



Serial No. 1001  
(H. various)

Document No. 58

ANNUAL MEETING - JUNE 1962

Preliminary Annotated List of Papers pertinent to ICNAF

compiled in the Secretariat 1/

Up to date, 10 May 1962, lists of annotated papers pertinent to ICNAF interests and published in 1961 have been received from the following member countries (papers published in ICNAF publications are not considered):

Canada  
Germany  
Iceland  
U.S.A.

In addition Poland has answered that no paper relevant to ICNAF interests has been published by that country in 1961.

I. HYDROGRAPHY

Bumpus, D.F. 1961. Drift bottle records for the Gulf of Maine, Georges Bank and Bay of Fundy, 1956-58. U.S. Fish & Wildlife Serv., Bur. Comm. Fish., Spec. Sci. Rept. - Fish. No. 378, 127 pp.

Records of drift bottles released from research vessels and static locations and recoveries from them are reported. Circulation deduced from recoveries is described.

Hachey, H.B. 1961. Oceanography in Canada 1957-60. Fish. Res. Bd. Canada, Studies 1960, No. 590, 19 pp.

A review of current organization, problems and co-operative agencies in the field of oceanography followed by a list of papers published by Canadian authors during the years 1957-60.

Nutt, D.C., L.T. Coachman and P.F. Scholander, 1961. Dissolved nitrogen in West Greenland waters. Jour. Marine Res. 19 (1): 6-11.

The nitrogen tension in several water masses in the West Greenland coastal region departs only about 5% from the value of the atmosphere. Higher values near glacier fronts are attributed to solution of gases trapped in glacial ice.

1/ Please hand possible additions to this list to the Secretariat during the Annual Meeting, or not later than 15 July, 1962.

Erik M. Poulsen,  
Executive Secretary.

Rodewald, M. Die Windigkeit des Nordatlantik hat zugenommen (Stronger winds in the North Atlantic). - Der Wetterlotse, 13, No 174/75: 149-152, 1961

As per title.

Unsteinn Stefansson, Baldur Lindal, Johann Jakobsson and Isleifur Johnsson: The Salinity at the Shores of Southwest Iceland, Rit Fiskideildar, Vol. II, no. 9, 1961.

As per title.

## II. PLANKTON

Miller, D. 1961. A modification of the small Hardy Plankton Sampler for simultaneous high-speed plankton hauls. Bull. Mar. Ecol. 5(45): 165-172.

A high-speed sampler for study of vertical distribution of fish larvae is described. A series of samplers may be attached at varying levels to a single wire. Depth while under way is maintained through use of a multiplane depresser on wire end.

## III. FISHES

### A. Cod-Group

Clark, J.R. and F.A. Dryer. 1961. New England haddock fishery bio-statistics - 1956 U.S. Fish & Wildlife Ser., Bur. Comm. Fish. Spec. Sci. Rept. - Fish. No. 375, 89 pp.

A brief review of the fishing followed by size and age compositions of the landings is presented.

Conover, J.T., R.L. Fritz, and M. Vieira. 1961. A morphometric study of silver hake. U.S. Fish & Wildlife Ser., Bur. Comm. Fish., Spec. Sci. Rept. - Fish. No. 368, 13 pp.

Silver hake, Merluccius bilinearis, Mitchell, along the western Atlantic coast are divided into 2 groups, based on head length and pelvic fin length measurements. One group is found off northern New England; the other is found off southern New England, New York, and New Jersey.

Fritz, R.L. 1961. Size distribution by depth of the longfin hake, Phycis chesteri. Copeia 1961 (2): 229-230.

Size of longfin hake found along the continental slope of New England varied with depth with larger fish being found in deeper areas.

Lacroix, G., and A. Marcotte. 1961. Variations regionales et saisonnieres de l'alimentation de la Morue (Gadus morhua L.) a l'entree de la Baie des Chaleurs. Naturaliste Canadien, Vol. 88, No. 10, pp. 225-235.

