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Preliminary Annotated List of Papers pertinent to ICNAF

compiled in the Secretariat 1/

To date, 14 May 1962, lists of annotated papers pertinent to ICNAF interests and published in 1962 have been received from the following member countries (papers published in ICNAF publications are not considered):

Canada  
Germany  
UK  
USA

In addition, Poland has answered that no paper relevant to ICNAF interests has been published by that country in 1962.

I. HYDROGRAPHY

Breslan, Lloyd R., J.B. Hersey, Harold E. Edgerton and Frances S. Birch. 1962. A precisely timed submersible pinger for tracking instruments in the sea. Deep-Sea Res. 9: 137-144.

The inclusion of a miniaturized precision time source in a standard Edgerton submersible pinger and used in conjunction with a Precision Graphic Recorder or similar device, permits the measurement of direct acoustic travel time as well as the difference in acoustic travel time between the ping and its echo.

Bumpus, Dean F. 1962. Investigations of climate and oceanographic factors influencing the environment of fish. Woods Hole Ocean. Inst. unpublished ms. No. 62-1, 5 pp. (as per title).

1962. Investigations of climate and oceanographic factors influencing the environment of fish. Woods Hole Ocean. Inst. unpublished ms. No. 62-24, 4 pp. (as per title).

Craig, R.E. and Lawrie, R.G. 1962. An underwater light intensity meter. Limnol. Oceanogr., 7, 259-261.

Describes an instrument to measure underwater light from 0.00001 to 100 lux on a single scale.

Dietrich, G. 1962. Fischereihydrographie im Rahmen der internationalen Meeresforschung (Fishery Hydrography within the Scope of International Oceanography). - Ber. Dt. Wiss. Komm. Meeresforsch., 17 (1): 21-26, Stuttgart,

1/ Please submit further lists to the Secretariat during the Annual Meeting, or not later than 15 July, 1963.

L.R. Day,  
Executive Secretary.

Dec. 1962.

A lecture given on occasion of the 60th Anniversary of the DWK.

- Harvey, J.G. 1962. Hydrographic conditions in Greenland waters during August, 1960. Ann. biol., 17, 14-17.  
As title.
- Jordan, G.F. 1962. Large submarine sand waves. Science 136, 839-848.  
Their orientation and form are influenced by some of the same factors that shape desert sand dunes.
- Lauzier, L.M., and J.H. Hull. 1962 Sea temperatures along the Canadian Atlantic coast, 1958-1960. Fish. Res. Bd. Canada, Atlantic Progress Rept., no. 73, 11-15.  
During the years 1958 and 1959 the cooling trend has generally continued along the outer coast of Nova Scotia and in the Bay of Fundy area. Quarterly deviations from long-term averages are plotted in Figure 1 for each one of the monitoring stations for the period 1950-1960. All curves indicate a cooling trend starting at the beginning of the fifties, and relatively warm waters observed in 1960. At Lurcher Lightship the temperature variations of the bottom waters are remarkably similar to those of the surface waters, but they seem to indicate a slightly more pronounced cooling trend than that of the surface waters.
- Lee, A.J. 1962. The effect of wind on water movements in the Norwegian and Greenland Seas. Proc. Symp. on Mathematical-hydrodynamical methods of physical oceanography, Sept. 1961.  
Institut für Meereskunde der Universität, Hamburg.  
Correlations are found between wind and water transport at Bear Island (in summer only) and off South Greenland. No such correlations were found in the winter at Bear Island, or in the Faroe-Shetland Channel.
- Mertins, H.-O. 1962. Nordostorkan bei Kap Farvel (North-East Hurricane off Cape Farvel). - Der Wetterlotse, 14 (187): 145-149.
- " " 1962. Die Sturmhäufigkeit auf den Fischfangplätzen im Jahre 1961 (The frequency of gales on the fishing grounds in 1961). Der Wetterlotse, 14 (187): 155-157.
- Rodewald, M. 1962. Die Anomalie der Luftzirkulation über den nördlichen Meeren des atlantischen Bereiches im Jahre 1960 (Atmospheric Circulation Anomalies in the Northern Part of the Atlantic Region). - Der Wetterlotse, 14 (185): 121-123.
- Worthington, L.V. 1962. Evidence of a two gyre circulation system in the North Atlantic. Deep Sea Res., 9, 51-67.

Data presented suggest that the Gulf Stream

does not turn to the northward after passing the Grand Banks, but continues to flow in a south-easterly direction, and that the currents which pass the Flemish Cap are part of a separate, northerly gyre. Evidence is produced for the existence of a nearly permanent trough of low pressure separating the two gyres. A water budget consistent with the distribution of oxygen is presented.

## II - PLANKTON

Be', Allen W.H.

1962. Quantitative multiple opening- and-closing plankton samplers. Deep-Sea Res., 9, 144-151.

Two quantitative plankton samplers, incorporating identical opening-and-closing principles, have been constructed for serial sampling of zoo-lankton in the upper 1000 m. of water. A pressure-sensitive release mechanism allows horizontal or oblique towing in preselected depth intervals. No messengers are needed. The designs are flexible and may be modified for size of frame opening, number of nets and depth ranges to be sampled.

