Curatorial Report Number 33

Cephalopods in the Nova Scotia Museum Collection

By Elizabeth MacAlaster
August 1977

Nova Scotia Museum
1747 Summer Street
Halifax, Nova Scotia, Canada
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NOVA SCOTIA MUSEUM

Curatorial Reports

The Curatorial Reports of the Nova Scotia Museum contain information on the collections and the preliminary results of research projects carried out under the program of the museum. The reports may be cited in publications but their manuscript status should be clearly indicated.

Abstract

This report contains a description and evaluation of the Cephalopod collection in the Nova Scotia Museum. The collection is relatively small, containing 8 of 13 families found in the American Boreal Region (Cape Cod north to Newfoundland). In addition there is a brief summary of the museum's fossil cephalopod collection.
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INTRODUCTION

Cephalopods are an interesting and diverse group of molluscs. They inhabit the seas of the world from the littoral zone to great depths and have in their group some of the largest invertebrates existing. They are active carnivores, strong, alert and have unusually well-developed senses, qualifying them as the most intelligent of all marine invertebrates.

Several distinguishing characteristics separate them from other molluscs - their ability to undergo rapid and vivid color changes, their reproductive behavior, in which separate sexes mate, the female producing eggs which in some species are carefully brooded and, most obvious, their structure. With the reduction of or even loss of the typical mollusc shell and resultant need for protection during life the cephalopods have developed a structure to suit an active and independent life. They are symmetrical, having their bodies and appendages equally developed on the right and left sides, and pelagic species are usually streamlined for rapid and efficient movement. Although they have developed arms and tentacles to grasp their prey, cephalopods retain some typical molluscan feeding characteristics - a rasping, toothed tongue and the typical alimentary canal. Like other molluscs they also have a siphon, gills and a mantle. However, their highly developed nervous and reproductive systems and their shape places them in a separate position in the molluscan phylum:

Phylum Mollusca
Class Amphineura - chitons
  Gastropoda - snails
  Scaphopoda - tusk shells
  Pelecypoda - bivalves
  Cephalopoda - squids and octopus
    Order Teuthoidea - common squids
    Sepioidea - Spirula, Sepia
    Octopoda - argonauts, octopods

In their classification cephalopods fall into two principal subclasses according to the presence of one or two pairs of gills.

1. two pairs of gills, arms numerous and without suckers, shell external - Tetrabranchia (Nautilus)

2. one pair of gills, arms eight or ten with rows of suckers and hooks, shell internal or absent - Dibranchia (all cephalopods except Nautilus).

Because most of the species are large and have distinguishing features, classifying them into their families and genera is relatively simple. Although a good key to North Western Atlantic cephalopods is lacking, useful references are Abbott (1974) and Gosner (1971).

NOVA SCOTIA MUSEUM COLLECTION

Due to several factors the cephalopod collection is relatively small in size. In the Atlantic Boreal region the cephalopods inhabit sublittoral to deep-water zones or they are free oceanic swimmers. Thus, other than the common squid, Illex, which is caught in abundance in fish nets, catching cephalopods is limited to a chance occurrence.
in a trawl. Also cephalopods (again with the exception of Illex) are of no commercial value at the present so that little effort is made to develop specific and efficient fishing techniques.

The development of the collection, therefore, has been a consequence of donations from people who have found cephalopods in nets aboard fishing and research vessels or washed ashore. Many of the early contributors to the collection are unknown. J. M. Jones found the giant squid in 1870, H. Piers was another early collector. Most of the recent material has been collected by D. S. Davis and P. Odense. (FRB cruises, "E. E. Prince").

The specimens of a deep-water octopus, Bathypolypus arcticus, in the collection were used to initiate a major study of this elusive species (see Macalaster, 1976).

Of the thirteen families found in the American Atlantic Boreal Region, the museum collection has representatives from eight - 60% of the total number. In addition the collection contains several British and European species, and in the fossil collection are some good specimens of early cephalopods. The following report is designed to familiarize the reader with the collection and to stress its value as a small, interesting and diverse group of both preserved animals and shells readily available for display and for interpretative purposes.
LIST OF AMERICAN ATLANTIC BOREAL CEPHALOPODS
(species followed by an asterisk are represented in the museum collection)

Class Cephalopoda
Order Sepioidea

Family Spirulidae
Spirula spirula (Linne) 1758*

Family Sepiolidae
Rossia tenera (Verrill) 1880*
Rossia glaucopsis Loven 1845 *
Rossia megaptera Verrill 1881
Rossia palpebrosa Owen 1835 *
Rossia leucoptera Verrill 1878

