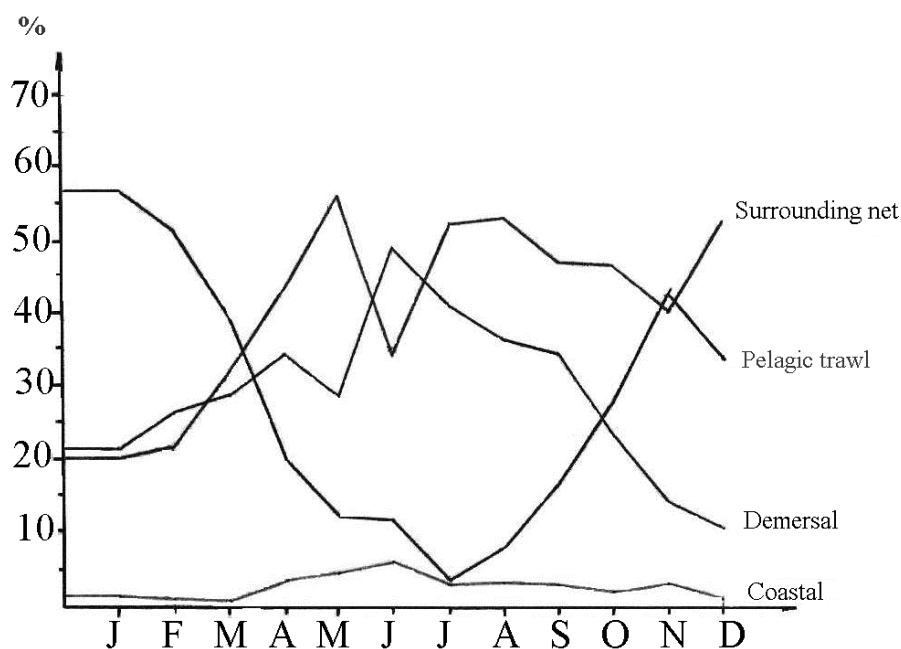


Figure 3. Monthly landings (%) by fishery in 1985.

The small pelagic catch from “lampara” fishery fluctuated from year to year, depending on the weather conditions and on the presence of fish schools. The greatest yield occurred from January to March and from October to December (Figure 4).

Where small pelagic trawl fishery is concerned, the greatest catch per unit of effort (CPUE) occurred at a depth of 60 – 80 m in the area to the north of Dürres, in this area the catch from “lampara” fishery was also high (Figures 5 and 6).

Greatest catches were obtained in the first and fourth quarter. Sardines made up 83% of the catch from surrounding nets with light attraction, the rest of the catch (17%) was made up of anchovies (*Engraulis encrasicolus*), chub mackerel (*Scomber japonicus*) and Atlantic horse mackerel (*Trachurus trachurus*). For this type of fishery in the areas of Valona, Dürres and Saranda the chub mackerel and, less so, the Atlantic mackerel often constituted up to 50% of the yield.

In the mid-water pair trawl fishery 90% of the catch consisted of sardines while the remainder was mostly swordfish (*Xiphias gladius*), with 3-4% of chub mackerel and squid (*Loligo vulgaris*). This concerned the fishing carried out mainly at a depth of 60–100 m. At lesser depths, 30–40 m, especially in the winter months, the catch was mostly made up of mullets (*Mugilidae*) and various other species.

Under the conditions of a centralized economy, small pelagic fishery was given importance in terms of the construction of new fishing vessels and new fishing gear. This was costly from 1980 to 1990; in mid-water pair trawl fishery, 27 vessels were used in the month of January while the yearly average for this activity was 16 vessels.