Brunel, Jules.

1962. Le phytoplancton de la Baie des Chaleurs. Contr. du Min. Chasse et Pêch., No. 91.

Colton, John B., Jr.

and Robert R. Marak. 1962. Use of the Hardy continuous plankton recorder in a fishery research programme. Bull. Mar. Eco., 5(49), 231-246.

Investigations of the drift of haddock eggs and larvae at Georges Bank and an evaluation of the use of the Recorder for research.

Grainger, E.H.

1962. Zooplankton of Foxe Basin in the Canadian arctic. J. Fish Res. Bd. Canada, 19, 377-400.

Zooplankton collections from 100 stations in Foxe Basin and immediately adjacent waters of the eastern Canadian arctic, made in 1955, 1956 and 1957, are considered. Available information on physical oceanography of the region is discussed, especially factors with apparent direct relationship to plankton distribution. Zooplankton standing crop on the two sides of Foxe Basin is estimated, and related to water movement, depth, ice cover and turbidity. Zooplankton quantity within the upper 50 m of the basin is estimated as about 50 mg/m<sup>3</sup>, the western section showing approximately twice the standing crop of the eastern area. Forty-eight species of zooplankton are recorded, dominated numerically by amphipods (12), copepods (10) and medusae (9). Copepods exceed all other groups in biomass, and are represented principally by the species Pseudalibrotus minutus, Calanus glacialis and Calanus hyperboreus. Other especially abundant and widely spread species are

Aglantha digitale and Halitholus cirratus (medusae), Sagitta elegans (chaetognath) and Themisto libellula (amphipod). From the occurrence of plankton species and apparent water movements, it is concluded that Foxe Basin is a region of opposed arctic (polar water) and subarctic (mixed polar and Atlantic water) elements, the former entering the basin from the north and dominating most of the north and central parts of the region, the latter entering from the south and influencing chiefly the southernmost part of the basin but probably extending as a minor element up the east side to the northern limits of Foxe Basin. Differences in the zooplankton development in different years are related in part to variations in duration of ice cover.

Marak, R.R. and J.B. Colton, Jr. 1962. Distribution of fish eggs and larvae, temperature and salinity in the Georges Bank-Gulf of Maine area 1953. U.S. Fish and Wildl. Service, Special Sci. Rept., Fisheries No. 398: 61 pp. (as per title).

Marak, Robert R., John B. Colton, Jr., and Donald B. Foster. 1962. Distribution of fish eggs and larvae, temperature, and salinity in the Georges Bank-Gulf of Maine area, 1955. U.S. Fish and Wildl. Service, Spec. Sc. Rept. Fisheries No. 411, 66 pp.

Basic data on the distribution of fish eggs and larvae in the Georges Bank-Gulf of Maine area were collected on surveys made by the Bureau of Commercial Fisheries research vessel Albatross III during the spring of 1955. The data are presented in tabular and graphic form. Plots and tables of surface temperature and salinity are also included.

Marak, Robert R., John B. Colton, Jr., Donald B. Foster, and David Miller. 1962. Distribution of fish eggs and larvae, temperature, and salinity in the Georges Bank-Gulf of Maine area, 1956. U.S. Fish and Wildl. Service, Spec. Sc. Rep. Fisheries No. 412, 95 pp.

Basic data on the distribution of fish eggs and larvae in the Georges Bank-Gulf of Maine area were collected on surveys made by the Bureau of Commercial Fisheries research vessel Albatross III during the spring of 1956. The data are presented in tabular and graphic form. Plots and tables of surface temperature and salinity are also included.

Steele, J.H. and Menzel, D.W. 1962. Conditions for maximum primary production in the mixed layer. Deep Sea Res. 9, 39-49.

Theoretical relations are developed which determine primary production in terms of the depth of the mixed layer and of nutrient limitation.

Wood, E.J. Ferguson. 1962. A method for phytoplankton study. Limnol. Oceanogr. 7, 32-35.

A method for quantitative and qualitative investigations of phytoplankton which can be employed at sea on fresh material is described.