Subfamily Stoloteuthinae
Stoloteuthis leucoptera (Verrill) 1878

Order Teuthoidea
Family Loliginidae
Loligo pealei Lesueur 1821 *

Family Histiotethuidae
Histiotethis collinsi Verrill 1879
Histiotethis reversa (Verrill) 1880 *

Family Cranchiidae
Taonius pavo (Lesueur) 1821
Megalocranchia megalops (Prosch) 1849
Pyrgopsis lemur Berry 1920

Family Chiroteuthidae
Chiroteuthis lacertosa Verrill 1881

Family Mastigoteuthidae
Mastigoteuthis agassizii Verrill 1881
Mastigoteuthis grimaldi (Joubin) 1895
Mastigoteuthis cordiformis Chun 1908

Family Enoploteuthidae
Pterygioteuthis gemmata Chun 1908 *
Abraliopsis pfefferi (Joubin) 1896*

Family Architeuthidae
Architeuthis dux Steenstrup 1857
Family Ommastrephidae
Subfamily Ommastrephinae
  *Ommastrephes megaptera* (Verrill) 1878
  *Ommastrephes bartrami* (Lesueur) 1821
  *Ommastrephes pteropus* (Steenstrup) 1855

Subfamily Illicinae
  *Illex illecebrosus* (Lesueur) 1821*

Family Gonatidae
  *Gonatus fabricii* (Lichtenstein) 1818*

Family Brachioteuthidae
  *Brachioteuthis beanii* Verrill 1881
  *Brachioteuthis riisei* (Steenstrup) 1882

Family Onychoteuthidae
  *Onychoteuthis banksii* (Leach) 1817*
  *Tetronychoteuthis dussumieri* (Orbigny) 1839

Order Octopoda
Family Stauroteuthidae
  *Stauroteuthis syrtensis* Verrill 1879
  *Chunioteuthis eversbachii* Grimpe 1916

Family Alloposidae
  *Alloposus mollis* Verrill 1880 *

Family Octopodidae
  *Octopus equivocus* Robson 1929

Subfamily Bathypolypodinae
  *Bathypolypus arcticus* Prosch 1849 *
  *Benthotepus piscatorum* (Verrill) 1879
  *Graneledone verrucosa* Verrill 1881

Family Ocythoidae
  *Ocythoe tuberculata* Rafinesque 1814

Family Argonautidae
  *Argonauta argo* Linné 1758

The following are species in the museum collection but not normally found live in these waters. They have been obtained through donations.

Family Sepiolidae
  *Sepiola atlantica* (Orbigny) 1839

Family Nautilidae
  *Nautilus pompilius* Linné 1758

Family Sepiidae
  *Sepia officinalis* Linné 1758

Family Loliginidae
  *Alloteuthis subulata* (Lamarck) 1798
CEPHALOPODS IN THE NOVA SCOTIA MUSEUM COLLECTION

Spirula spirula Linnaeus 1758. Little cuttlefish.

Distribution: tropical and subtropical regions in the Atlantic, Indian and Pacific Oceans, from about 100 to 750 fathoms.

Habitat: marine pelagic

This primitive oceanic sepioid is characterized by the presence of an internal chambered shell, which is at the posterior end. It tends to lift this portion so that the animal appears to hang vertically in the water. There is also a light organ on this end of the body, but unlike the on-off effect of other luminescent organisms, this light shines continuously, facing upwards because of the vertical position of the animal.

Museum Collection

The museum collection contains dried specimens of the shells only.

<table>
<thead>
<tr>
<th>Accession #</th>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>1974-Z-213</td>
<td>unknown</td>
<td>unknown</td>
<td>old collection</td>
</tr>
<tr>
<td>1973-Z-406.1</td>
<td>St. Catherine Pt., Bermuda</td>
<td>1 Feb. 1973</td>
<td>P. Doleman</td>
</tr>
</tbody>
</table>

References:
Abbott, 1974
Clarke, 1966
Dall, 1896
Johnson, 1934
Voss, 1956
Rossia palpebrosa Owen 1835


Habitat: marine benthic, continental shelf and slope, 50 to 300 fathoms.


Museum Collection

The museum collection contains 3 specimens preserved in 70% isopropanol.

