

SPARIDAE IN CATCHES OF THE COASTAL FISHING GEARS IN THE EASTERN ADRIATIC SEA

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Abstract

Catches of 6 coastal fishing gears were analysed regarding to presence of the Sparidae fishes in the catches. Among 18 Sparidae species and subspecies in the Adriatic Sea 16 were noted in the catches. Except "tramata" all other target fishing gears harvested Sparidae in small quantities; participation of Sparidae in the "tramata" catches usually amounts more than 96% in number and 98% in weight, and other fishing gears amount between 6.5% and 26.0% in number and between 2.6% and 26.5% in weight in total catches. The most common Sparidae fishes are: *Oblada melanura*, *Sarpa salpa* ("tramata"), *Diplodus* spp. (all fishing gears), *Pagellus erythrinus* (trammel bottom set, "tartana", coastal beach seine), *Boops boops* (coastal beach seine).

Key-words: *Fishes, fisheries, coastal waters, Adriatic Sea*

Introduction

The Adriatic ichthyofauna includes 18 Sparidae family species and subspecies (1-5) which is 75% of all Sparidae species and subspecies registered in the Mediterranean, i.e., on the other hand, 6 species less than in the other Mediterranean parts (6). All Sparidae species and subspecies inhabit shelf area mostly up to 100 m depth. They belong to benthopelagic, what determines the type of fishing gears and the way of their fishing.

Some east-Adriatic Sparida fishes are commercially valuable. This especially refers to species *Sarpa salpa*, *Obalda melanura*, *Boops boops*, *Sparus aurata*, *Pagellus erythrinus* and *Spondyliosoma cantharus*, catches of which, depending on species, amount, between 50 and 200 tons annually, and this is considerably more compared to the catches of the most other Sparidae species. Vertical distribution, seasonal migrations and time of reproduction are important factors which limit their commercial catches.

In this paper we discuss about the participation of Sparidae fishes in the catches of 6 coastal fishing gears: trammel bottom set, small coastal bottom beam trawl ("strasin"), small coastal bottom trawl with beam before wings ("kogol"), small coastal otter trawl type tartanas ("tartana"), coastal beach seine and fishing with gill nets using ropes (tramata fishing, "tramata"). The fishing of mentioned gears is of a seasonal character and is used mostly for harvesting of certain fish species.

Researched area, material and methods

Researches were performed along the whole east-Adriatic coast but with different width from gear to gear. Areas, where the analyses of catches by mentioned fishing gears took place, actually respond to areas of their most frequent or exclusive usage (e.g. "strasin"). The catches were realised by usual fishing methods characteristic for commercial fishing. Seasons in which researchers took place mostly coincided with seasons of usage of particular fishing gears regulated by the Croatian law on sea fisheries, except the trammel bottom set which was used in our researchers all over the year. All other fishing circumstances (depth, type of bottom, fishing effort units) were equal as those in the commercial fishing (Table 1). Except of trammel bottom set, all other coastal gear catches were realised by professional fishing crews.

Table 1. Fishing areas, depth, sort of bottoms, fishing period and number of analysed coastal fishing gear catches along the eastern Adriatic coast.

Fishing gear	Fishing area	Depth (m)	Bottom	No. of analysed catches	Period
Trammel bottom set	Middle and South Adriatic: from Vir Island to Konevli	to 30	variable	243	1987-1996: all year
"Stralin" (1)	Middle Adriatic: Trogir area	to 20	sandy-muddy Posidonia beds	6	1988: autumn
"Kogol" (2)	Middle Adriatic: Brač, Šolta, Korčula and Hvar Islands	to 20	sandy-muddy Posidonia beds	15	1991-1992: autumn
"Tartana" (3)	Middle Adriatic: Tribunj area, Pag, Murter and Vrgada Islands	to 40	sandy-muddy Posidonia beds	17	1991-1992: winter, spring
Coastal beach seine	Middle Adriatic: Šibenik and Primošten areas, Murter and Šolta Islands	to 30	sandy-muddy Posidonia beds	35	1991-1996: autumn, winter, spring
"Tramata" (4)	North Adriatic: Istra peninsula, Krik, Cres and Lošinj Islands Middle Adriatic: Šibenik, Split and Makarska areas, Pag, Šibba, Drvenik, Hvar, Lastovo, Korčula and Vis Islands	to 50	variable	47	1986-1993: summer