III. FISHES

A. Cod Group

- Anon. 1962. Die deutschen Kabeljauuntersuchungen bei Grönland 1960 (The German Cod Investigations off Greenland in 1960). AFZ, 14 (24): 18-19, Bremerhaven, June 16.
- As per title.
- Anon. 1962. Wanderungen grönländischer Kabeljau (Migrations of Greenlandic Cod). - AFZ, 14 (10): 15-16, Bremerhaven, March 10.
- A short review of Dr. Meyer's tagging experiments.
- Fritz, Raymond L. 1962. Silver hake. U.S. Fish and Wildl. Service, Fishery Leaflet No. 538, 7 pp.
- Discusses distribution and movements, spawning, tagging, growth, feeding and the fishery for silver hake.
- Gulland, J.A. 1962. Trans-Atlantic journey of a tagged cod. Nature, 195, 921.
- A cod tagged in the North Sea in June 1957 was recaptured by a Polish factory trawler off Newfoundland in December, 1961.
- Hoberman, John M. and Albert C. Jensen. 1962. The growth rate of New England pollock. Trans. Amer. Fish. Soc. 91, 227-228.
- The scales and fork lengths of 299 American pollock from seven locations in the Gulf of Maine were analyzed to determine the growth rate.
- Jean, Yves. 1962. Discards of cod at sea. Fish. Res. Bd. Canada, Biological Station, St. Andrews, N.B., General Series Circular No. 37, 3 pp. (Also printed in French)
- The quantity of small cod discarded at sea by fishermen in the southwestern Gulf of St. Lawrence has changed. Prior to 1947 cod were taken by hook and line, and wastage of cod was small. By 1956 otter trawling was an important fishing method in this area, and in that year about 7 million cod were discarded at sea because small-mesh nets were used and small fish were not marketable. By 1961 discarded cod were reduced to about 1 million fish because fishermen were required to use large-mesh nets and smaller cod became acceptable to fish buyers.
- Jensen, Albert C. and John P. Wise. 1962. Determining age of young haddock from their scales. U.S. Dept. Interior, Fish and Wildl. Service, Fish. Bull. 195, 61: 439-450.
- The history of age determinations of haddock from various areas is discussed, with a resumé of the previous work in New England and adjacent areas. Various methods of validation of age determination

of haddock in New England waters are considered and evaluated. It is concluded that scales provide a satisfactory indication of the age of these fish, particularly for their first 5 years.

- Jones, R. 1962. Haddock bionomics. 2. The growth of haddock in the North Sea and at Faroe. Mar. Res. Scot., 1962, no. 2, pp. 19.

The growth of haddock in the North Sea and at Faroe, with particular reference to growth differences between different sub-areas and years.

- Livingstone, Robert, Jr. 1962. Underwater television observations of haddock (Melanogrammus aeglefinus (Linnaeus)) in the cod-end. J. Cons. int. Explor. Mar., 27:43-48.

In general, haddock entered the cod-end near the top in loose groups numbering between 3 to 26 individuals, rather than continuously, at an average rate of one fish every 1.6 seconds. Two distinct swimming patterns were recorded; one in which individuals swam from side to side and generally avoided the meshes, and another in which individuals headed downstream to the end of the cod-end. Approximately 58% of the haddock responded to the moving cod-end meshes by keeping pace with the net.

- Meyer, A. 1962. Bisher 3.7% Rückmeldungen der Kabeljaumarkierungen von Grönland (Up till now 3.7% Returns of Tagged Greenlandic Cod). AFZ, 14:22, Bremerhaven, June 1.

As per title.

- O'Brien, John J. 1962. New England whiting fishery, and marketing of whiting products, 1946-61. U.S. Fish and Wildlife Service, Bur. of Comm. Fish., Market News Service, Spec. Rep. 39 pp (Mimeo).

A special report of landings and ex-vessel prices of the whiting fishery in New England; primary wholesale prices, stocks, market trends, and receipts on some wholesale markets.

- Templeman, Wilfred, and A.M. Fleming. 1962. Cod tagging in the Newfoundland area during 1947 and 1948. J. Fish. Res. Bd. Canada, 19, 445-487.

Cod were tagged in the Newfoundland and Labrador inshore areas and on the Grand Bank and St. Pierre Bank. Most cod tagged in the inshore areas were recaptured close to the tagging areas with a gradual increase with time in the average minimal distance moved.

Following the tagging year, the greatest number of recaptures of cod tagged inshore was in shallow inshore waters from June to September. Through late summer to winter and early spring there were more recaptures from the deeper water.

Cod were tagged either with an internal bachelor button tag through the opercular bone or with an internal 2-inch flat tag inserted through a slit in the body wall. Injuries at

the point of insertion were often quite severe for the external tag but generally mild for the internal tag. The internal tags gave fewer returns than the external in the tagging year but the opposite was generally true for the years following.

Although cod were recaptured almost immediately after being tagged from traps, those tagged from handlines and longlines were not caught by baited hooks for 7-10 days afterwards. An inverse relationship exists between the length of otter-trawl drag from which fish were tagged and the percentage recaptures.

#### B. Flat Fishes

Miller, David and Robert R. Marak. 1962. Early larval stages of the fourspot flounder, Paralichthys oblongus. Copeia 1962, 454-455.

As per title.

#### C. Redfish

Anon. 1962. Uber das Vorkommen von Jugendstadien des Rotbarsches (On the Distribution of Redfish Larvae). AFZ, 14 (24): 19-20, Bremerhaven, June 16.

A short review of the Icelandic-German Redfish Larvae Survey in the North Atlantic.

Henderson, G.T.D. 1962. Sebastes in continuous plankton records in 1960. Ann. biol., Copenhagen, 17(1960), 81-83, 1962.

Samples at monthly intervals in the Iceland-Irminger Sea/Greenland area to the Newfoundland Banks give average numbers of young S. marinus per 10 m<sup>3</sup> in statistical rectangles, and percentage size frequency composition of the Recorder catches. (This paper was published in Denmark by the International Council for the Exploration of the Sea).

Seydlitz, H. von. 1962. Untersuchungen über die Tagesperiodizität des Rotbarsches, Sebastes marinus, auf Grund von Fanganalysen (Investigations on the Daily Periodicity of the Redfish according to analyses of catches). Kurze Mitteil. Inst. Fischereibiologie Univ. Hamburg, Nr. 12: 27-35, Hamburg, Dec.