<table>
<thead>
<tr>
<th>Accession #</th>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>1973-Z-515.13</td>
<td>N. Sable I., N. S.</td>
<td>17 April 1973</td>
<td>D. S. Davis</td>
</tr>
<tr>
<td>1973-Z-528.9</td>
<td>Halifax, S. E. Buoy.</td>
<td>19 April 1973</td>
<td>D. S. Davis</td>
</tr>
<tr>
<td>1977-Z-201.10</td>
<td>Emerald Bank</td>
<td>10 March 1977</td>
<td>D. S. Davis</td>
</tr>
</tbody>
</table>

References:
Hyatt, 1871
Mercer, 1968
Owen, 1835

References for R. glaucopsis Lovén, 1845
Abbott, 1974
Johnson, 1934
LaRocque, 1953
Mercer, 1968 MSc. thesis
Voss, 1957
Whiteaves, 1901
*Sepiola atlantica* Orbigny, 1839

Distribution: Färöes, Norway to W. Africa, absent from the Mediterranean 12 to 84 fathoms.

Habitat: marine benthic

Absent from the Atlantic Boreal Region, this small squid was donated to the collection. It was collected from the Blackwater Estuary, Essex, England with a beam trawl during a study of marine fauna in that area.

Museum Collection

The museum collection contains 2 preserved specimens.

<table>
<thead>
<tr>
<th>Accession #</th>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
</table>

References:
Davis, D. S., 1967
Hoyle, W. E., 1886
Massy, A. L., 1967
*Sepia officinalis* (Linné, 1758) Common cuttlefish

Distribution: shallow warmer waters of Europe.

Habitat: marine benthic

This colorfully marked squid is not represented in the Western Atlantic Ocean, though the internal shell, the cuttlebone, has been found washed up on shores from Florida to Texas. It was once caught commercially for its durable black ink, and its cuttlebone is still sold in pet stores as a source of lime for caged birds.

Museum Collection

A whole cuttlefish preserved in 70% isopropanol as well as whole cuttlebones and fragments are in the museum collection.

<table>
<thead>
<tr>
<th>Accession #</th>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>1975-Z-259.1</td>
<td>Naples, Italy</td>
<td>Aug. 1975</td>
<td>J. O'Dor</td>
</tr>
</tbody>
</table>

References:
Abbott, 1974
Davis, 1974
Harry and Snider, 1969
Verrill, 1882a
Voss, 1974
Loligo pealeii Lesueur, 1821

Distribution: along the Northeast coast of North America from S. Carolina to Cape Cod, from the low water mark to about 50 fathoms.

Habitat: pelagic

Loligo pealeii is one of the larger squids found in this area, sometimes reaching a length of 60 cm. It is very abundant in areas further south where it is caught commercially for fish bait.

Museum Collection

There are 4 preserved specimens in the museum collection.

<table>
<thead>
<tr>
<th>Accession #</th>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>1974-Z-212</td>
<td>off Halifax, N.S.</td>
<td>15 July 1974</td>
<td>S. Purdy</td>
</tr>
<tr>
<td>1977-Z-201.4</td>
<td>unknown</td>
<td></td>
<td>old collection</td>
</tr>
<tr>
<td>1977-Z-201.6</td>
<td>unknown</td>
<td></td>
<td>old collection</td>
</tr>
</tbody>
</table>

References:
Abbott, 1974
Johnson, 1934
Mercer, 1968
Verrill, 1882a
Alloteuthis subulata (Lamarck, 1798)

Distribution: Eastern Atlantic Ocean, North Sea from 3-60 fathoms.

Habitat: pelagic

Alloteuthis subulata is not common to this area and was collected from the Blackwater Estuary, Essex, England and also from Cornwall, England.

Museum Collection

Both preserved specimens were donated to the collection.

<table>
<thead>
<tr>
<th>Accession #</th>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>1977-Z-200.3</td>
<td>Cornwall, England</td>
<td>24 April 1964</td>
<td>D. S. Davis</td>
</tr>
</tbody>
</table>

References:

Davis, 1967
Turk, 1973
Histioteuthis reversa (Verrill) 1880

Distribution: major part of the Atlantic, south of approximately 55°N. latitude, including the Mediterranean and the South Atlantic.

Habitat: pelagic from surface waters to about 500 fathoms, found in greatest abundance near land masses and oceanic ridges.

This medium-sized squid is covered with large and small photophores on the ventral mantle, giving it a warty appearance. The left eye is about twice the size of the right.

Museum Collection

There are 2 preserved specimens in the museum collection.

