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Proposals on the standardization of oceanographic sections in the ICNAF Area

by

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1.Introduction

It has long been necessary to adjust the standard sections in the ICNAF area. The volume of hydrological observations in this area carried out by a number of countries (USA,Canada,West Germany,Danmark,USSR et al.) is not comparatively great yet. The sections,where the surveys are conducted by each country do not coincide often. In consequence of this,the joint analysis of data obtained by different countries during the observations is a matter of some difficulty,and in some cases it is impossible to be performed. The adjustment of standard sections would eliminate the mentioned defects in the arrangement of oceanographic observations and favour the consolidation of efforts of the ICNAF member-countries in collecting the necessary hydrological information.

While compiling the present proposals we took into account the positive recommendations of the Environmental Working Group,given in ICNAF Summ.Doc.75/7,series No.3442 and Circular Letter of the ICNAF Secretariat (No.75/5 of 27 January 1975).

2.Stadardization of oceanographic sections

As far as the observations in the ICNAF area had been

already undertaken by some countries for a long time, it would be unsuitable to accept the new sections to be the standard ones, greatly differred by position from those carried out due to the national programs. On the contrary, some of the national sections with the longest sets of observations are to be taken as standard ones. Therefore, prior to formulate our proposals on the composition of standard sections, it is necessary to give a brief characteristics of the sections scheme, where the Soviet vessels operate in Subareas 1-3.

2.1. Standard sections carried out by the Soviet vessels

Subarea 1

The hydrological observations aimed at studying the features of water circulation, temperature and salinity variability and its influence upon the distribution and behaviour of commercial fishes in the West Greenland area and Davis Strait were started by the USSR in 1958. There was compiled the scheme of hydrological sections, including the sections conducted by Danmark (Fig.1).

Except the section 8-A from Farewell Cape (Greenland) to Labrador, regularly conducted by the US Coast Guard /Ice Patrol/ and Danmark, the sections 27-A, 28-A, 11-A, 32-A (II, III, IV, VI - in Fig.2 of ICNAF Summ.Doc.No.75/7), 15-A, 14-A, 13-A, 12-A, 10-A, 9-A, 31-A were also included in the scheme. Sometimes the Soviet vessels carried out the sections 8-A, 28-A, 27-A completely from Greenland to Labrador.

Usually the comprehensive hydrological surveys were carried out by the USSR vessels since May to September, but sometimes (1963-1964) some sections were conducted in November and January, but the data on winter observations were quite insignificant.

As it is known during a long period Danmark conducted the observations in the West Greenland area. After 1958, when Norway, USSR and West Germany started to undertake the hydrological researches, the sets of observations on

the sections became to be added with data. Some sections with the long sets of temperature and salinity are represented in Table 1.

From our point of view the sections on which the environmental conditions changes can essentially effect the distribution and abundance of commercial fishes are the most important. For instance,the temperature fluctuations on sections 9-A and 32-A can serve as an indicator of the environmental conditions for migration of cod for wintering after their feeding on the Store Hellefiske Bank. The distribution of cod,American plaice and redfish along the continental slope and West Greenland shelf considerably related to the temperature variations on the sections 11-A, 12-A,13-A,14-A,15-A.

The sections crossing the Davis Strait from Greenland to Canada will help to reveal the features of waters circulation on the ridge and in the Labrador Sea in relation to eggs and larvae transport of commercial fishes.

Subareas 2 and 3

The sections 2-A,3-A,4-A,6-A,7-A,"triangle" and 8-A, carried out by the Soviet RV,mainly dubbed the sections conducted by the US Coast Guard .,and 45-A and 47-A - by Canadian Biological Station in St.John's. The rest sections 44-A,1-A,40-A,27-A and 28-A are accepted at PINRO.

Mostly often the PINRO RV carried out the surveys of sections: 8-A - in July and November,"triangle" - in July, 7-A - in May,6-A - in March-May,4-A,3-A,2-A - in April-June,1-A - in April and June and 44-A - in June. The rest sections in the Labrador and Newfoundland areas are carried out episodically.

Oceanological observations are carried out by PINRO since 1958,however,the data on continuous sets of water temperature by main sections are only beginning since 1964-1968.

To study the regime of the slope waters the hydrological stations were more frequently made on the slope with the aim of covering its upper middle and lower parts.

In our opinion,observations on the above sections will make it possible to accumulate a series of hydrological indices wanted for fishery forecasting.

2.2. Proposals on the composition of the ICNAF standard sections.

Status of the ICNAF standard sections should ensure their advantageous accomplishment relative to the national standard sections. This will promote more frequent observations on the ICNAF standard sections the year throughout at the cost of international efforts. Due to the same reason the number of the ICNAF standard sections should not be great,as in this case we shall not achieve the pursued objectives.