Analyses of the redfish catches of German exploring trawlers in 1958-1960 showed that catches in the waters off Labrador and West Greenland by day were better than at night. Catches off East Greenland did not show such a periodicity.

#### D. Others

Bevelander, Gerrit and Richard J. Goss. 1962. Influence of tetracycline on calcification in normal and regenerating teleost scales. Nature, 1098-1099.

Tetracyclines administered to biological systems have an affinity for calcified tissues,

inhibit calcification, and fluoresce under ultra-violet illumination. These properties facilitate the investigation of growth and regeneration of scales in Fundulus heteroclitus.

Boyar, H.C.

1962. Blood cell types and differential cell counts in Atlantic herring, Clupea harengus harengus. Copeia 1962, 463-465.

The various blood cell types and their frequency of occurrence in herring of three length groups are described.

Brawn, Vivien M.

1962. Physical properties and hydrostatic function of the swim-bladder of herring (Clupea harengus L.). J. Fish. Res. Bd. Canada, 19, 635-656.

Living herring at the depth of adjustment had a mean sinking factor of 1003, density of 1.026 g/ml, relative sensitivity of 0.8 and percentage swim-bladder volume of 4.2. Neutral buoyancy was attained at a mean pressure reduction of 5.5% from the adjusted pressure. Swim-bladder gas was under an average excess pressure of 1 cm Hg. Gas was released through the posterior swim-bladder duct during pressure reduction in 105 out of 109 herring observed. Gas release occurred at a mean pressure decrease of 6% in rapidly swimming herring, at 32% in moderately swimming fish and brought the herring to within 19% of perfect adjustment to a new reduced pressure within half an hour. Herring could compensate for their increased buoyancy during pressure decrease until this was reduced by gas release. Decompression at rates up to 123 cm Hg/sec was not fatal after 16 hours at the greater pressure. No recovery of buoyancy after gas loss occurred in herring held 24 hours in running sea water even if fine air bubbles were present. Recovery occurred if these fish had access to the surface. Gas production by bacterial activity as a means of restoring buoyancy was not established.

Herring responded to rapid pressure increases by swimming upwards. They could compensate for their increased density following pressure increase of 300% and survive increases of 430%. Herring from 10 to 25 feet depth at sea were positively buoyant at surface pressure when anaesthetized. Thus in nature herring are adjusted to pressures greater than surface pressure. It is suggested that they take in air when feeding at the surface at night and slowly pass this to the swim-bladder on returning to greater depths by day.

Das, Naresh, and S.N. Tibbo. 1962. On the feeding and growth of young herring (Clupea harengus L.) in captivity. J. Fish. Res. Bd. Canada, 19, 981-983.

Results of a preliminary study of young herring in captivity show that they can be kept alive with a steady increase in body length.

During the first 42 days of the experiment the increase in mean body length was only 0.4 cm. This small amount of growth can be attributed to the fact



that the fish passed through a period of starvation during that time. During the whole 89-day period, however, mean length increased by 3.0 cm. The table shows that there was a decrease in growth rate between mid August and mid September. This was probably the result of an observed decrease in food intake during September. During the same period there was a significant rise in the water temperature which was not controlled during the experiment.

Graham, T.R.

1962. A relationship between growth, hatching and spawning season in Canadian Atlantic herring. (Clupea harengus L.). J. Fish. Res. Bd. Canada, 19, 985-987.

Evidence is presented to show that the season at which Chaleur Bay herring spawn is not necessarily the same as the hatching season, and is influenced or determined by the rate of growth in the first year, as shown by scales and otoliths. An increase in the relative amount of autumn-hatching and spawning has taken place, and mean length has also increased. There appears to be a definite relationship between growth, hatching and spawning season in the Chaleur Bay herring stock.

Major, Richard L. and Donovan R. Craddock. 1962. Marking sockeye salmon scales by short periods of starvation. U.S. Fish and Wildl. Service, Spec. Sci. Rep. Fisheries No. 416, 12 pp.

Experiments conducted at the Leavenworth, Washington, national fish hatchery in 1959 and 1960 demonstrated that the scale pattern of Columbia River sockeye salmon Oncorhynchus nerka can be recognizably modified by a short period of starvation. Modification was obtained with little mortality.

Mather, Frank J., III, and Martin R. Bartlett. 1962. Bluefin tuna concentration found during a long-line exploration of the northwestern Atlantic slope. Comm. Fisheries Rev. 24(2): 1-7.

Results are given for fishing 14 exploratory long-line sets during November 1960, in or near the slope water between Cape Hatteras, North Carolina, and the Nova Scotia Banks. Water temperatures and salinities are listed for each station.

Parrish, B.B.

1962. Problems concerning the population dynamics of the Atlantic herring (Clupea harengus L.) with special reference to the North Sea. Brit. Ecol. Soc. Symp., no. 2, 3-28.

Discussion of the complex changes in the composition of herring stocks coinciding with the decline in the British drift net fishery and of the problems involved in assessing the effects of fishing.

