



Serial No. 869  
(D. c. 1)

Document No. 21

ANNUAL MEETING - JUNE 1961

Oceanographic Observations by Fisheries Research Board of Canada  
in the ICNAF Area during 1960

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The present report is the annual compilation of the types of oceanographic observations made by the various establishments of the Fisheries Research Board of Canada in the ICNAF area during the year 1960. The Biological Stations at St. Andrews, N. B., and at St. John's, Newfoundland, and the Atlantic Oceanographic Group at Halifax, N. S., were engaged in the collection of data.

As shown in Table I, the ships and vessels used by the Fisheries Research Board of Canada for the collection of oceanographic data during 1960 were: C.N.A.V. "Sackville", C. G. S. "A. T. Cameron", M. V. "Investigator II", M. V. "Harengus", M. V. "Marinus", M. B. "Pandalus II" and M. B. "Mallotus". The C.N.A.V. "Sackville" was engaged in oceanographic cruises only while the other vessels were engaged most of the time in fishing operations or in plankton surveys. Similarly to previous years' operations, the "Investigator II" was engaged in oceanographic surveys of the Grand Banks area. During most of the "Sackville" cruises, the regular temperature and salinity distribution studies were augmented by studies in chemical and geological oceanography. The emphasis given to plankton collections has increased during 1960. Observations have been taken in Sub-areas 1, 2, 3, 4 and 5 during at least 12 cruises, with a total of over 350 samples collected between March and December. However, the repeated inshore plankton surveys are not included in this total.

Because of the very large number of stations occupied during the year the presentation of station positions in chart form was most convenient to show the distribution of stations over the ICNAF area during each quarter of the year.

Station positions for observations in the low latitudes of the ICNAF area were plotted in chart 1, 2, 3 and 5 for each quarter of the year, respectively. Station positions for observations in the northern regions were plotted in chart 4 for the third quarter.

The types of observations are shown on the charts by distinctive symbols. There are four types of observations:

- a) hydrographic station, temperature and salinity at standard depths, and a bathythermograph cast;
- b) a bathythermograph cast and a bottom salinity and/or temperature;
- c) a bathythermograph cast only;
- d) daily monitoring stations.

There are a few positions not plotted because of the closeness of the stations on this small-scale chart. Repeated observations at one point are shown by only one symbol on the chart. Daily observations at monitoring stations are shown on the chart, but not accounted for in Table II. Daily surface temperature observations were carried out

.../2

at the following monitoring stations: St. Andrews, N. B., "Lurcher" Lightship, "Sambro" Lightship, Halifax Harbour, N. S., Entry Island, Que., Port Borden, P.E.I. and St. John's, Newfoundland.

The number of various types of observations per quarter per subarea are summarized in Table II. The five ICNAF subareas and contiguous areas were covered in 1960 by the research vessels of the Fisheries Research Board of Canada with a grand total of 1,470 stations.

Table I. List of cruises for each quarter of the year 1960.

Quarter	Vessel	Cruise code letter and number*
January-March (Chart 1)	A. T. Cameron	ATC - 16,17,18,19,20,21
April-June (Chart 2)	A. T. Cameron	ATC - 22,23,24
	Sackville	S - 48,49
	Harengus	GRF - 20,21,22,23,23A
	Pandalus II	Pa - 6
	Investigator II	INV - 24
	Marinus	Mar - 11,12
July-September (Chart 3)	A. T. Cameron	ATC - 25,27,28
	Sackville	S - 50,51,52
	Harengus	GRF - 24,25,26,27
	Pandalus II	Pa - 6
	Mallotus	MPS - 4
July-September (Chart 4)	A. T. Cameron	ATC - 26
	Sackville	S - 52
October-December (Chart 5)	A. T. Cameron	ATC - 29,30-31
	Sackville	S - 53
	Pandalus II	Pa - 6
	Mallotus	MPS - 5,6,7
	Investigator II	INV - 28,29
	Marinus	Mar - 15

\*The code letters and numbers refer to those used in the library of data at the Biological Station, St. Andrews, N. B.

Table II. Types and numbers of oceanographic observations per quarter per subarea.

Quarter	Subarea	Hydrographic station and BT cast	BT cast with bottom salinity and/or temperature	BT cast	Total
January-March	3	2			2
	4	<u>14</u> 16	<u>120</u> 120	3 3	<u>137</u> 139
April-June	3	8	102		110
	4	<u>108</u> 116	<u>68</u> 170	67 67	<u>243</u> 353
July-September	1	8			8
	2	14	35		49
	3	104	80	8	192
	4	<u>189</u> 315	<u>85</u> 200	<u>147</u> 155	<u>421</u> 670
October-December	3	24	9	3	36
	4	83	89	59	231
	5	<u>18</u> 125	<u>98</u>	<u>23</u> 85	<u>41</u> 308
<b>Total:</b>					
January-December	1	8			8
	2	14	35		49
	3	138	191	11	340
	4	<u>394</u>	<u>362</u>	276	1032
	5	18		23	41
<b>Grand Total:</b>		572	588	310	1470