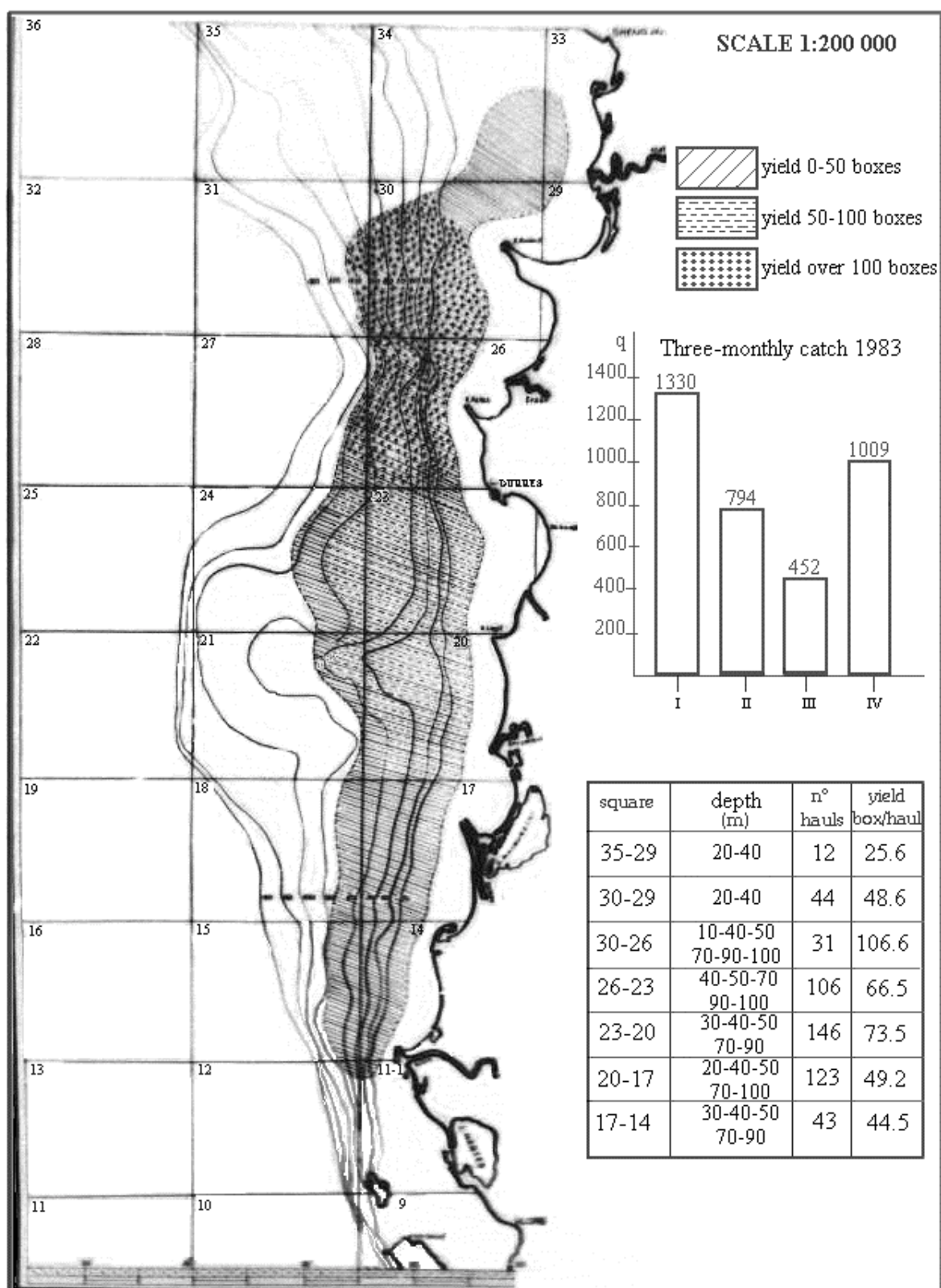


Figure 4. Lampara fishing grounds and relative catch per haul (box/haul) from two Dürres fishing units in 1983, quarterly catch is also shown.