Southward, G. Morris. 1962. Photographing halibut otoliths for measuring growth zones. J. Fish Res. Bd. Canada, 19, 335-338.

Apparatus is described for clearing and

photographing halibut otoliths for use in growth studies.

- Steele, J.H. 1961. The environment of a herring fishery. Mar. Res. Scot., 1961, no. 6, pp.19.

Plankton and herring distributions are studied in relation to the sharp boundary between Atlantic and Baltic water masses in the North Sea.

#### IV. SHELLFISH

- Bourne, N., and A. McIver. 1962. Gulf of St. Lawrence scallop explorations -- 1961. Fish. Res. Bd. Canada, Biological Station, St. Andrews, N.B., General Series Circular, No. 35, 4 pp. (Also published in Canadian Fisherman, 49, 17-19, 1962 as "Gulf Survey for Sea Scallops")

Five beds in the southern Gulf of St. Lawrence are sufficiently well stocked with commercial-size scallops to make small-boat scallop fishing worth while in 1962. On 4 of these beds there were also large numbers of small scallops, indicating that profitable fishing might be continued into 1963.

- Dow, Robert L. 1962. A method of predicting fluctuations in the sea scallop populations of Maine. Comm. Fisheries Rev. 24(10), 1-4.

During the past 80 years the inshore sea scallop fishery in Maine has alternated at about decade intervals between extremes of high and low landings. Trends of sea water temperature closely parallel declines and increase in the relative abundance of sea scallops as indicated by landings and suggest an optimum range as well as unfavorable high and low temperatures.

- Hughes, John T. and George C. Mathiessen. 1962. Observations on the biology of the American lobster, Homarus americanus. Limnol. Oceanogr. 7, 414-421.

Presents data from records of the Massachusetts State Lobster Hatchery, Oak Bluffs, Massachusetts, on seasonal occurrence of hatching, duration of larval period, occurrence of moulting with age and season, and rates of growth.

- Shaw, William N. 1962. Raft culture of oysters in Massachusetts. U.S. Dept. Interior, Fish and Wildl. Service, Fish. Bull. 197, vol. 61: 481-495.

The possibility of growing oysters attached to rafts was tested and found commercially feasible as a method of culture that might be useful in reviving the declining oyster industry in Massachusetts.

- Squires, H.J. 1962. Giant scallops in Newfoundland coastal waters. Bull. Fish. Res. Bd. Canada, 135, 29 pp.

Exploratory fishing in 1957 and 1958 around Newfoundland showed several promising areas on the west coast but fewer and smaller areas on the southwest coast, and no areas on the northeast and east coast where beds of giant scallops (*Placopecten magellanicus* Gmelin) were present.

#### V. OTHER MARINE ORGANISMS

Colton, John B., Jr., Robert F. Temple, and Kenneth A. Honey. 1962. The occurrence of oceanic copepods in the Gulf of Maine-Georges Bank area. Ecology 43, 166-171.

Lists species, frequency of occurrence, relative abundance, and distribution of oceanic copepods in the Gulf of Maine-Georges Bank area. The distribution and abundance of the various copepod species yield direct evidence of an intrusion of oceanic water across the southern edge of Georges Bank and into the Gulf of Maine.

Dow, Robert L. 1962. Use of environmental and economic factors to check biological fluctuations in Maine lobster population. Comm. Fisheries Rev. 24(8), 6-8.

Average April-May sea water temperature is associated with the number of lobsters available to the post-moult July-August fishery. The July-August supply regulates the summer price, which, in turn, influences fishing intensity during both the lobster seasonal year (July-June) and the calendar years following.

Since it is possible to predict landings, and, by inference, available abundance, by the measurable variables: temperature, landed value, and fishing intensity, any significant ( $\pm 10$  percent) deviation from prediction is indicative of probable biological changes; i.e. frequency of moult, natural mortality, or year class survival.

Hoffman, Glenn L. and Carl J. Sindermann. 1962. Common parasites of fishes. U.S. Fish and Wildl. Service, Circular No. 144, 17 pp.

Discusses different parasites of marine and freshwater fish separately. Each category is organized into parasites of the body surfaces and gills, parasites of the body muscles, and parasites of the viscera.

Kabatz, Z. 1962. The mouth and the mouth-parts of Lernaeocera branchialis (L.), a parasitic copepod. Crustaceana, 3, 311-317.

Prefontaine, Georges et Pierre Brunel. 1962. Liste d'invertébrés marins recueillis dans l'estuaire du Saint-Laurent de 1929 à 1934. Contr. Min. Chasse et Pêch., Québec, No. 86. Le Naturaliste canadien, Vol. 89, nos. 8-9.

A list of invertebrates collected in the St. Lawrence estuary.

Rae, B.B. 1962. The effect of seal stocks on the Scottish marine fisheries. Brit. Ecol. Soc. Symp., no. 2, 306-311.

Describes kinds of damage to fisheries and quantity of fish eaten by seals. Refers to the spread of nematode infestation of cod due to seals.

Sindermann, Carl J. and Alva E. Farrin. 1962. Ecological studies of Cryptocotyle lingua (Trematoda: Heterophyidae) whose larvae cause "pigment spots" of marine fish. Ecology 43, 69-75.

