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International Commission for the Northwest Atlantic Fisheries

Serial No. 3896
(D.c.1)

ICNAF Res.Doc. 76/VI/84
Corrigendum

ANNUAL MEETING - JUNE 1976

Interium sorting protocol for ICNAF zooplankton samples

by

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Ruth Byron, and Jeanne Burns
National Marine Fisheries Service
Northeast Fisheries Center
Narragansett, Rhode Island 02882

Please make the following changes on page 5 (Attachment 3): Under 1) 1975, add: - ANTON DOHRN 76-1

Under 2) 1974, add: - WALTHER HERWIG - 75-1

Under 3) 1973, add: - WALTHER HERWIG - 74-1

Under 5) 1971, delete first line "FRA...Miquelon".

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Interim sorting protocol for ICNAF zooplankton samples

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Introduction

The zooplankton collections made during the joint ICNAF larval herring surveys are unique. They represent the most complete autumn sampling of the zooplankton community of Georges Bank - Nantucket Shoals and the Gulf of Maine since the pioneering studies of Bigelow in the early decades of the century. These time-series provide the data required for a better understanding of the interactions between larval herring and the dynamics of their zooplankton food.

A series of experiments is now underway at the Plankton Sorting Center in Szczecin to ensure that the protocols used in the sorting and identification of the zooplankton constituents is consistent with the needs of ICNAF scientists. Among the problems being examined are those relating to: 1) aliquot size, 2) minimal numbers of organisms required to establish length modes, and 3) efficient methods for determining biomass of both total samples and the more important constituents.

The recommended interim protocols are designed to provide estimates of the total biomass of each sample expressed as wet and dry weight. Contributions of the major taxa and, where possible, species will be expressed both in numbers and in milligrams of dry weight. Length frequency information will also be obtained to gain an insight to species generation times, succession, and predator-prey interactions.

Two methods for obtaining dry weight values of taxa and species are now under examination. The monogram method developed by Tschislenko (1968) is now being used by the staff of the Sorting Center to estimate the contribution of the more numerous zooplankters to the total biomass. At Narragansett we are processing samples following the protocols described in the attachments 1 and 2. We expect to substitute our method for the Tschislenko method in the next few months. To improve estimates of biomass we are now determining length-weight relationships of the more numerous zooplankters in the Georges Bank-Nantucket Shoals-Gulf of Maine areas following procedures now used in CalCOFI (Isaacs, Fleminger, and Miller, 1971).

The proposed priorities for sorting samples collected during the past five years of the joint survey (1971 - 1975) are given in attachment 3.

Computer printouts of pertinent station data and the numbers and weights of zooplankton constituents will be provided to each of the countries participating in the joint surveys.

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[1] Presented as Working Paper 76/IV/111 at Environmental Working Group meeting, Szczecin, Poland, April 1976.

References

Tschislenko, L. L. 1968. Nomograms for weight determination of water organisms based on body size and shape of sea mezobentos and plankton. Science Press. Leningrad, U. S. S. R.

Isaacs J. D., A. Fleminger, and J. K. Miller. 1971. Distributional Atlas of Zooplankton Biomass in the California Current Region: Winter 1955 - 1959. CalCOFI Atlas 14, Marine Life Research Program, Scripps Institution of Oceanography, La Jolla, California.

Interim Sorting Protocol
For ICNAF 0.333 Zooplankton Samples

I. Remove all non-planktonic forms and record on Zooplankton Volume Log.

II. Pour the sample into a plastic tray and remove all organisms over 2.5 cm. These are washed and placed in a graduated cylinder (size depending upon volume of sample) containing a known volume of 3-5% buffered formalin (the difference between the resulting volume and the original amount of formalin is the volume of the organisms >2.5 cm). This difference is entered on the Zooplankton Log. Identify all organisms to species, record their lengths. Reconstitute and divide into ½ aliquots; preserve ½ for archive; homogenize and determine dry weight biomass of the remaining aliquot.

