CRASPEDACUSTA SOWERBYI LANKESTER 1880 AND *CORDYLOPHORA LACUSTRIS* ALLMAN 1871 IN WESTERN LAKE ERIE (COELENTERATA)[1]

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ABSTRACT

Thirty-seven stations, representing a variety of rocky habitats in the Lake Erie island region were sampled over a three-year period. Rock samples were hand-picked by diving and identification made from living material. The colonial hydroid *Cordylophora lacustris* was collected at fourteen widely separated locations. The minute polyp form of the freshwater jellyfish *Craspedacusta sowerbyi* was collected at all of the stations sampled. New hydranth buds, frustules, and medusoid buds were produced in the laboratory by the polyps collected.

INTRODUCTION

The phylum Coelenterata (Cnidaria) is almost exclusively marine. In addition to the hydras, it is represented in freshwater by only a few colonial forms. Two of these, *Cordylophora lacustris* Allman 1871, and *Craspedacusta sowerbyi* Lankester 1880, are known to occur in Lake Erie.

The first North American record for the colonial hybroid *Cordylophora lacustris* was established in 1922 by Garman. It was not until 35 years later that *C. lacustris* was reported in the Great Lakes drainage (Davis, 1957). His material was collected from Chagrin Harbor, Ohio, in November of 1956. Davis pointed

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out that such a history of sporadic collection gives little indication of successful establishment in the freshwaters of North America. He also suggests "it is possible that a thorough search for it in suitable environments would show it to be more common and more widely distributed than available records would lead us to believe". We are now prepared to report that *C. lacustris* is well established and widely distributed in the western basin of Lake Erie.

The freshwater jellyfish *Craspedacusta sowerbyi* Lankester 1880 draws attention wherever it is found. The medusa stage is normally collected during periods of localized abundance, especially in isolated ponds and quarries. To our knowledge, the first report of these polyps in Lake Erie was by Carrick in 1956. Our collections have established that the minute polyp form of this Coelenterate was extremely abundant in the island section over a three-year period.

METHODS

This work was conducted at the F. T. Stone Laboratory at Put-in-Bay, Ohio, during the summers of 1969, 1970, and 1971. Collecting sites were selected specifically to permit examination of rocky habitats usually missed by traditional benthic sampling techniques. Rock samples from the lake bottom were hand-picked by diving at 37 stations throughout the western basin of Lake Erie. These stations included many of the island shoals and offshore reefs of the region (fig. 1). Station locations, substrates, and dates of sampling are listed in Table 1.