Examination was made of seasonal variations in incidence of larval Cryptocotyle lingua in the snail Littorina litorea. Experimental studies of factors that might influence emergence of infective cercariae from the snail host are included.

Squires, H.J. 1962. Decapod crustacea of the Calanus expeditions in Frobisher Bay, Baffin Island, 1951. J. Fish. Res. Bd. Canada, 19, 677-686.

Specimens collected by trawl and dredge on the Calanus Shelf and by plankton net at Potter Island were mostly of the family Hippolytidae; especially abundant was Lebbeus groenlandicus. Their size distribution was similar to those from Ungava Bay but maturity was apparently later and at a somewhat larger size. Stations at the shallower parts of the shelf yielded the greater number of specimens of decapods, those on the outer slope few decapods and a deeper station shoreward from the shelf no decapods at all.

Teal, J.M. and K. Halcrow. 1962. A technique for measurement of respiration of single copepods at sea. J. Cons. int. Explor. Mer., 27, 125-128.

The method involves the use of polarographic oxygen electrodes and has yielded results comparable to those obtained by other workers, using similar experimental material.

## VI. FISHERIES AND FISHING INDUSTRY

Anon. 1962. Fischerei in NW-Atlantik (Fishery in the NW Atlantic). AFZ, 14(13): 35-36, March 31.

As per title.

Anon. 1962. Die Zukunft der Hochseefischerei (The Future of the Deep Sea Fishery). AFZ, 14(13): 33-34, March 31.

As per title.

Anon. 1962. Die Fischerei im NW-Atlantik (The Fisheries in the NW-Atlantic) AFZ, 14(49):17-18, Bremerhaven, Dec. 8.

Deals with the catches of Cod, Haddock and

Redfish by different countries in the ICNAF-Area.

Anon.

1962. Starke Expansion der grönländischen Fischerei (The Fisheries off Greenland heavily expanded). AFZ, 14(22/23): 15, Bremerhaven, June 8.

As per title.

Beverton, R.J.H.

1962. Long-term dynamics of certain North Sea fish populations. Brit. Ecol. Soc. Symp. 2

Examines the trends in North Sea catches of cod, plaice and turbot (steady), sole (increasing) and haddock (decreasing). The possible controlling factors of the plaice population are examined and the most likely control is density-dependent mortality in the young larvae.

Büttner, S.

1962. Die deutsche Hochseefischerei im Jahre 1961 (The German Deep Sea Fishery in 1961). - Jahresber. Dt. Fischwirtschaft 1961/62: 250-256, Berlin, Oct.

As per title.

Dickie, L.M.

1962. Effects of fishery regulations on the catch of fish. Economic Effects of Fishery Regulations, FAO Fish. Rept. No. 5, 102-133, Rome.

The biological theories or "models" underlying fisheries regulations are classed here into two major types, termed the logistic and the dynamic-pool type models. They postulate a different relationship between population size and rate of natural production, hence may sometimes lead to a different diagnosis of fishery conditions, a different judgment of the need for and best kind of regulation, and predicted different effects of regulation. There are no fully satisfactory objective criteria for making choices between the models. A review of past applications suggests that choice has depended largely on investigator's judgment of the fishery complexity, and the state of data collection concerning it. The logistic-type model has generally been fitted to the more complex or less well known situations. Where data are available, the dynamic-pool model has often been preferred because of its inherently more analytic approach.

Comparison of the two models suggests that in fisheries where size at first capture can be manipulated, the simple logistic model may describe too limited a range of population and production relationships. However, experience with some fisheries suggests that interactions among forces controlling population size lead to fewer possible equilibrium states than are predicted by the simple dynamic-pool models.

Differences between the two types of models are not as great as appears from comparison of their simplest forms. They reflect a difference in the relative importance that investigators ascribe to forces controlling population size rather than

fundamental disagreement about the nature of population control. However, pending their further development, there remains the possibility of conflicting results from the two models applied to the same fishery. This is illustrated by reference to published studies of the Pacific halibut fishery. Where there are such differences, there would appear to be particular obligations for thorough testing of the consequences of regulation.

Lundbeck, J. 1962. Biologisch-statistischer Bericht über die deutsche Hochseefischerei im Jahre 1961 (Biological-statistical Report on the German Deep Sea Fishery in 1961). Jahresber. Dt. Fischwirtschaft 1961/62: 119-150, Berlin, Oct.

Lundbeck, J. 1962. Biologisch-statistische Untersuchungen über die Deutsche Hochseefischerei. IV Die Entwicklung der Hochseefischerei in fangtechnischer, räumlicher und biologischer Hinsicht. 6. Die Fernfischerei (Biological-statistical Investigations on the German Deep Sea Fisheries. IV The Development of the Deep Sea Fisheries with Respect to Techniques, Space, and Biology. 6. The Distant Fisheries). Ber. Dt. Wiss. Komm. Meeresforsch., 16 (4): 251-338, Stuttgart, Nov.

This is another part of the author's well-known contribution to the knowledge of the history of the German Deep Sea Fisheries by aids of biologic-statistical investigations. It deals with the development of the fisheries in the distant waters including those of the ICNAF-Area.