Seasonal and regional variations in volumes and species composition of cod stomach contents reflect similar variations in the distribution and abundance of the preys. Cumaceans and herring show marked seasonal fluctuations, whereas variations in the occurrence of brittle-stars and benthic amphipods are mostly regional. The occurrence of some Pelecypods, euphausiids and shrimps shows both seasonal and regional variations. Maturity stages do not affect the volume of food taken by cod.

Lundbeck, J. Untersuchungen über die Körperproportionen beim Kabeljau (Investigations on the Body Proportions of cod). - Arch. Fischereiwiss., 12 (1/2): 1-24, Braunschweig 1961

The difference in various body proportions of cod of different stocks are described and discussed. Age-dependent and "race"-dependent characters were found. The cod of West-Greenland shows remarkable similarities to Gadus ogac.

Meyer, A. Erfolgreiche deutsche Kabeljaumarkierungen bei Gronland (Successful German Cod Tagging off Greenland). - Informationen f. d. Fischwirtschaft, 8 (5/6): 124-125, 1961.

See A. Meyer in Hansa, 98 (20): 2170-2172, 1961.

Meyer, A. Erste Ergebnisse der deutschen Kabeljau-Markierungen bei Gronland (First Results of the German Cod-Tagging off Greenland). - Hansa, 98 (20): 2170-2172, 1961.

The first results of the tagging work with Greenlandic cod are described. 1728 cod were tagged within the year from October 1959 to October 1960, mainly off the southwest-, the south- and the southeast coasts of Greenland. Until the end of October 1961, 54 tags came back. The results show the eastward migrations against the current all to be spawning migrations, those with the current in a westward direction being feeding migrations. The recaptures furthermore underline the fact that cod spawning in March/April off East-Greenland and in May off Northwest-Iceland are immigrants from South-Greenland. Long-termed recaptures confirmed the age-determinations and gave interesting details concerning the growth-rates.

Sherman, K., and J.P. Wise. 1961. Incidence of the cod parasite Lernaeocera branchialis L. in the New England Area, and its possible use as an indicator of cod populations. Limnology & Oceanography 6(1): 61-67.

Infestation decreased from north to south and from inshore to offshore. From infestation rates, four general groups of cod were distinguished, supporting tag return data.

#### B. Flat Fishes

Colton, J.B., Jr. 1961. The distribution of eyed flounder and lantern-fish larvae in the Georges Bank area. Copeia 1961 (3): 274-279.

The distribution of Bothus ocellantus and myctophids on Georges Bank was indicative of occasional (seasonal) intrusion of Gulf Stream (tropical) water.

Jensen, A.C. and J.P. Wise. 1961. Movement of tagged halibut off New England - II. Trans. Am. Fish. Soc. 90 (4): 489-490.

Halibut of medium and large sizes make long migrations. Movement from Browns to Grand Bank was noted.

Saila, Saul B. 1961. A study of winter flounder movements. *Limnology and Oceanography* 6 (3): 292-298.

Marketing was used to study movements of winter flounder Pseudopleuronectes americanus (Walbaum). An attempt is made to explain the return of winter flounder to the coast by means of random search, postulating the presence of a reflecting barrier.

### C. Redfish

Dietrich, G., H. Aurich & A. Kotthaus: On the Relationship between the Distribution of Redfish and Redfish Larvae and the Hydrographical Conditions in the Irminger Sea. - ICNAF Special Publ., No. 3: 124-139, 1961 (also: ICES, Rapp. Proc. Verb. Reun., 150: 124-139, 1961).

As per title.

Freund, K. Some observations on the Redfish of the Labrador Region. - *Ibidem*: 140-141, 1961

Fishing grounds, bottom temperatures, composition of the catches by types, sex and length are given and the stomach content is mentioned.

Kotthaus, A. Contribution to the Race Problem in Redfish (Abstract). *Ibidem*: 42-44, 1961.

This paper, to its full extent published already in 1960 (see "Red Book", 1961) contains the results of the meristic and morphometric investigations on redfish collected in West-, and East-Greenland, Iceland-Greenland Ridge, West-, South- and East-Iceland, the Iceland-Faroe Ridge and Rockall Bank. Except for Sebastes viviparus no clear-cut differences between the different forms have been found.