(1) small coastal bottom beam trawl. (2) small coastal bottom trawl with beam before wings. (3) small coastal otter trawl type tartanas. (4) fishing with gillnets using ropes (tramata fishing).

Fishing gears characteristics and ways of usage

Trammel bottom set is the most widely distributed in Croatian coastal fisheries. It can be used from August 15th to April 30th. All benthic and benthopelagic fish species and other sea animals and even bigger pelagic species can be caught with it. It is used during the night and on all types of bottoms, usually up to 30 m depth.

"Strasin" and "kogol" are two types of small coastal bottom trawl which are used during the night primarily for the picarel fishing although other bottom species in the coastal fisheries can be caught with them. They can be used only on boats with the engine power of 18.5 KW (25 HP) in the period from October 1st to April 30th. They are used from 5 to 20 m depth. Bar of mesh in the cod end must not be less than 12 mm.

"Tartana" is small coastal otter trawl which can be used on the boats with the engine power of 18.5 KW (25HP). It is designed primarily for picarel fishing from 20 to 50 m depth, during the period from November 1st to March 1st, exclusively during the night. With the "tartana" fishing otter boards are used. Bar of mesh must not be less than 12 mm.

Coastal beach seine is designed primarily for daily picarel fishing, but some others benthic fish species and other sea bottom animals could be caught. It is used from October 1st to April 30th. Fishing with coastal beach seine is done on bottom up to 30 m depth. It is pulled on the coast or on the boat moored to the coast. Bar of mesh in the cod end of coastal beach seine must not be less than 12 mm.

"Tramata" is the way of fishing with gill nets using ropes for fish scaring. Ropes are used for enclosing a larger sea area and gathered fish is harvested by the gill nets. This kind of fishing is done only during the summer period and only Sparidae fishes are caught, primarily saddled bream (*Oblada melanura*) and salem (*Sarpa salpa*), but also all other Sparidae fishes. This kind of fishing is done only in coastal areas up to 50 m depth.

Results and discussion

A great number of authors (7-18, 5) have already carried out some general data about mentioned fishing gears and their catches. On this matter authors have concentrated their attention to construction features of gears, the way of their use, efficiency, common qualitative and quantitative structure of catches and the noxiousness. (19) have published results of analysis of presence of Centracanthidae fish family in catches of the coastal fishing gears in the eastern Adriatic during the winter period. They have analysed catches of three types of coastal bottom trawl designed mostly for the Centracanthidae catches, especially of picarel (*Spicara smaris*), and these are "strasin", "kogol" and "tartana" as well as coastal beach seine also designed for picarel catches.

Present Sparidae fish species and subspecies in the catches of targeted coastal fishing gears is done in the Table 2 and 3. From the total of 18 Sparidae species and subspecies living in the Adriatic Sea 16 were established in the catches. Two species are missing: *Pagrus coeruleostrictus* and *Dentex* (*Dentex*) *macrophthalmus*. Both fishes can be usually caught in the area deeper than 50 m, mostly in south and some parts of mid-Adriatic (20). Population density of these fishes is mainly small. Sparidae species and subspecies were presented in analyses trammel bottom set catches in small quantities: 19.33% in number and 14.43% in weight. The most common were shallow-water species *Diplodus annularis*, followed by *Pagellus erythrinus* with considerable lower share.

In one earlier fundamental study of trammel bottom set catches along the whole east-Adriatic coast in the period 1971-1984 (5) from the quantitative and qualitative point of view more than 110 fish,