Meseck, G. 1962. Die fischwirtschaftspolitik im Jahre 1961/62 (Fishery Policy in 1961/62). - Jahresber. Dt. Fischwirtschaft 1961/62: 7-17, Berlin, Oct.

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A lecture given on the occasion of the 60th anniversary of the DWK.

Messtorff, J. 1962. Zur Fischerei von morgen (Fisheries of Tomorrow). - AFZ, 14 (47): 24-25, Bremerhaven, Nov. 24.

A discussion of the future development and possibilities of the deep sea fisheries.

Meyer, A. 1962. Die deutsche Salzfischproduktion 1961 (The German Production of Salt Fish). - AFZ, 14 (1/2): 62-64, Bremerhaven, Jan. 13.

As per title.

Meyer, A. 1962. Grönland 1961 an erster Stelle der deutschen Fischereigebiete. Auch weiterhin gute Aussichten (Greenland in 1961 on the First Grounds fished by Germany. Still good prospects). - Hansa, 99(8): 865-868.

As per title.

Meyer, A. 1962. Grönland jetzt an erster Stelle der Fanggebiete deutscher Fischdampfer (Greenland takes the First Place now amongst the Fishing Areas of German Trawlers). - AFZ, 14(21): 21-22, Bremerhaven, June 1.

As per title.

Sommer, K. 1962. Die See- und Küstenfischerei und die Fischversorgung der Bundesrepublik Deutschland im Jahre 1961 (The Sea- and Coastal Fisheries as well as the Fish Supply in the Federal Republic of Germany in 1961) - Jahresber. Dt. Fischwirtschaft 1961/62: 22-110, Berlin, Oct.

A statistical review of the German Fisheries in 1961.

## VII. GEAR

Anon. 1962. Erörterungen über Maschenerweiterung im nordwestlichen Fischereigebiet (Discussions on bigger Mesh-Sizes in the ICNAF-Area). AFZ, 14(47): 73, Bremerhaven, Nov. 24.

Gives the results of the ICNAF Assessment Group's Report.

Beverton, R.J.H. et al. 1962. North-western Working Group report. ICES Cooperative Research Report No. 1.

Describes assessments made of the state of the stocks, and the effect of changes in mesh size for the fisheries of the north-western part of the ICES area, including East Greenland.

Bohl, H. 1962. Rotbarsch-Selektionsexperimente mit Grundschieppnetzen unter Ostgrönland (Redfish-Selectivity Experiments with Bottom-Trawls off East Greenland). Inform. f.d. Fischwirtschaft, 9(1/2): 25-27.

Bohl, H. 1962. Untersuchungen über die Selektivität von Grundschieppnetzen in der Rotbarschfischerei unter Ostgrönland (Investigations Concerning the Selectivity of Bottom Trawls in the Fisheries for Redfish off East Greenland). - Protokolle zur Fischereitechnik, 8 (35): 34-47.

Both publications deal with the same experiments as given as Document No. 40 to the ICNAF Annual Meeting, June 1962.

Brock, Vernon E. 1962. On the nature of the selective fishing action of longline gear. Pacific Science 16, 3-14.

The selective capture of large fish by long-line gear is described and various causes for this are discussed.

Caldwell, David K. and Charles R. Carlin. 1962. A photomicrographic adapter for stereomicroscopes useful in photographing fish larvae. Copeia 1962, 445-446.

Describes a modified device which provides a simple, inexpensive adapter for mounting a single-lens reflex camera directly to one eyepiece barrel.

Cushing, D.H. 1962. Fishing gear and fish behaviour. Proc. World Sci. Meet. on the Biol. of Sardines and related species. Vol. III, 1307-26.

Colton, J.B., and Marak, R.R. 1962. Use of the Hardy Continuous Plankton Recorder in a fishery research programme. Bull. Mar. Ecol., 5(49), 231-246, 1962.

Investigations of the drift of haddock eggs and larvae at Georges Bank and an evaluation of the use of the recorder for research.

Dickson, W. 1962. How much warp will a winch hold? World Fishing, 11(12), 48.

The useful fishing length of warp between towing block and otterboards is calculated from the dimensions of the winch and the warp. Practical examples are given.

Frolander, H.F. and Ivan Pratt. 1962. A bottom skimmer, Limnol. Oceanogr. 7, 104-106.

Constructional details and description of a bottom-skimming sled equipped with a suitable collecting net used to secure quantities of newly settled meroplanktonic forms, as well as species that normally live on the bottom.

Garner, J. 1962. How to make and set nets, or the technology of netting. pp. 95, Fishing News (Books) Ltd., 1962.

Hanks, Robert W. 1962. A mounting device for recording instruments. Progressive Fish-Culturist, 24: 137-138.

Construction details, with several suggested methods of installation, are given for an economical, portable, yet stable and rugged, instrument stand to meet conditions along northern coastlines.

Jones, F.R.H. and McCartney, B.S. 1962. The use of electronic sector-scanning sonar for following the movements of fish shoals: Sea trials in R.R.S. DISCOVERY II. J. Cons. int. Explor. Mer., 27, 141-9.

McDermott, John P. 1962. Aluminum punch strip method for measuring fish. Progressive Fish-Culturist, 24, 87.