<table>
<thead>
<tr>
<th>Accession #</th>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>1974-Z-255.4</td>
<td>South of Sable I. Bank</td>
<td>25 June 1974</td>
<td>D. S. Davis</td>
</tr>
</tbody>
</table>

References:
Abbott, 1974
Mercer, 1968
Verrill, 1882a
Voss, 1970
Ptergioteuthis gemmata Chun, 1908

Distribution: worldwide, primarily in warmer waters.

Habitat: pelagic

Museum Collection

The museum collection contains 1 preserved specimen of this small species.

<table>
<thead>
<tr>
<th>Accession #</th>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>1975-Z-298.4</td>
<td>LaHave Bank</td>
<td>15 Aug. 1974</td>
<td>P. Odense</td>
</tr>
</tbody>
</table>

References:
Abbott, 1974
Roper, 1972
Abraliopsis pfefferi (Joubin) 1896

Distribution: Widely distributed throughout much of the Atlantic and Indian Oceans.

Habitat: pelagic

Museum Collection

The museum collection contains 6 preserved specimens.

<table>
<thead>
<tr>
<th>Accession #</th>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>1975-Z-299.8</td>
<td>off LaHave Bank</td>
<td>15 Aug. 1974</td>
<td>P. Odense</td>
</tr>
</tbody>
</table>

References:
Roper, 1972
Architeuthis megaptera Verrill 1878

Distribution: Nearly all records of Architeuthis, the giant squid, are from Newfoundland, northern Europe and New Zealand, though it has been found off the western and lower eastern U. S. and in the Mediterranean. Most of the specimens have been stranded.

Habitat: pelagic

Although many different species have been reported — A. harveyi, A. princeps, A. clarkei, A. dux — Aldrich (1967) states that in the North Atlantic there is but 1 species, A. dux Steenstrup, 1857. According to Verrill, A. megaptera is too small (19") to be considered a synonym of this type species.

Museum Collection

One preserved specimen was transferred to the National Museum, Ottawa, in 1967.

<table>
<thead>
<tr>
<th>Accession #</th>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>1870-Z-2</td>
<td>Cape Sable, Nova Scotia</td>
<td>Feb. 1870</td>
<td>J. M. Jones</td>
</tr>
</tbody>
</table>

References:
Aldrich, 1967
Verrill, 1882a

Other references for the genus:
Abbott, 1974
Clarke, 1966
Johnson, 1934
LaRocque, 1953
Mercer, 1968
Verrill, 1882a
Illex illecebrosus (Lesueur) 1821

Distribution: Newfoundland to N. E. Florida

Habitat: pelagic

Illex is the common squid of the Gulf of St. Lawrence and the Maritime Provinces. It is an active animal, swimming freely in schools like mackerel and herring. Illex is an important food source for cod, mackerel and whales and provides the principal bait for the cod fishery. It is edible for humans, but not yet considered a delicacy in Nova Scotia as it is by the Japanese.

Museum Collection

The museum collection contains 23 preserved specimens, several beaks and jaw parts and 3 pens.

<table>
<thead>
<tr>
<th>Accession #</th>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
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</thead>
<tbody>
<tr>
<td>1972-Z-790.1</td>
<td>S. of Emerald Bank, N. S.</td>
<td>31 July 1972</td>
<td>P. Odense</td>
</tr>
<tr>
<td>1974-Z-229.17</td>
<td>Shelburne, N. S.</td>
<td>summer 1973</td>
<td>P. MacLeod</td>
</tr>
<tr>
<td>1973-Z-525.1</td>
<td>Emerald Gully, N. S. shelf</td>
<td>18 April 1973</td>
<td>D. S. Davis</td>
</tr>
<tr>
<td>1977-Z-201.1</td>
<td>unknown</td>
<td>unknown</td>
<td>old collection</td>
</tr>
<tr>
<td>1977-Z-201.2</td>
<td>Hubbard's Bay, Halifax Co., N. S.</td>
<td>24 July 1917</td>
<td>E. Piers</td>
</tr>
<tr>
<td>1977-Z-291.3</td>
<td>Hubbard's Bay, Halifax Co., N. S.</td>
<td>4 Aug. 1918</td>
<td>E. Piers</td>
</tr>
<tr>
<td>1977-Z-201.5</td>
<td>Nova Scotia</td>
<td>unknown</td>
<td>old collection</td>
</tr>
<tr>
<td>1977-Z-201.7</td>
<td>Nova Scotia</td>
<td>unknown</td>
<td>old collection</td>
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</tbody>
</table>

References:
- Abbott, 1974
- Clarke, 1966
- Johnson, 1934
- Larocque, 1953
- Mercer, 1968
- Verrill, 1882a
- Whiteaves, 1901a
Gonatus fabricii (Lichtenstein) 1818

Distribution: Widely distributed in colder regions of the N. Atlantic and N. Pacific.