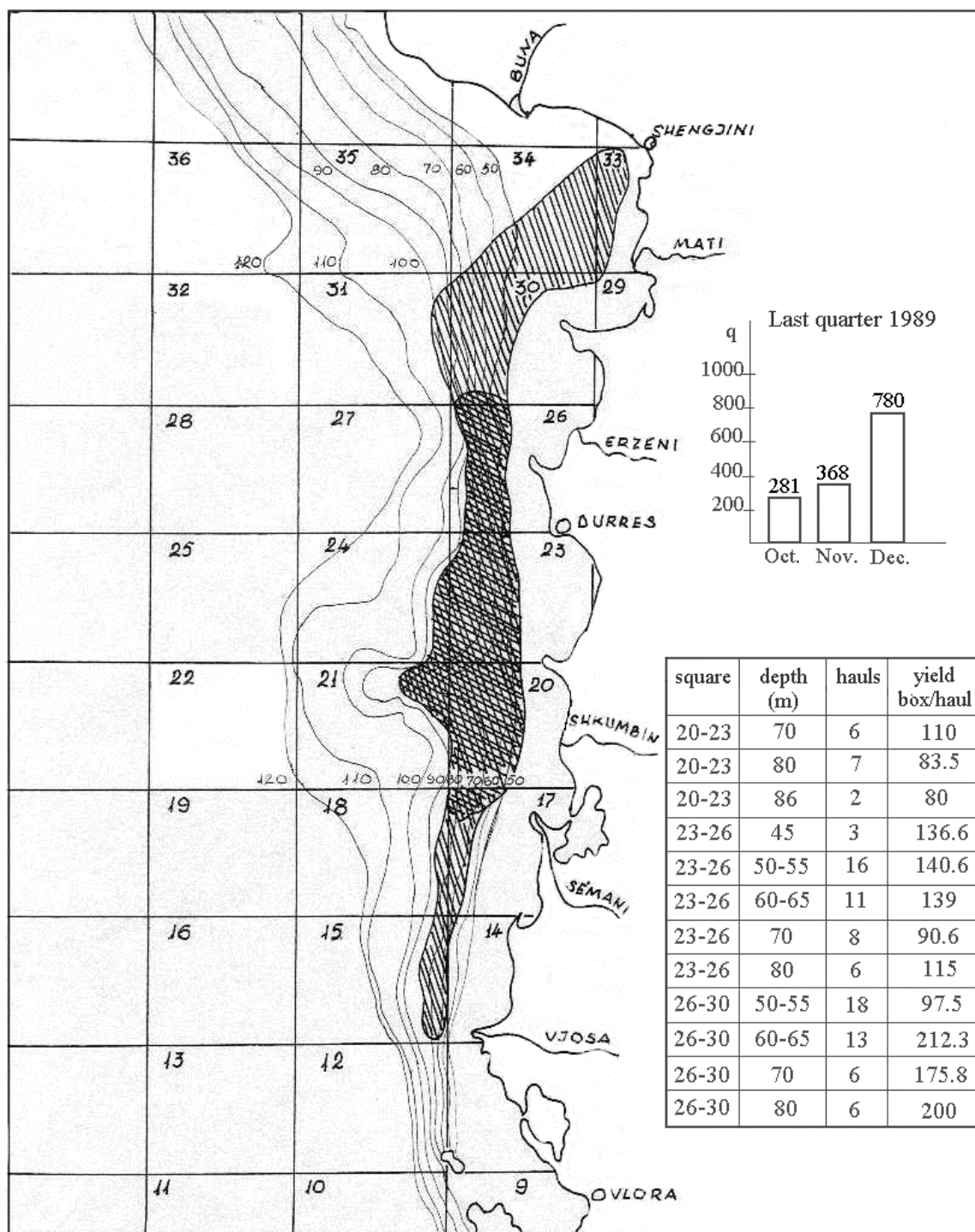


Figure 5. Small pelagics fishing grounds and catch (n. box) per haul from two fishing units in 1989 in the last quarter of 1989.

Eds'note: spatial grey pattern meaning not indicated in the original text.