Fish lengths are recorded by punching small dents in the aluminum strip. To read fish lengths a clear plastic overlay marked in whole centimeters is placed over the aluminum strip. A count of dents between the divisions of the overlay gives the total number of fish falling in each length increment.

Merna, James W. 1962. Quantitative sampling with the orange-peel dredge. Limnol. Oceanogr., 7, 432-433.

Presents data showing the relationship between the volume of sand collected and the surface area sampled by a No. 3 orange-peel dredge.



Rathjen, Warren F. and L.A. Fahlen. 1962. Progress report on midwater trawling studies carried out of the New England coast in 1961 by M/V Delaware. Comm. Fisheries Rev., 24(11): 1-11.

The principal objective of the work was to modify midwater trawling gear so that it could be controlled accurately. A depth-sounder transducer was mounted on the headrope of a trawl to allow a constant check to be made on the relation of the net to the bottom and to fish schools. In limited fishing trials, carried out with the transducer-equipped net, over 25 species of marine animals were sampled.

Schack, I. 1962. Die deutsche Fischereiflotte nach dem Stande vom 31. Dezember 1961 (The German Fishing Fleet at the End of 1961). - Jahresber. Dt. Fischwirtschaft 1961/62: 119-150, Berlin, Oct.

As per title.

Skud, Bernard E. 1962. Scientists answer questions on herring seining. National Fisherman - Marine Coast Fisherman, May, 3-4.

Studies by fishery scientists of the Bureau of Commercial Fisheries Biological Laboratory in Boothbay Harbor, Maine, combined with the knowledge gained from other fisheries indicate that the utilization of purse seine gear in the Maine sardine fishery will not have a detrimental effect on the abundance of fish.

Stephens, K. 1962. Improved tripping mechanism for plastic water samplers. Limnol Oceanogr. 7: 484

Describes an improved tripping mechanism for Van Dorn type water samplers.

Stubbs, A.R. and Lawrie, R.G.G. 1962. Asdic as an aid to spawning ground investigations. J. Cons. int. Explor. Mer. 27, 248-260, 1962.

Describes a sea-bed survey by asdic of the Ballantrae Bank (Clyde, Scotland) herring spawning ground. Comparisons are made with the results of conventional sea-bed sampling.

Wales, Joseph H. 1962. Forceps for removal of trout stomach content. Progressive Fish-Culturist. 24, 171.

Describes forceps used to remove stomach contents of live trout without injury to the fish.

#### VIII. MISCELLANEOUS

Anon. 1962. Actualités marines, Vol. 6, No. 1 and 2. Min. Chasse et Pêch., Québec. Popular reviews -- including zooplankton and effects of otter trawling on the bottom.

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- Continued series of multigraphed papers -- gill netting and oceanography.
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- Bahr, K. 1962. Rückblick auf die Entwicklung der Deutschen Wissenschaftlichen Kommission für Meeresforschung (DWK) in sechs Jahrzehnten (Retrospect on the Development of the German Scientific Commission for the Exploration of the Sea (DWK) in six decades. Ber. Dt. Wiss. Komm. Meeresforsch., 17(1): 34-44, Stuttgart, Dec.
- As per title.
- "Buckmann, A. 1962. Praktische Probleme der Fischereibiologie im Zusammenhang mit der Entwicklung der Fischerei (Practical Problems of Fishery Biology in Connection with the Development of the Fisheries). Ber. Dt. Wiss. Komm. Meeresforsch., 17(1): 14-20, Stuttgart, Dec.
- A lecture given on occasion of the 60th Anniversary of the DWK.
- Burke, Jack D. 1962. A simple technique for immobilizing fish to remove blood. Copeia 1962, 852-854.
- Describes a "home-made" holding board.
- Claussen, J. 1962. 60 Jahre Deutsche Wissenschaftliche Kommission für Meeresforschung (60 Years of Work in the German Scientific Commission for the Exploration of the Sea). Ber. Dt. Wiss. Komm. Meeresforsch., 17 (1), Stuttgart, Dec.
- As per title, a lecture.
- Darnell, Rezneat M. and Richard R. Meierotto. 1962. Determination of feeding chronology in fishes. Trans. Amer. Fish. Soc. 91, 313-320.
- A method is presented for determining the 24-hour chronology of feeding intensity in natural populations of fishes based upon stomach food analyses and digestion rate experiments.
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dynamics of exploited fish populations.

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- Jensen, Albert C. 1962. Marking and tagging fishes. U.S. Fish and Wildl. Service, Fishery Leaflet No. 534, 8 pp.  
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- Lander, Robert H. 1962. A method of estimating mortality rates from change in composition. J. Fish. Res. Bd. Canada, 19, 159-168.  
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- Linn, D. Wayne 1962. Prevention of clot while collecting fish blood. Progressive Fish-Culturist, 24, 73.  
Fish blood is kept flowing and no components are lost by using heparin-soaked toothpicks and cotton swabs on the wound and in blood containers.
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- Paulik, G.J. 1962. Use of the Chapman-Robson survival estimate for single- and multi-release tagging experiments. Trans. Amer. Fish. Soc., 91, 95-98.  
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