III. Measure the volume of smaller (<2.5 cm) constituents.

a. The sample and its preservative are poured into a clean graduated cylinder and the level of the liquid is read to the nearest whole milliliter. This volume is recorded for subsequent computations.

b. A funnel is placed in another clean graduated cylinder lined with a draining cone of a smaller mesh size than the sampling mesh.

c. The plankton and its preservative are poured into the draining cone. The plankton is considered drained when the interval between the drops from the bottom of the cone is 15 seconds.

d. The volume of the drained liquid in the cylinder is subtracted from the initial volume of the plankton plus liquid. The difference is recorded on the Zooplankton Volume Log as the volume of organisms <2.5 cm.

IV. Remove all fish larvae from <2.5 cm sample. For the exceptional samples swarming with single larval fish species, consult with senior planktologist to determine aliquot level for adequately documenting length frequency modes.

V. Determine total wet volume of all fish larvae.

VI. Sort and enumerate fish larvae to lowest taxa possible.

VII. Divide remaining zooplankton sample into ½ aliquots.

VIII. Homogenize ½ aliquot or representative sub-sample and determine dry weight biomass.

IX. The remaining sample is re-aliquoted and one-half is preserved in 3-5% buffered formalin, as a representative sample from the station.

X. Aliquot the remaining ¼ sample to approximately 500 zooplankters.

a. Sort all organisms to major taxa and count.

b. Identify taxa listed to species.

c. Separate 20 individuals of each species using random selection method and measure. Vial each species separately.

XI. Dry weight to determine biomass is then obtained either on the individual species or on major taxa. This will be expressed in mg/100m^3.

Attachment 2

MAJOR TAXA DESIGNATED FOR SORTING

1. FORAMINIFERA
2. HYDROMEDUSAE
3. SIPHONOPHORA
4. CTENOPHORA
5. GASTROPODA
6. PTEROPODA
7. HETEROPODA
8. PELECYPODA
9. CEPHALOPODA
10. POLYCHAETA
11. CLADOCERA
12. OSTRACODA
13. COPEPODA
14. CIRRIPEDIA
15. STOMATOPODA
16. CUMACEA
17. ISOPODA
18. AMPHIPODA
19. MYSIDACEA
20. EUPHAUSIACEA
21. DECAPODA
22. THALIACEA
23. APPENDICULARIA
24. CRUSTACEAN LARVAE
25. CRUSTACEAN EGGS
26. OTHER LARVAE
27. FISH LARVAE
28. FISH EGGS

Attachment 2 (cont'd)

SPECIES DESIGNATED FOR SORTING

1. CTENOPHORA
2. CHAETOGNATHA
3. PTEROPODA
4. HETEROPODA
5. CLADOCERA
6. OSTRACODA
7. COPEPODA
8. EUPHAUSIICEA
9. DECAPODA
10. APPENDICULARIA
11. CRUSTACEAN LARVAE[1]
12. AMPHIPODS
13. SALPS
14. MYSIDS
15. POLYCHAETE LARVAE

[1]Only the abundant easily-identified forms.

Attachment 3

Priority for Sorting of ICNAF .333 Samples

1) 1975 - BELOGORSK - 2 cruises
- ANTON DOHRN -)
- ALBATROSS -) in transit from Narragansett, March 1976
- ALBATROSS -)

2) 1974 - WIECZNO - 74-1
- ALBATROSS - 75-2
- USSR - PROGNOZ 74 -1
- ANTON DOHRN 74-1 - in Kiel
- ALBATROSS 74-13
- FRA CRYOS 74-4 (relabeled 74-4, from 74-1)

3) 1973 - FRA CRYOS 73-1
- POL WIECZNO 73-10
- USSR BELOGORSKI 73-1
- FRG WALTHER HERWIG 73-1 - in Kiel
- USA ALBATROSS 73-9
- USA ALBATROSS 74-2

4) 1972 - USSR ARGOS 72-1
- POL WIECZNO 72-10
- USSR ARGOS 72-2
- ANTON DOHRN 72-1
- USA ALBATROSS 72-9 - at Narragansett

5) 1971 - FRA CRYOS 71-1 - awaiting reply from St. Pierre Miquelon
- USA DELAWARE 71-4
- USSR VIANDRA 71-1
- FRG WALTHER HERWIG 71-1 - Kiel
- USA ALBATROSS 71-7