Habitat: pelagic

Gonatus fabricii is an important food source for the bottlenose whale, northern fur seal, tuna, cod and some sea birds. The Greenland Eskimos also use it for bait in the cod and shellfish industry and for food.

This species may not be fabricii, as the genus is presently undergoing revision, and the species are confused.

Museum Collection

In the museum collection there are 4 preserved specimens.

<table>
<thead>
<tr>
<th>Accession #</th>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>1975-Z-299.8</td>
<td>off LaHave Bank</td>
<td>15 Aug. 1974</td>
<td>P. Odense</td>
</tr>
<tr>
<td>1973-Z-513.8</td>
<td>South of Sable Island</td>
<td>16 April 1973</td>
<td>D. S. Davis</td>
</tr>
<tr>
<td>1973-Z-513.9</td>
<td>South of Sable Island</td>
<td>16 April 1973</td>
<td>D. S. Davis</td>
</tr>
<tr>
<td>1975-Z-296.6</td>
<td>off LaHave Bank</td>
<td>15 Aug. 1974</td>
<td>P. Odense</td>
</tr>
</tbody>
</table>

References:
Abbott, 1974 p.578
Clarke, 1966 p.152
Johnson, 1934 p.161
LaRocque, 1953 p.342
Mercer, 1968
Verrill, 1882a
Whiteaves, 1901a p.210
Onychoteuthis banksi (Leach) 1817

Distribution: worldwide in warm and temperate waters.

Habitat: pelagic, surface to about 50 fathoms.

*O. banksi* is regarded as one of the flying squids as it often jumps aboard vessels. Its principal characteristic is the development of hooks on the arms, replacing to a large extent the suckers of many other squids. It is a strong swimmer, designed for speed in hunting down and hooking its prey.

Museum Collection

The museum's 1 specimen was taken off the coast of Nova Scotia, but the date of capture and its present whereabouts is unknown. The illustration is a copy of an original drawing by J. M. Jones or R. Morrow. (see Figure 1. page 23)

References:
Abbott, 1974
Clarke, 1966
Mercer, 1968
Voss, 1956
Alloposus mollis Verrill, 1880

Distribution: East & West N. Atlantic, Azores, W. Africa, Gulf of Mexico

Habitat: pelagic, more abundant near coasts

The body of *Alloposus mollis* is characteristically gelatinous, ovate with very stout arms webbed nearly to their ends. While swimming about it would give the appearance of an umbrella opening and closing.

Museum Collection

There is one specimen in the collection. This was on display in the travelling exhibit "One Hundred Years of Oceanography" from 1973 until 1977.

<table>
<thead>
<tr>
<th>Accession #</th>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>1972-Z-780-3(1)</td>
<td>S. of Emerald Bank, N. S. Cont. Shelf.</td>
<td>31 July 1972</td>
<td>P. Odense</td>
</tr>
</tbody>
</table>

References:
Abbott, 1974
Johnson, 1934
Mercer, 1968
Verrill, 1882a
Verrill, 1880 Am. J. Sci. 20:393
Bathypolypus arcticus (Prosch, 1849)

Distribution: abundant in the deep water of the North Atlantic Ocean.

Habitat: benthic, mostly along the continental slope

This small octopus though abundant, is rarely caught, perhaps because of the depth at which it lives. Unlike other, shallow water species, B. arcticus has no ink sack, nor does it change color dramatically. It has been found in the stomachs of groundfish such as cod and hake, but is not yet of any commercial value.

The genus is presently undergoing revision; in this area there may be more than 1 species. For more information on B. arcticus see Macalaster (1976).

Museum Collection

There are 9 preserved specimens in the museum collection.