Kotthaus, A. Preliminary Remarks about Redfish Otoliths. - *Ibidem*: 45-50, 1961.

Differences in the shape of otoliths and their growth curves are described for the different types of redfish. Within the same type there is some geographical variation too.

Kreffft, G. A Contribution to the Reproductive Biology of Helicolenus dactylopterus (De la Roche, 1809) with Remarks on the Evolution of the Sebastinae. - *Ibidem*: 243-244, 1961.

Information is given concerning the mode of reproduction of the Blue-throat. There is internal fertilization whereas the reproduction may be either oviparous or viviparous. The genus is understood as a link between the Scorpaeninae and the Sebastinae.

Schaefer, H. A. Biochemical Contribution to the Redfish Problem. - ICNAF Special Publ., No.3: 104-110, 1961 (also: ICES, Rapp. Proc. Verb. Reun., 150: 104-110, 1961).

The concentration of some amino acids in the skeletal muscle of redfish of both the types, mentella and marinus were determined by a quantitative paper chromatographic method, using the copper complex of the ninhydrin coloured spots. Significant differences between the two types, even if caught at the same station, were found suggesting that they represent different populations.

Sinderman, C.J. 1961. Serological studies of Atlantic redfish. U.S. Fish & Wildl. Ser., Bur. Comm. Fish., Fishery Bull. 191, Vol. 61: 347-354.

Individual variations in erythrocyte antigens have been found in redfish, Sebastes marinus, from the western North Atlantic. Two closely related antigens, tentatively labeled A<sub>1</sub> and A<sub>2</sub> were demonstrated with specific reagents created by adsorptions of rabbit antisera. Each reagent would agglutinate cells of only one antigenic type, so it was possible to identify fish as possessing A<sub>1</sub> or A<sub>2</sub> antigen.

D. Others

Boyar, H.C. 1961. Swimming speed of immature Atlantic herring with reference to the Passamaquoddy tidal project. Trans. Am. Fish. Soc. 90(1): 21-26

Maximum swimming speed of herring 60-219 mm. in length was 2.3 - 4.4 feet per second.

Colton, J.B. Jr., K.A. Honey, and R.E. Temple. 1961. The effectiveness of sampling methods used to study the distribution of larval herring in the Gulf of Maine. Jour. du Conseil Vol. XXVI (2): 180-190.

Meter net and Hardy Plankton Recorder catches were analysed to study distribution and abundance of larval herring. Hardy Plankton Recorder catches showed greater herring abundance and provided a more detailed picture of distribution than meter net collections.

Jakob Jakobsson. Icelandic Driftnet Herring Tagging Experiments, Rit Fiskideildar, Vol. II, No. 10, 1961.

Jensen, A.C. 1961. Recaptures of tagged spiny dogfish, Squalus acanthias. Copeia 1961 (2): 228-229.

Movements of dogfish, based on 3.9% recoveries from 205 releases in New England waters are reported. Most movement was small, but one fish was caught 140 miles from release point.

June, F.C. 1961. Age and size composition of the menhaden catch along the Atlantic coast of the United States, 1957, with a brief review of the commercial fishery. U.S. Fish & Wildl. Ser., Bur. Comm. Fish., Spec. Sci. Rept. - Fish No. 373, 39 pp.

As per title.

McKenzie R.A. and S.N. Tibbo. 1961. Herring movements in the Bay of Fundy and Gulf of Maine, 1957 and 1958. J. Fish. Res. Bd. Canada, 18 (2): 221-252.

During 1957 and 1958, 137,469 herring were tagged in the southern part of the Bay of Fundy and the western part of the Gulf of Maine. These fish were immature and ranged in mean total length from 9.9 to 20.0 cm and in age from 1 to 3 years. Recovery of 3,582 (2.6%) tagged individuals showed that herring moved in and out of Passamaquoddy Bay irregularly throughout the summer and autumn with some tendency to concentrate at the head of this bay. Outward movement reached a peak in July when there was a considerable movement eastward towards Point Lepreau. Herring

moved into Passamaquoddy from as far south as Grand Manan and from as far east as Point Lepreau. Little interchange of herring took place between the Passamaquoddy area and the coasts of Maine and Nova Scotia.