From the other hand,the position of sections shoul be such that observations conducted on them were representative for the certain fishing areas and could be used with the greatest advantages in the application to the fishery.

Individual sections conducted up to now according to national programms will apparently best comply with these conditions.

Based on the considerations and proposals presented to the Working group by separate countries,our proposals amount to the following: Subarea I.The following standard sections are proposed (Fig.2):8-A(from Cape Farewell to Labrador) 27-A,28-A(sections I,II, III,ICNAF Summ.Doc.75/7,Fig.2) with their extention as far as Labrador. To fit the position of stations on these sections in the Labrador area to the position of sections conducted by Canada.

To extent section 11-A (IV,Summ.Doc.75/7,Fig.2) performed by Denmark,Norway,FRG and USSR as far as the Canadian coast. The Soviet side suggests to make observations in the western part of the extended section according to positions of stations conducted by the USSR vessels.

Section along 65°06' N and 10-A with equal reason could become standard. Danish section along 65°06' N has long-term series of obser-

vations in July, and Section 10-A is better positioned relative to the main West Greenland and Baffinland Currents. Therefore, it is suggested to take a sector of the Danish Section V from 53°00' to 59°09'W as standard (ICNAF Summ.Doc. 75/7, Fig. 2), and for the western part of the Strait to adopt stations of the Soviet Section 10-A as standard. The following is a list of the proposed stations:

1.	65°06' N	53°00' W
2.	65°06' N	53°30' W
3.	65°06' N	54°52' W
4.	65°06' N	55°43' W
5.	65°06' N	56°30' W
6.	65°06' N	57°30' W
7.	65°06' N	58°19' W
8.	65°06' N	59°09' W
9.	65°10' N	59°14' W
10.	65°12' N	59°31' W
11.	65°15' N	60°00' W
12.	65°18' N	60°29' W
13.	65°21' N	60°50' W
14.	65°25' N	61°15' W
15.	65°30' N	61°59' W

Section 9-A. It is better positioned compared with the Danish section along 68°00'N (section VII,Fig.2,ICNAF Summ.Doc,75/7) and makes it possible to register the water exchange with the Baffin Sea and to reveal timely the movement of the cold Baffin Land waters into the area of the West Greenland banks.

Subareas 2 and 3. In the Labrador area,as it is noted for Subarea I,Sections 8-A,27-A and 28-A could be taken as standard (Fig.2). South of Section 8-A,off Newfoundland,the Sections 40-A (agreed with the Canadian section) and "triangle" (according to positions of stations performed by the US Coast Guard) are suggested as standard. The section "triangle" is performed by US Coast Guard and PINRO research vessels (USSR) for a longer time compared with the Canadian section positioned in this area.

Sections combined by the programms of USA and Canada: 6-A, 3-A,2-A and Soviet 1-A are proposed for the Grand Bank area. Section 44-A could be taken as standard in the Cabot Strait and through the Saint-Pierre Bank.

3. Oceanographic stations

Number of standard stations on each ICNAF standard section must be optimal. Excessive number of stations will unjustifiedly increase the operation time of the vessel on the section. From the other hand,thinning out of stations,will lead to lost of information due to complicacy of the water structure in most observation areas.

In the majority of Soviet investigations,when searching for relationships between the state of the environment and conditions of the fishery,integral characteristics of the water temperature by separate sectors and layers of the sections were used.

Relationships between hydrological conditions and biological phenomena on individual hydrological stations are poorly investigated.

It is difficult to assess objectively the required number and frequency of standard stations on the sections. Therefore, as the first stage,it is suggested to accept on the ICNAF standard sections the standard sections set up on them earlier by separate countries.

With appearance of methodical investigations based on volumenous data of observations one can return to discussion of this problem.

When conducting observations on standard sections,all the investigators should try to measure the temperature,salinity and possible complex of hydrochemical parameters at standard depths: 0,10,20,30,50,75,100,150,200,250,300,400,500,600,800,1000,1200, 1500 and 2000 m. On stations shallower than 2000 m observations are also made 5 m from the bottom.

4. Base periods

The choice of coomen periods of data averaging to calculate the anomalies of hydrological parameters will play an important role in unification of observations on the state of the environment,conducted by separate countries.

The solution of this problem is complicated by the fact that observation periods on some sections differ greatly and there are plenty of gaps in observations in separate years.

Work that will be conducted in this direction by MEDS seems to be extremely useful. However,it is apparently untimely to take decisions on the choice of base periods at the regular meeting of the Working group. It is necessary that specialists of all countries - members of ICNAF familiarizied themselves with the results of MEDS investigations and conveyed their proposals to the Working group with regard to recommendations given by MEDS.

