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Preliminary observations on scattering layer in the Adriatic

Preliminarna opažanja o difuznom sloju (scattering layer) u Jadranu

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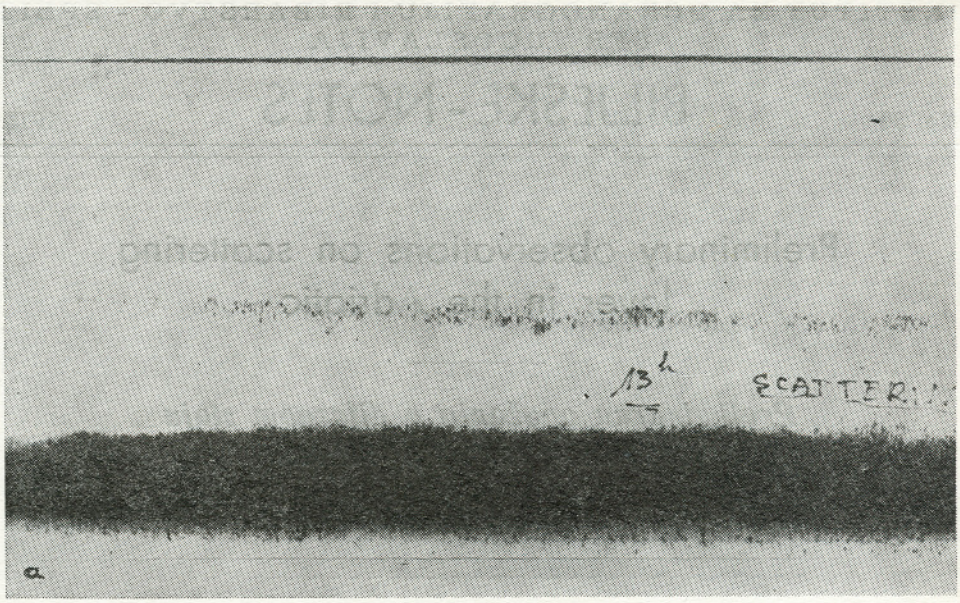
I. INTRODUCTION

Scattering layer has been mentioned often in oceanographic researches lately. It is registered by means of echo sounders in tropic as well as in arctic seas. By now a few works dealing with the scattering layer in the Mediterranean sea have been published, in which the results of direct or indirect observations on that not enough researched phenomenon have been brought forth. Here can be mentioned the remarkable results about scattering layer in the Mediterranean sea brought forth by Moore (1949; 1950), Frassetto and Della Croce (1965), Bernard (1955), Peres and Picard (1956).

Biologic or physical origine of the scattering layer and its big areas which covers, make it to be a very interesting matter for research whether for marine biology or oceanology in larger sense.