<table>
<thead>
<tr>
<th>Accession #</th>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
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<tbody>
<tr>
<td>1974-Z-230.1</td>
<td>Nova Scotia</td>
<td>unknown</td>
<td>unknown</td>
</tr>
<tr>
<td>1974-Z-252.2</td>
<td>Western Bank, N. S. shelf</td>
<td>25 June 1974</td>
<td>D. S. Davis</td>
</tr>
<tr>
<td>1973-Z-528.10</td>
<td>Halifax S. E. Buoy, N. S. shelf</td>
<td>19 April 1973</td>
<td>D. S. Davis</td>
</tr>
<tr>
<td>1973-Z-525.2</td>
<td>Emerald Gully, N. S. shelf</td>
<td>18 April 1973</td>
<td>D. S. Davis</td>
</tr>
<tr>
<td>1977-Z-201.9</td>
<td>Nova Scotia</td>
<td>unknown</td>
<td>H. Piers</td>
</tr>
<tr>
<td>1977-Z-201.8</td>
<td>Bay of Fundy, 10' N. of Digby, N. S.</td>
<td>6 Aug. 1958</td>
<td>B. Reid &amp; L. Duncanson</td>
</tr>
</tbody>
</table>

References:
Abbott, 1974
Johnson, 1934
LaRocque, 1953
Macalaster, 1976
Mercer, 1968
Robson, 1932
Verrill, 1882a
Argonauta argo (Linne) 1758

Distribution: worldwide in warmer waters

Habitat: pelagic

Argonauta argo is a small pelagic octopod, the female many times larger than the male. During maturation one pair of arms in the female becomes expanded at its extremities into broad paddle-like membranes which secrete lime to build a delicate shell cradle in which the eggs are held during incubation. Since the octopus is normally found in warm waters it is an important record for this area.

Museum Collection

The museum collection contains preserved and dried specimens.

<table>
<thead>
<tr>
<th>Accession #</th>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>1974-Z-229.18</td>
<td>Shelburne Harbour,</td>
<td>summer, 1973</td>
<td>P. MacLeod</td>
</tr>
<tr>
<td></td>
<td>Shelburne Co., N. S.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1975-Z-282.2</td>
<td>Prospect Bay, N. S.</td>
<td>summer, 1973</td>
<td>V. Kiley</td>
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<td>1974-Z-227.1</td>
<td>unknown</td>
<td>summer, 1973</td>
<td>S. Sharpe</td>
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</tbody>
</table>

References:
Abbott, 1974
Verrill, 1882a
Voss, 1956
*Nautilus pompilius* Linné, 1758  Chambered or Pearly Nautilus

**Distribution:** warm seas, common around Indo Pacific Islands

**Habitat:** pelagic-benthic

*Nautilus pompilius* is the only cephalopod to possess a large, completely external shell, which is chambered with a siphonal tube running through the center of each chamber septum. As the animal grows it moves forward, cutting off the chamber which it last occupied by a pearly septum until it comes to rest in the large outer one. The compartments can be filled with gas to regulate the buoyancy of the Nautilus, which is able to float, swim or carry the shell as it walks on the sea bottom. It has been used for cameos, ornament, and as drinking cups.

**Museum Collection**

*Nautilus pompilius* does not occur in the North Atlantic, but the museum collection contains several of the beautiful shells.

<table>
<thead>
<tr>
<th>Accession #</th>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
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</thead>
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<td>1975Z.213.</td>
<td>Indo-Pacific</td>
<td>unknown</td>
<td>R. Rateau</td>
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<td>1972-Z-556.10</td>
<td>Phillipine Islands</td>
<td>1971</td>
<td>W. san Luis</td>
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</table>
Cephalopods in the Museum Fossil Collection

Cephalopods have been an important element of marine fauna since Ordovician time and are unsurpassed as guide fossils in Paleozoic rocks. The geological distribution of the main divisions of Cephalopods are shown in Figure 2. The Nautiloidea include the root stock of all cephalopods, the Ammonoids and Dibranchiates being particularly successful offshoots. The only present day Nautilioid is the comparatively primitive Nautilus. The Ammonoids, a very abundant and diverse group during the Jurassic and Cretaceous periods, are now extinct, while the Dibranchiata have branched into 4 groups - the first, the Belemnoids, are extinct, but the other 3 have modern representatives - the Sepioids, the Teuthoids and the Octopoids.

The Cephalopod fossil collection in the museum has representatives from all 3 major groups explained above and contains exceptionally fine examples from the Ammonoids. Although most of the collection needs further taxonomic study it could readily supply an exhibit or interpretative program with substantial material in good condition.
Figure 1. A drawing of *Onychoteuthis banksi* (Leach) 1817 from the files of the Nova Scotia Museum. The drawing has been attributed to J. M. Jones or R. Morrow. The annotations are by H. Piers. Slightly reduced.
Figure 2. The distribution of orders of the cephalopoda through geological time. The variation in width of the shaded areas is indicative of the variation in species diversity at any time. (After Moore et al, 1952).
REFERENCES


Verrill, A. E. 1880. Am. J. Sci. 20:393