5. Data exchange on the state of environment, data form,information

Introduction of the ICNAF standard sections will be effective only in the case if there is a rapid exchange of observation data between countries-ICNAF members.

The use of the existing system of national and world centres of oceanographic data seems to be right for this purpose. Connections were established between these centres which provide,in our opinion,fairly speedy transmission of data from one country into the other one.

Use of ROSCOP tables,which are sent via national channels to World Data Centre,as information on the conducted investigations doesn't cause any objections.

Table 1. List of data on the long observations carried out on the sections in Subarea 1

Section	Month of observations	Number of years observed	Period of observations	Countries
8-A	July	about 30	1928-1970	USA, Danmark, West Germany, Norway, USSR
Greenland area	October	7	1962, 1963, 1964, 1966, 1968, 1970, 1972	USA, USSR
28-A	July	15	1950-1964	Danmark
11-A	April	11	1959-1969	Norway, Danmark
	June	9	1961-1970	Danmark, USSR
	July	22	1946, 1950-1970	Danmark, USSR, West Germany
Along 65°06'N	July	18	1946, 1950, 1952-1968, 1970	Danmark
32-A	July	21	1946, 1950, 1948, 1952-1968, 1970	Danmark, West Germany
10-A	May	4	1961, 1964, 1965	USSR
	June	3	1959, 1960, 1962	USSR
	August	5	1959, 1963, 1964, 1967, 1970	USSR
	September	7	1961-1964, 1966, 1967, 1969	USSR
	December	3	1963-1965	USSR