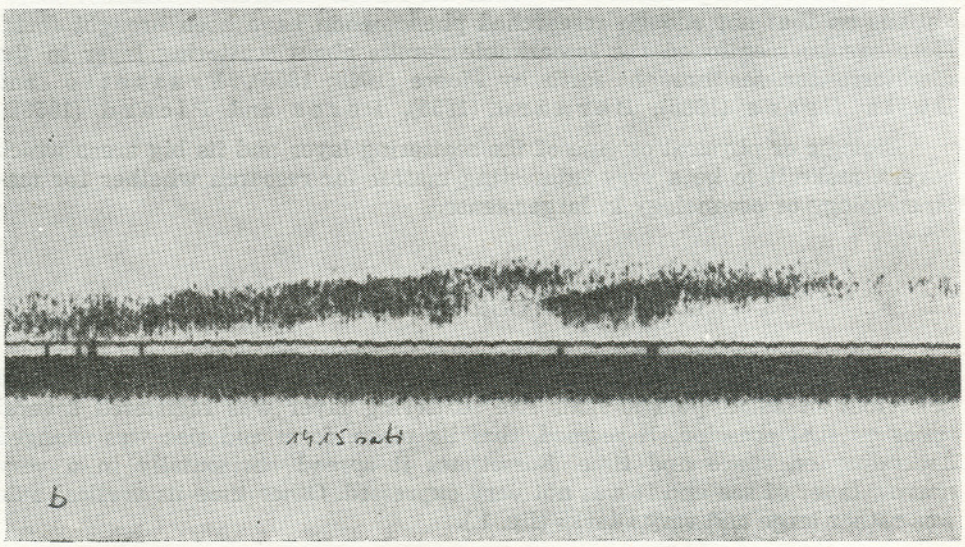
II. SOME OF OUR OBSERVATIONS

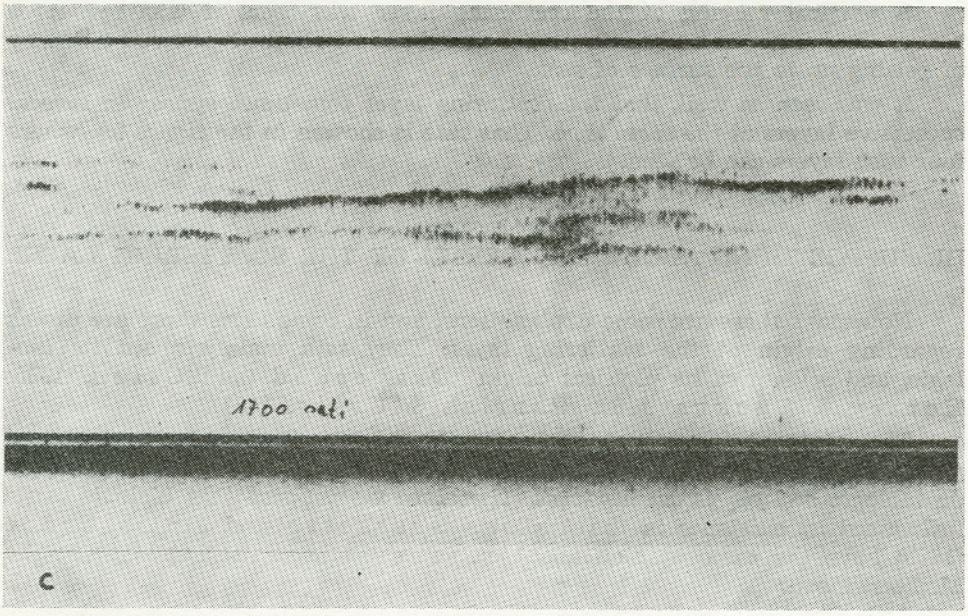
It was done echo survey in the Middle Adriatic during the research of behaviour of small pelagic fish. The scattering layer was registered several times on that occasion. It seemed, that its place, form and size was changed depending on space and time. Sometimes it spread horizontally in a very narrow layer of sea and it was not very expressed. Other time its vertical axis was rather large and very »dark« (fig. 1.).

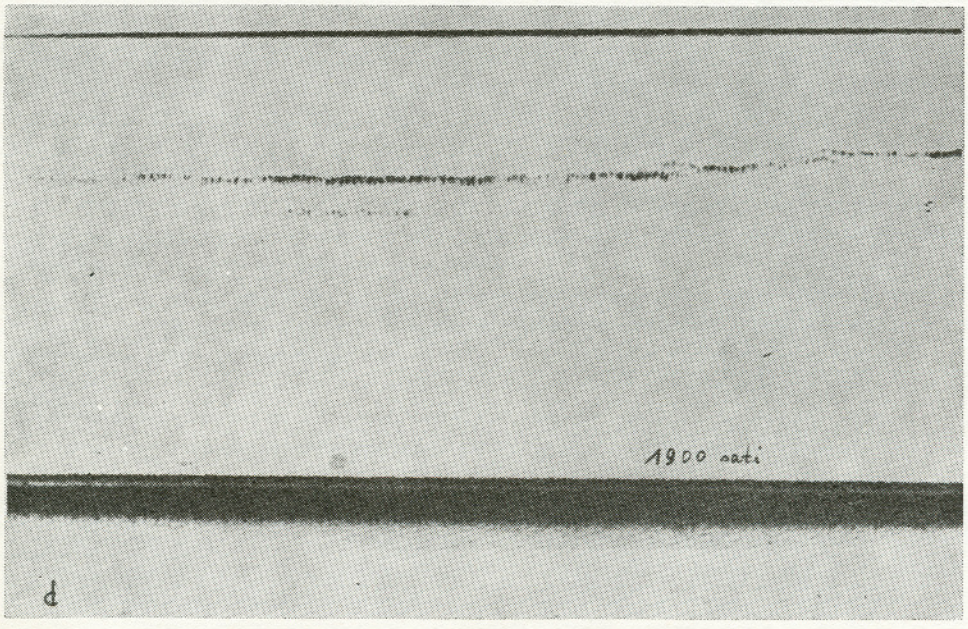


Slika 1. Difuzni sloj u Jadranu i neke njegove forme

Figure 1. Scattering layer in the Adriatic sea




1700 ati
c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d

A vertical moving of the scattering layer was seen, it was registered nearer the bottom in early afternoon hours, but in twilight it showed tendency of getting up to the surface of sea.