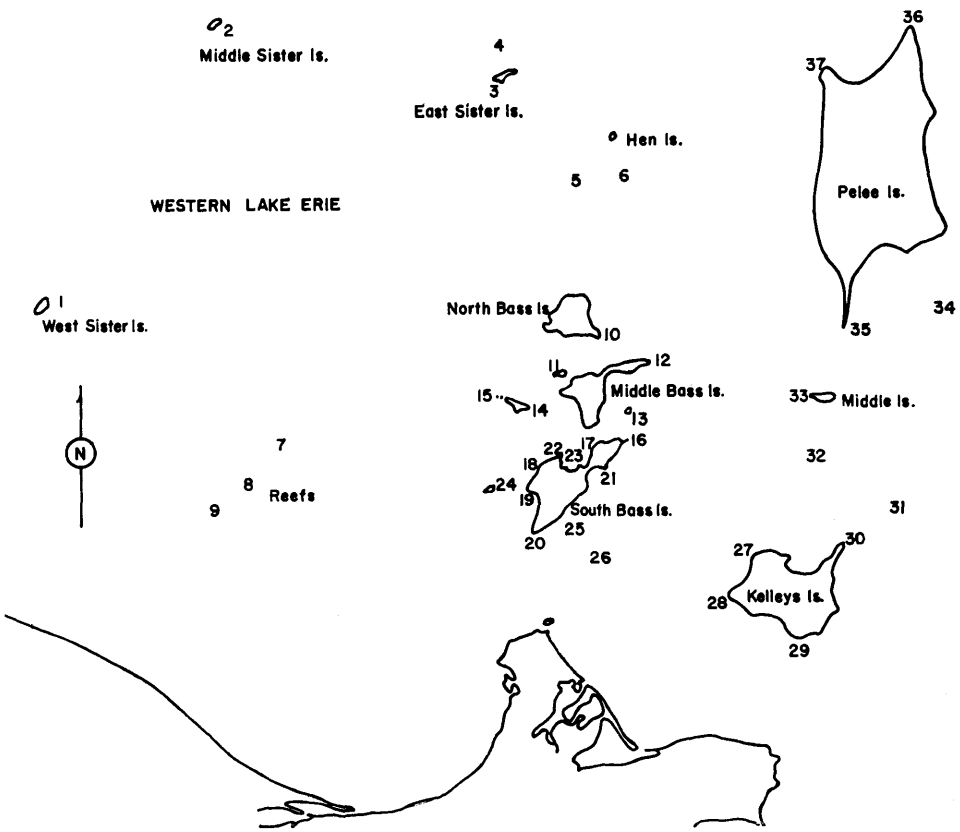

FIGURE 1. Chart of the Island Region of Western Lake Erie showing collection sites of *Craspedacusta sowerbyi* and *Cordylophora lacustris*. For descriptive data on specific stations refer to table 1.

TABLE 1

1971 Collection sites of the polyp forms of Craspedacusta sowerbyi *(1) and* Cordylophora lacustris *(2) in the Island Region of Western Lake Erie*

#	Station	Substrate	Long. W	Lat. N	Depth	Date	Species
1.	West Sister Is.	Irregular boulders and cobbles	83°06.0′	41°44.2′	24′	7/23	1,2
2.	Middle Sister Is.	Flat bedrock with occasional cobble	82°59.7′	41°50.9′	15′	7/21	1,2
3.	East Sister Is.	Irregular boulders over bedrock	82°51.5′	41°48.6′	14′	7/21	1
4.	North Harbor Is.	Large boulders over sand	82°51.5′	41°49.5′	15′	7/21	1
5.	Big Chicken Is.	Bedrock with rocks in grooves	82°49.2′	41°46.2′	14′	7/21	1,2
6.	Little Chicken Is.	Irregular stones on sand	82°47.2′	41°46.3′	20′	8/18	1,2
7.	Niagara Reef	Flat bedrock, occasional stone	82°58.4′	41°39.8′	18′	7/23	1
8.	Crib Reef	Irregular stones (rubble)	83°00.4′	41°38.6′	12′	7/23	1
9.	Toussaint Reef	Flat bedrock with occasional stone	83°01.0′	41°37.5′	10′	7/23	1
10.	North Bass Is. S.E. Reef	Irregular rocks, silted	82°48.1′	41°42.7′	12′	6/30	1
11.	Sugar Is.	Irregular boulders	82°49.8′	41°41.6′	29′	8/6	1
12.	Middle Bass Is. E. Reef	Boulders and rocks, silted	82°46.5′	41°41.7′	17′	7/27	1,2
13.	Lost Ballast Is.	Irregular stones in bedrock grooves	82°47.0′	41°40.5′	15′	6/23	1
14.	Rattlesnake Is. E. Reef	Boulders, honeycombed	82°50.5′	41°40.7′	20′	7/6	1
15.	Rattlesnake Is., Rattles	Boulders over sand	82°51.6′	41°41.0′	21′	8/6	1
16.	South Bass Is., Buckeye Point	Irregular rocks, silted	82°47.3′	41°39.7′	19′	7/29	1
17.	South Bass Is. N.E. corner of P.I.B.	Boulders	82°48.6′	41°39.7′	15′	7/8	1
18.	South Bass Is., W. Shore	Irregular stones on sand	82°50.3′	41°39.3′	24′	8/15	1
19.	South Bass Is., Stone Cove	Irregular boulders	82°50.6′	41°38.6′	18′	7/9	1
20.	South Bass Is., Lighthouse Pt.	Rounded cobble, rocks and boulders	82°50.6′	41°37.8′	24′	7/9	1
21.	South Bass Is., Monument Bay	Bedrock, rubble in grooves	82°48.1′	41°39.1′	21′	7/29	1,2
22.	Gibraltar Is., East Tip	Irregular boulders and rocks	82°49.1′	41°39.5′	10′	7/13	1,2
23.	Gibraltar Is., N. Side	Boulders	82°49.4′	41°39.5′	15′	7/1	1
24.	Green Is., E. Reef	Irregular rocks near sand	82°51.7′	41°38.7′	20′	7/6	1,2
25.	Starve Is., South	Irregular bedrock	82°49.3′	41°37.5′	12′	8/9	1,2
26.	Starve Is. Reef	Steep irregular bedrock, boulders	82°48.8′	41°36.7′	16′	8/9	1
27.	Kelleys Is., N.W. Corner	Irregular boulders silted	82°42.7′	41°37.3′	25′	8/9	1,2
28.	Kelleys Is., Carpenter Pt.	Irregular boulders, silted	82°44.3′	41°36.0′	19′	8/9	1
29.	Kelleys Is., S.E. Side	Flat bedrock, silted	82°41.4′	41°34.9′	16′	8/9	1
30.	Kelleys Is., Long Pt.	Irregular boulders	82°40.3′	41°37.5′	23′	8/9	1,2
31.	Kelleys Is. Shoal	Flat bedrock, occasional cobble	82°38.6′	41°38.3′	18′	6/28	1,2
32.	Gull Is. Shoal	Irregular cobble	82°41.5′	41°39.4′	8′	6/28	1,2
33.	Middle Is., W. End	Irregular Cobble, silted	82°41.6′	41°40.9′	17′	6/28	1
34.	Chickenolee Reef	Irregular rocks and boulders	82°37.9′	41°43.1′	20′	8/18	1,2
35.	Pelee Is., Fish Pt.	Small stones on firm sand	82°40.2′	41°42.2′	20′	8/18	1
36.	Pelee Is., Lighthouse Pt.	Large boulders	82°38.7′	41°44.9′	18′	8/18	1
37.	Pelee Is., Sheridan Pt.	Flat bedrock, occasional boulder	82°41.2′	41°44.1′	18′	8/18	1