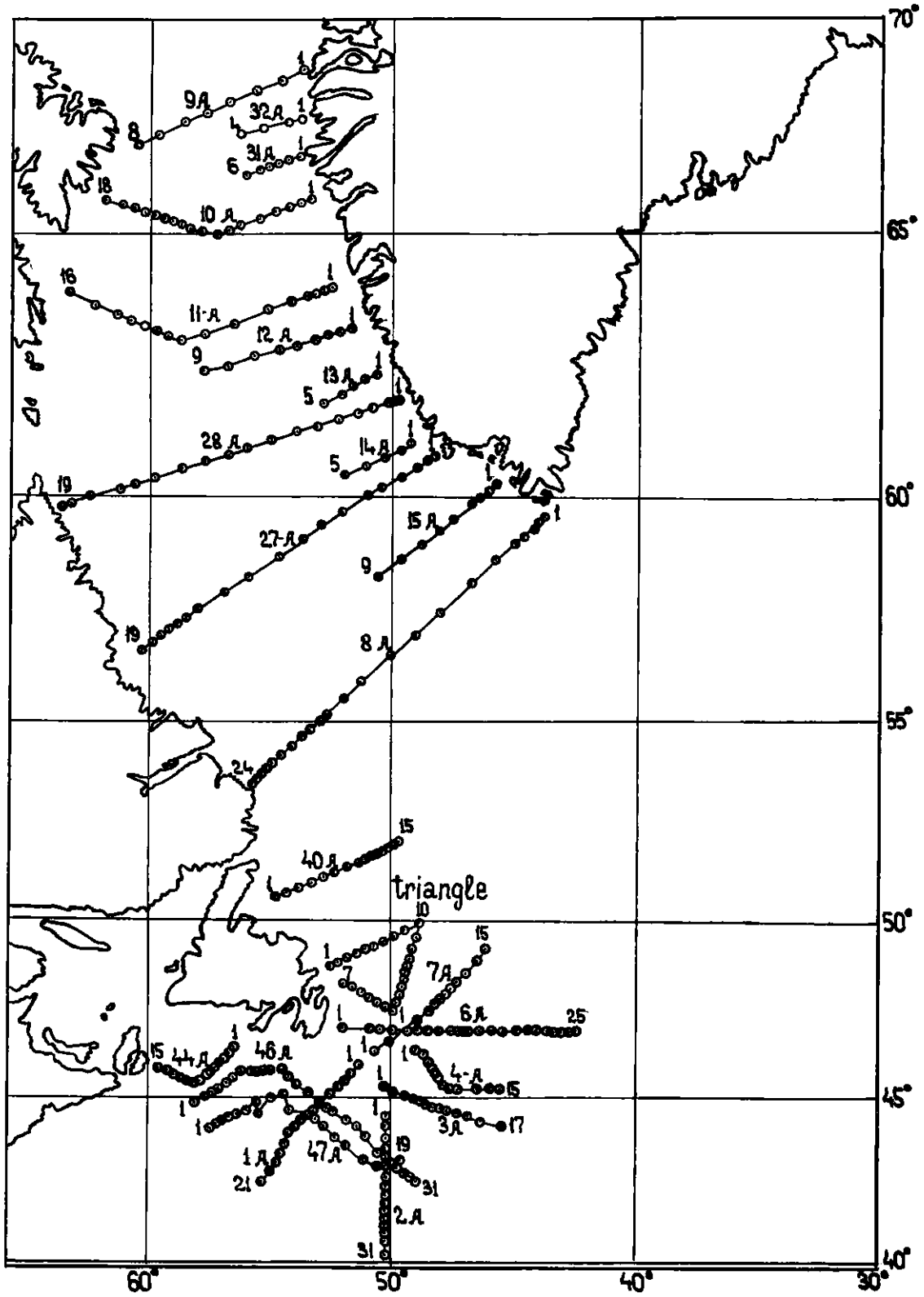

Fig. 1. Oceanographic sections carried out by USSR in ICNAF Subareas 1, 2 and 3.

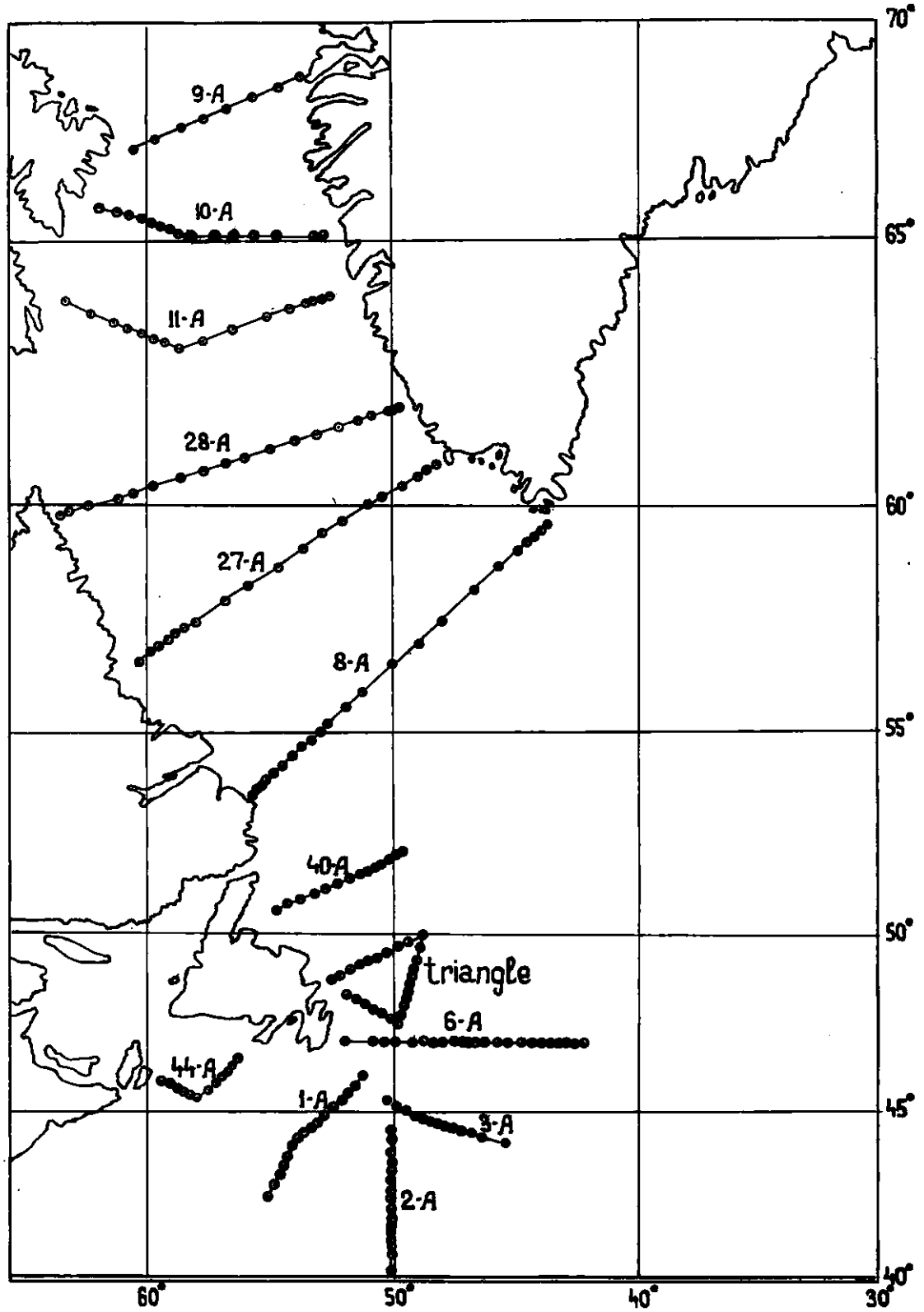

Fig. 2. Oceanographic sections proposed by USSR as ICNAF standard sections for Subareas 1, 2 and 3.