Olsen, Steinar. Contribution to the biology of the herring (Clupea harengus L.) in Newfoundland waters. Journal of the Fisheries Research Board of Canada, Vol. 18, No. 1, pp. 31-46, 1961.

A study of the herring of the south and west coasts of Newfoundland in 1957 and 1958 revealed no great fluctuations in relative year-class strength and indicated a fairly high survival rate from the age of recruitment to the fishery. No significant difference in growth rate was demonstrated between the south coast and the region of Bay of Islands and Port au Port Bay. The study indicated an unusual spread in spawning time with probably peaks in spring, autumn and winter, while prior to about 1950 the Newfoundland herring were apparently all spring spawners.

Sinderman, Carl J., and D.F. Mairs. 1961. A blood group system for spiny dogfish Squalus Acanthias L. Biol. Bull. 120 (3): 401-410.

An erythrocyte antigen system of dogfish was recognized and described. The system contains at least 2 antigens; individual fish may have both, either, or neither.

Smith, K.A. 1961. Air-Curtain fishing for Maine sardines. U.S. Fish & Wildl. Ser., Bur. Comm. Fish., Comm. Fish. Review 23 (3): 1-14.

A bubble curtain created by forcing air through a perforated hose on the sea bottom, is described. It has been experimentally used to guide sardines into weirs and seines.

#### IV. SHELLFISH

Dow, R.F. 1961. Some factors influencing Maine lobster landings. U.S. Fish & Wildl. Ser., Bur. Comm. Fish., Comm. Fish. Review 23 (9): 1-9.

A long season may be more economically efficient than a short one. A measurable causal relationship between spring sea water temperature and summer landings is indicated. Long-term landings fluctuations result in variation in fishing effort.

Merrill, A.S. 1961. Shell morphology in the larval and postlarval stages of the sea scallop. Placopectin magellanicus (Gmelin). Bull. Mus. Comparative Zool. 125 (1): 20 pp.

As per title.

O'Brien, J.J. 1961. New England sea scallop fishery, and marketing of sea scallop meats, 1939-60. U.S. Fish and Wildl. Ser., Bur. Comm. Fish., Market News Service, Boston, 48 pp.

The report summarizes data on the fishing from many publications. Detailed landings and marketing data are given

Squires, H.J. Shrimp survey in the Newfoundland fishing area, 1957 and 1958. Fisheries Research Board of Canada, Bulletin No. 129, pp. 1-29, 1961.

An account is given of the results of explorations during 1957 and 1958 in the Newfoundland area for the pink shrimp Pandalus borealis.

#### V. OTHER MARINE ORGANISMS

Kreff, G. Erhaltung der Klappmutzen- und Sattelrobben-Bestände im Nordwestatlantik (Conservation of the hood and harp seal stocks in the Northwest-Atlantic). Ibidem, 8 (4): 95, 1961.

A short notice concerning the proposals made during the Annual Meeting of ICNAF, 1961.

Wigley, R.L. 1961. Benthic fauna of Georges Bank. Trans. of the Twenty-sixth No. Am. Wildlife and Nat. Resources Confer., Mar. 6, 7 and 8, 1961. pp. 310-317.

The bulk of the benthic fauna is composed of 4 major groups: Crustacea, mollusca, Echinodermata, and Annelica. Abundance in terms of depth and substrate is discussed.

#### VI. FISHERIES AND FISHING INDUSTRY

Boulanger, J.M. 1961. La peche a la palangre. Actualites Marines, Vol. 5, No. 1, pp. 9-13.

Contrasting hydrographic conditions on the inshore and offshore slopes of Mecatina Bank are responsible for higher longline catches on the offshore slope. The lower limit of the intermediate cold-water layer on the offshore slope is located at about 60 fathoms and cod are concentrated at depths of 60 to 90 fathoms and at water temperatures of 0° to about 4°C. On the inshore slope of the bank waters of temperature below 0°C extend from 45 fathoms to the bottom at 100 fathoms.