All diving was done with the use of hooka equipment, which allowed prolonged, direct examination of specific sites. Samples from the different stations were transported to the laboratory in separate containers of lake water. All determinations were made from living material.

RESULTS AND DISCUSSION

Cordylophora lacustris was first collected on the eastern reef of the Middle Bass Island in 1969. Later the same summer, extensive patches of this hydroid were found on the flat bedrock of Kelleys Island Shoal. The following summer (1970) colonies were observed at several other locations. Preparation was then made for a systematic survey of the island region. During the summer of 1971, *C. lacustris* were collected at 14 widely separated stations (Table 1).

The polyp of *Craspedacusta sowerbyi* is widely distributed and common in the western basin of Lake Erie. The minute polyp form was found on rock samples collected at all of the stations listed in Table I. The widespread occurrence of

this hydroid provides little basis for generalization on its habitat specificity. It was found on rocky substrates from eight to 30 feet deep. The polyps apparently prosper when covered with a thick (¼ inch or more) blanket of sediment. Some of the best polyp populations (a dozen or more per square centimeter) occurred in the sediment-filled pockets or depressions in limestone boulders and bedrock. This so-called "honeycomb" rock (or "white fish rock" of the old commercial fisherman) forms an important substrate for the benthic community. In other locations, numerous polyps could be found among deteriorating ectoproct colonies (especially of *Paludicella* and *Pottsiella*). *Craspedacusta* polyps were most plentiful on the upper and lateral surfaces of the rocks, and seldom occurred on the undersides of rocks or cobbles where cavities were present. These under-surfaces were commonly dominated by growths of *Plumatella*.

Polyps from these collections reproduced asexually in the laboratory. Isolated polyps consistently produced frustules (asexual planula-like larvae) throughout the summer. Similar frustules were also found on the rock samples examined immediately upon being brought into the laboratory. Some polyps from these collections also produced medusae in our laboratory aquaria. Since new hydranth buds, frustules, and medusoid buds may be produced at the same time, it is likely that the asexual reproduction is not a laboratory-induced phenomenon (Gardiner, 1972).

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