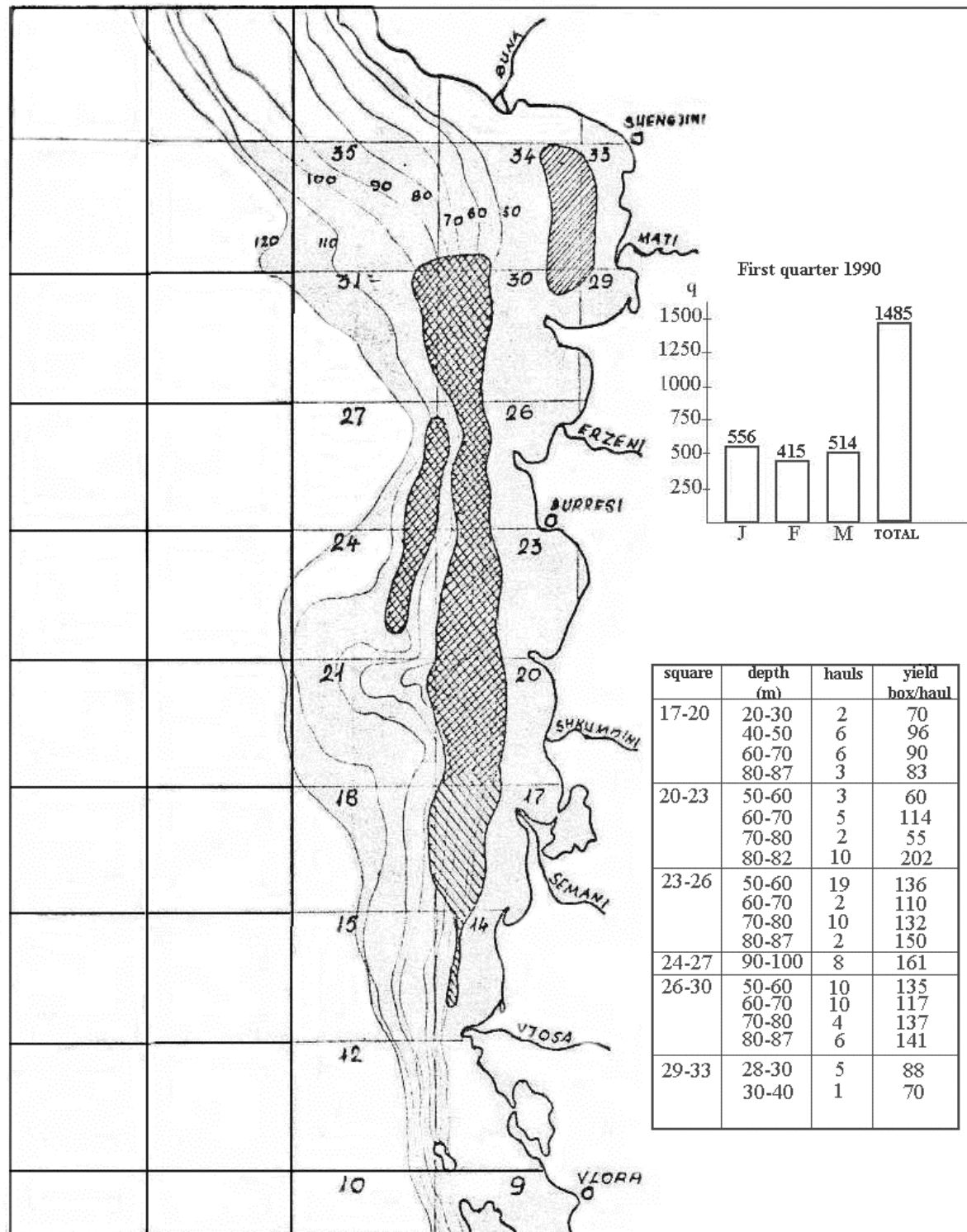


Figure 6. Small pelagic fishing grounds and catch (n. boxes) per haul from two fishing units during in the first quarter of 1990.

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In “lampara” fishery 34 vessels were used on average compared to pelagic trawl fishery. The structure of the fleet for “lampara” fishery was as follows: 16 vessels of 300 hp, 6 of 200 hp, 8 of 150 hp and 12 of 80 hp. The surrounding nets used varied in size according to the type of vessel, measuring from 250–500 m in length and 70–114 m in height.

Mid-water pair trawl fishing was successfully employed in the period 1980–1990 under the centralized economic regime, however, as in all areas, privatisation and free market economics extended to the fishery sector, including fishing activity and infrastructure.

Since the 1990s, 90% of the fishing fleet has been employed in bottom trawl fishery, in this case the priority is given to catching those high value species for which there is greatest demand, both in foreign and national markets.

Nowadays, small pelagic fishery utilizes less than 10% of the Albanian fishing fleet and has an annual yield of 100–150 t. The decrease in production of these species is partly due to the ineffective operation of the fish processing factories which during this period of transition lack supplies. Current policy is working to renew the interest of the processing industry in order to prepare the ground to re-launch small pelagic fisheries (sardine, anchovy etc.). In the context of the reactivation of this sector, the exchange of experience with the countries involved in the Adriamed Project is considered necessary.