Lundbeck, J. Biologisch-statistischer Bericht über die deutsche Hochseefischerei im Jahre 1960 (Biological-statistical Report on the German Deep-Sea Fishery in 1960). - Jahresbericht über die Deutsche Fischwirtschaft 1960/61: 116-144, Berlin 1961.

As per title.

Meyer, A. Die deutsche Salzfischproduktion 1960 (The German Production of Salt Fish in 1960). - Jahresheft d. deutschen Fischwirtschaft 1961.

As per title.

VII. GEAR

Kreffft, G. Regulierung der Maschenweiten für Schlepp- und Zugnetze im ICNAF-Gebiet (Mesh-regulations for trawl and seine nets inside the ICNAF Area). - Ibidem, 8 (4): 101-102, 1961.

As per title.

VIII. MISCELLANEOUS

Gunnar Boovarsson and Jon Jonsson: Fluctuations in Marine Populations in Icelandic Waters, Nature, Vol. 192, No.4804, pp.768-769, November 25, 1961.

Colton, J.B. Jr., and R.F. Temple. 1961. The enigma of Georges Bank spawning. Limnology and Oceanography 6 (3): 280-291.

The effects of offshore drift, time and location of spawning, vertical distribution of eggs and larvae, and length of pelagic life on the dispersal and survival of eggs, larvae, and juveniles of commercially important food fishes are discussed. Observations on haddock and herring suggest that under average conditions most fish eggs and larvae are carried away from Georges Bank and lost to the fishery.

Kreffft, G. Tagung der Arbeitsgruppe für Umweltforschung im ICNAF-Gebiet (Meeting of the ICNAF Environmental Working Party). Informationen für die Fischwirtschaft, 8 (2/3): 49, 1961.

A short report on the meeting of the Working Party in Aberdeen.

Kreffft, G. Internationales Forschungsprogramm für Westgrönland (An international research program for West-Greenland). - Ibidem: 8 (4): 83, 1961.

A short notice concerning the ICNAF research program for Subarea I in 1963.

Meyer, A. Cod. German Investigations. West Greenland. - ICES Ann. biol., 16 (1959): 135, 1961.

As per title.

Paloheimo, J.E. 1961. Studies on estimation of mortalities. I. Comparison of a method described by Beverton and Holt and a new linear formula. J. Fish. Res. Bd. Canada, 18 (5): 645-662.

A method, described by Beverton (1954) and Beverton and Holt (1956 and 1957), giving estimates of the natural mortality rate,  $M$ , and the catchability coefficient,  $q$ , from catch at age and effort data, is examined. This method requires 4 to 5 iterations to arrive at the estimates. We have derived approximate solutions for  $q$  and  $M$  in a closed form. This makes the laborious iterations unnecessary, and gives virtually the same values as arrived at by iterations.



The effectiveness of the iterative Beverton and Holt method is evaluated by calculating  $q$  and  $M$  in 30 hypothetical examples. A new and simple (linear formula) method for estimating  $q$  and  $M$  is derived. Application of the new method to these 30 examples resulted in a 48% reduction in the standard deviation of  $q$  and a 45% reduction in that of  $M$ . The new method is in part the same as one suggested by Gulland, Beverton, and Holt (Beverton *et al.*, MS.1958; Holt, MS, 1959) to arrive at initial values in their shortcut (iterative) method of estimating the mortality rates. Thus we show that these initial values are actually better estimates than the final values arrived at by the iteration. Neither the Beverton and Holt method nor the linear formula give necessarily unbiased estimates; the bias depends on the types of variability in the data. To arrive at non-biased, least squares estimates would require ancillary information not usually available on the distributions of the three variates: catch at age, effort, and catchability coefficient.

Tiphane, M.

1961. Que savons-nous sur le fond de la Baie-des-Chaleurs. Actualites Marines, Vol. 5, No. 1, pp. 21-25.

Bottom topography and sediments are shown in 10 transverse sections across Chaleur Bay. Relation between topography and current is discussed.

Wigley, R.L.

1961. Bottom sediments of Georges Bank. Jour. Sed. Petrology. 31 (2): 165-188.

Geographic distribution of the various sediment constituents and size particles is discussed. Sands and gravels are the predominant sediment grades.

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