It was seen as well, that the scattering layer sometimes appear in several successive layers at the same time. That case is showen in the figure (c), where four such layers can be seen.

III. SUPPOSITIONS ABOUT THE ORIGIN OF THE SCATTERING LAYER

Nowadays there are some explanations, and in some cases there are proofs regarding origin of the scattering layer. They talk mainly about its biologic, and seldom of its physical origin (Dragesund, and Olsen, 1965; Hersey & Backus, 1962; Parrish & Craig, 1951).

The origin of the scattering layer in the Adriatic has not been researched yet neither by way of biologic nor physical methods, i. e. it has not been tested on biologic and on physical causes. Therefore we suppose that biologic cause influenced its existence in the Adriatic. Frassetto and Della Croce (1965) have the same opinion about existence of the scattering layer in the Mediterranean.

IV. FUTURE RESEARCHES

The future researches on the scattering layer should be directed to define its space and time component, and specially to determine the parametres which influence its origin.

PRELIMINARNA OPAŽANJA O DIFUZNOM SLOJU (SCATTERING LAYER) U JADRANU

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I. UVOD

Difuzni sloj, u literaturi poznatiji pod engleskim nazivom Scattering layer, u posljednje se vrijeme često spominje u oceanološkim istraživanjima. Registriran je pomoću ultrazvučnih detektora kako u tropskim, tako i u arktičkim morima. Objavljeno je dosad i nekoliko radova o difuznom sloju u Sredozemnom moru, u kojima se iznose rezultati direktnih ili indirektnih opažanja o toj još nedovoljno istraženoj pojavi. Tako su zapaženi rezultati koje je o difuznom sloju Sredozemnog mora iznio Moore (1949; 1950), Frassetto i Della Croce (1965), Bernard (1955) te Peres i Picard (1965).

Biološko ili fizičko porijeklo difuznog sloja, te veoma veliki areali njegovog rasprostranjenja, bez sumnje ga svrstavaju u interesantne i važne objekte istraživanja bilo za marinu biologiju ili oceanologiju u širem smislu.

II. NEKA NAŠA OPAŽANJA

U sklopu istraživanja ponašanja male plave ribe vršila se ultrazvučna detekcija u srednjem Jadranu. Tom prilikom je bio registriran difuzni sloj u nekoliko navrata. Po prvim zapažanjima se čini, da mu se, ovisno o prostoru i vremenu, mijenja smještaj, oblik i veličina. Ponekad se horizontalno proteže u uskom sloju mora i nije jako izražen. Drugi put je njegova vertikalna os prilično široka i dosta je »taman« (sl. 1.).

Primijećeno je i malo vertikalno pomicanje difuznog sloja, pa je u ranim poslijepodnevnim satima bio registriran bliže dnu, dok je u sumrak pokazivao tendenciju dizanja prema površini mora.

Isto tako se zapazilo, da se difuzni sloj ponekad u isto vrijeme javlja u nekoliko uzastopnih slojeva. Takav je slučaj prikazan na slici (c), na kojoj se uočavaju četiri takva sloja.

III. PRETPOSTAVKE O PORIJEKLU DIFUZNOG SLOJA

Danas već postoje neka tumačenja, a u nekim slučajevima i dokazi o porijeklu difuznog sloja. Oni uglavnom govore o njegovom biološkom, rjeđe fizičkom porijeklu (Dragesund and Olsen, 1965; Hersey & Backus, 1962; Parrish & Craig, 1951).

Porijeklo difuznog sloja u našem slučaju u Jadranu još nije istraživano ni biološkim ni fizikalnim metodama, odnosno nije testirano niti na biološke niti fizikalne uzročnike, pa samo pretpostavljamo, da je za njegovo formiranje u Jadranu najvažniji biološki uzročnik. Slično mišljenje imaju Frassetto i Della Croce (1965) i za formiranje difuznog sloja u čitavom Mediteranu.

IV. BUDUĆA ISTRAŽIVANJA

Buduća istraživanja difuznog sloja bi trebalo usmjeriti na određivanje njegove prostorno-vremenske komponente, a posebno na determiniranje parametara koji uvjetuju njegovo porijeklo.

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