2. Research

Scientific research in the field of small pelagics began in Albania in 1952 and was carried out intensively by the ichthyologist Prof Ndoc Rakaj. These studies concentrated on the determination of age and the dynamics of growth of the sardine. Growth in length resulted to be 8.1 cm in the first year of life, 3.8 cm, 2.4 cm, 1.3 cm and 0.4 cm in the successive years.

Sardine reproduction in Albanian waters occurs from October to May with little activity between November and February. In the years 1952 and 1953 the composition of the age groups was as follows:

Age	1+	2+	3+	4+	5+
%	2.2	49	45	3	0.4

Studies were also carried out concerning sardine reproduction using the egg survey method at distances between 1.5 and 20 nautical miles from the coast. The results from these studies showed that the most intensive reproduction zones for the sardine are: Seman, Vjosa, Kepi i Selites. In temperature conditions between 13.5 – 15 °C, the number of eggs varied from 123–268 eggs per net (Figures 7 and 8). The behaviour of the sardine towards the light in different seasons was also studied. The overall result of these studies was to encourage the authorities responsible at the time to develop small pelagic fishery.

During the years 1980–1986 attempts were made to assess the small pelagic resources (in particular the sardine) with research on the distribution of small pelagic species along the Albanian coast. This investigation demonstrated the following:

- The largest schools of small pelagics were at a depth of 20–45 m and 75–120 m.
- It was frequently possible to observe schools of 30 m in length and 3 m in height.

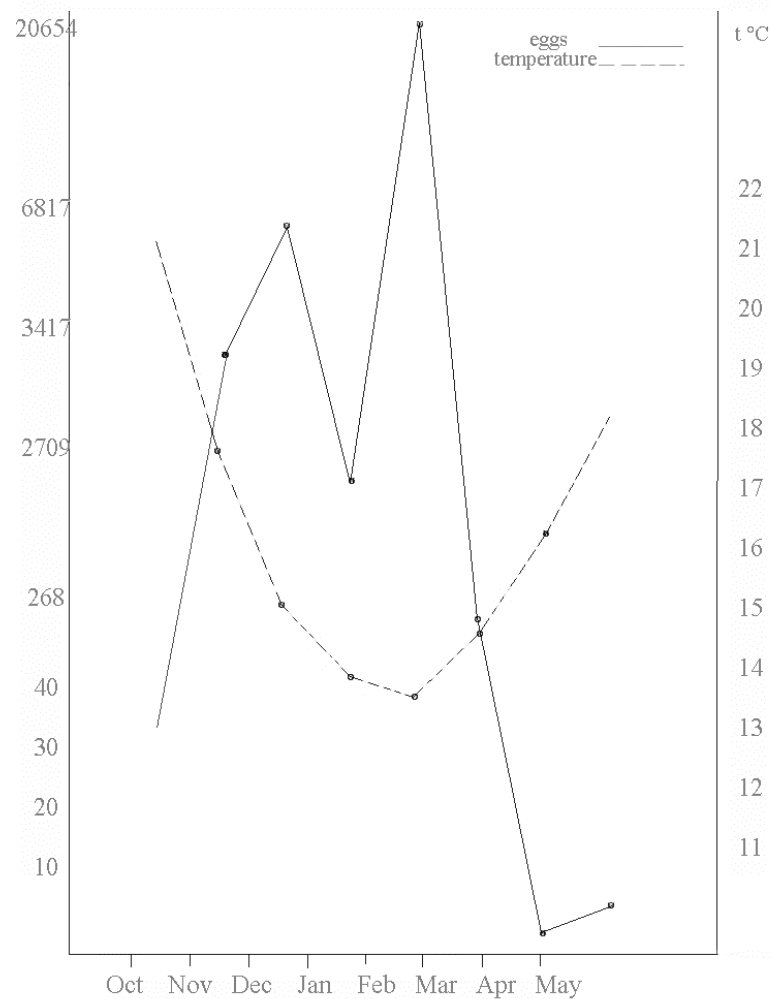


Figure 7. Temperature and sardine egg abundance pattern by month.

- The prevalent classes were those with a volume of up to 100 m^3 and $100\text{--}500 \text{ m}^3$
- Preliminary evaluation gave a density of $40\text{--}74 \text{ t per mile}$.

