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Proposal on trawling surveys for estimation of pelagic
fish stocks in ICNAF Subarea 5 and Statistical Area 6

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Trawling survey methods based on the stratified random sampling give good results for some bottom species but can be hardly used to estimate the abundance of the pelagic fishes which form dense relatively small and extremely uneven concentrations. The distribution of mackerel in the Northwest Atlantic in winter is typical for pelagic fishes. Thus, the mackerel abundance indices obtained as a result of surveys made according to the above mentioned method, cannot serve as a sufficient scientific basis for revision of earlier estimates. It is also confirmed by wide confidence intervals of new estimates of year-class sizes (Anderson, 1976). In our opinion a more reliable source of information on state of the pelagic fish stocks may be the trawling surveys made with a consideration of the objects under study distribution peculiarities. Methods are directed, in the first place on getting the reliable data on mackerel stocks state as most important pelagic fishery object in the region.

Survey period falls on the first quarter, the area covered being the ICNAF Subdivision 5Zw and SA 6. A number of vessels of similar type equipped with the same gear and searching instruments should participate. The whole area is subdivided into the same number of approximately equal squares. The survey is carried out by all the vessels simultaneously, each of them

covering its square (Fig.1). The first stage of research includes searching of concentrations by the hydro-acoustic instruments, the standard tacks scheme for all the vessels being used. The concentration found, its size is estimated and a number of 30-min. trawlings made. Since mackerel is a more mobile object as compared to the bottom species, trawling speed should be, probably, increased (up to 4 knots). The number of trawling stations should depend on the concentration distribution area. Minimum distance between stations should be estimated as a distance covered by vessel during half-an-hour trawlings. Trawlings of concentrations should be made during the daylight only which is conditioned by mackerel daily vertical distribution peculiarities (see previous Section). The survey finished, a search according to the previously adopted route should be resumed.

The catch on the deck should be processed according to the standard method developed by Grosslein. Samples for age determinations should be collected from each catch until a sufficient number of samples for age-length key is obtained. For each separate concentration mean catch per trawling should be calculated (in numbers and weight), and the areas inhabited by these concentrations may be considered as "strata" used for the bottom fish surveys.

The proposed methods result in getting mean weighted catch per trawling, individual age-groups abundance indices and the minimum biomass estimate for the whole area under investigations. The reliability of the results obtained should largely depend on the speed of the survey carrying-out.

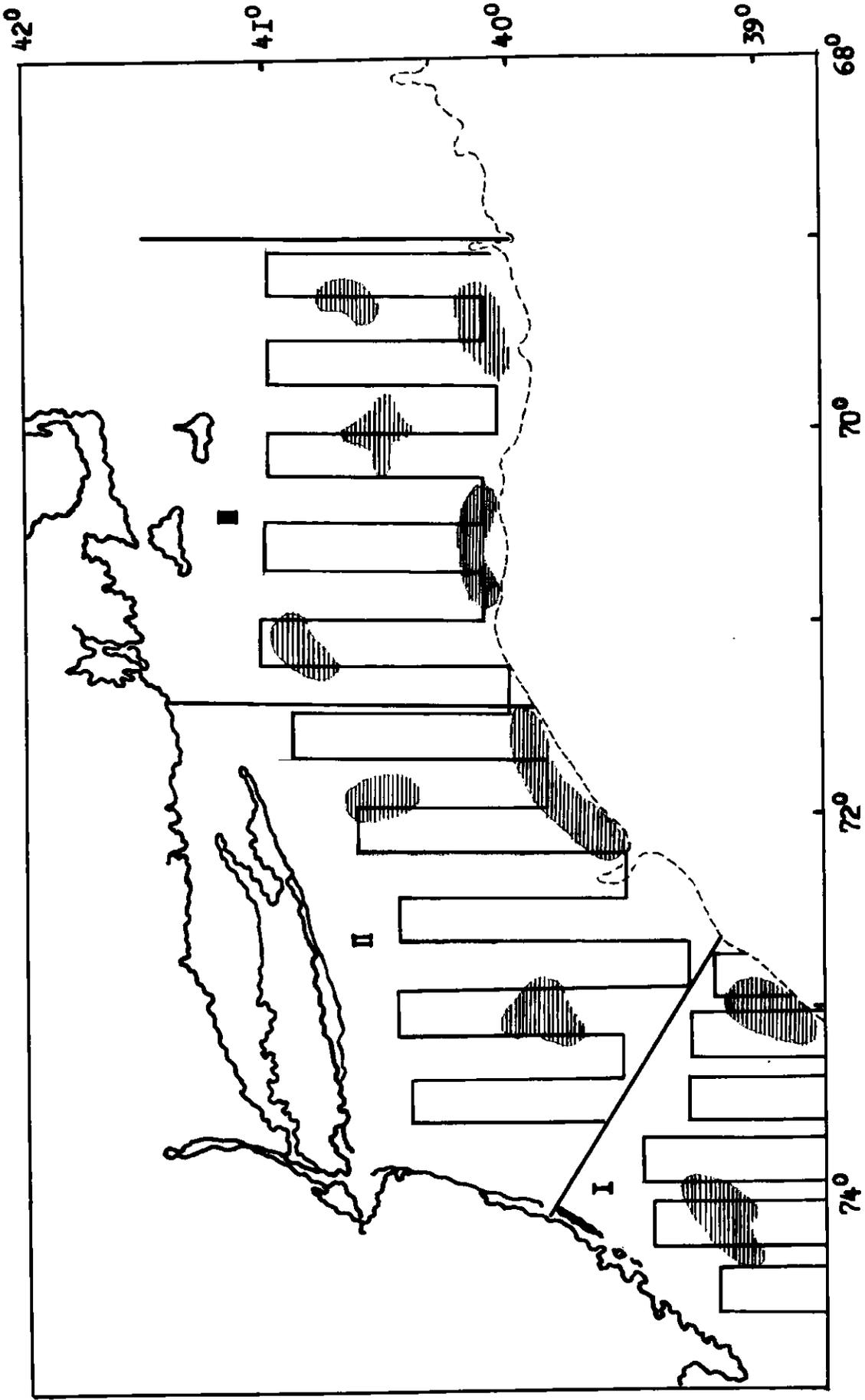


Рис. I Схема траловой съёмки для оценки запасов пелагических видов рыб в подрайоне
ИКНАФ 5 и статистическом районе 6

Scheme of trawling survey for the assessment of pelagic species stocks in ICNAF Subarea 5 and Statistical Area 6.