3. Conclusions

The abovementioned studies had an impact on the fishing fleet organisation for small pelagic fishery. In the last ten years there have been no studies whatsoever concerning resource evaluation. Collaboration with the countries participating in the Adriamed Project in order to start such studies again would no doubt encourage further assessment of these resources as well as their rational and responsible exploitation. These resources represent an extremely valuable source of nutrition for the Albanian people.

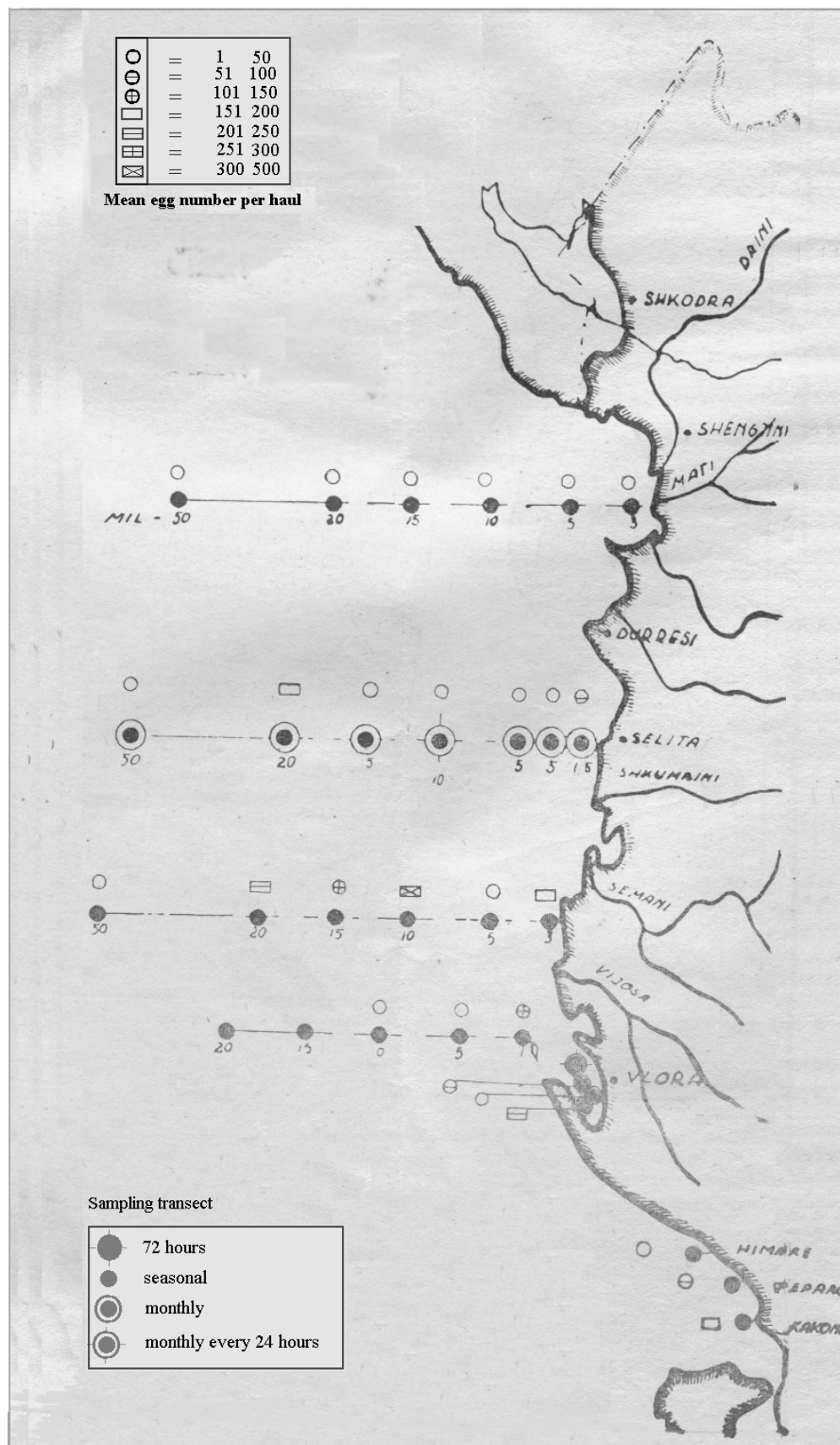


Figure 8. Sardine egg density along sampling transects in 1960-1961.