NOAA/Mote Marine Laboratory Joint Publication
NOAA Technical Memorandum NOS NCCOS CCMA 155
NOAA LISD Current References 2002-3
Mote Technical Report No. 832

Coastal and Estuarine Data Archaeology and Rescue Program

Charles M. Breder, Jr.: Palmetto Key, 1942

July 2002

US Department of Commerce
National Oceanic and Atmospheric Administrion
Silver Spring, MD

Mote Marine Laboratory
Sarasota, FL

NOAA/Mote Marine Laboratory Joint Publication
NOAA Technical Memorandum NOS NCCOS CCMA 155
NOAA LISD Current References 2002-3
Mote Technical Report No. 832

Charles M. Breder, Jr.: Palmetto Key, 1942

A. Y. Cantillo
NOAA National Ocean Service

E. Collins
NOAA Central Library

E. D. Estevez
Mote Marine Laboratory

(Editors)

July 2002

United States Department of Commerce	National Oceanic and Atmospheric Administration	National Ocean Service
Donald L. Evans Secretary	Scott B. Gudes Acting Under Secretary	Margaret Davidson Acting Assistant Administrator

For further information please call or write:

NOAA/National Ocean Service/National Centers for Coastal Ocean Science
1305 East West Hwy.
Silver Spring, MD 20910
301 713 3020

NOAA Central Library
1315 East West Hwy.
Silver Spring, MD 20910
301 713 2600

Arthur Vining Davis Library
Mote Marine Laboratory
1600 Ken Thompson Parkway
Sarasota, FL 34236
941 388 4441

TABLE OF CONTENTS

LIST OF FIGURES AND PLATES

Charles M. Breder, Jr.:
Palmetto Key, 1942

A. Y. Cantillo, E. Collins[Δ] and E. D. Estevez[◊]

(Editors)
NOAA National Ocean Service
Silver Spring, MD

ABSTRACT

Charles M. Breder and his wife Ethel spent part of the summer of 1942 at the Palmetto Key field station, known today as Cabbage Key, on the west coast of Florida south of Charlotte Harbor. The Palmetto Key field station began in 1938 and ended in 1942 because of World War II. His Palmetto Key diary ran for 95 pages of notes, tables, diagrams, drawings, lists, and business records and this report presents a variety of fascinating entries. Diaries from other years all bear Breder's style of discipline, curiosity, humor, and speculations on nature. The diary was transcribed as part of the Coastal Estuarine Data/Document Rescue and Archeology effort for South Florida.

INTRODUCTION by Dr. Ernest D. Estevez

This is a report of historical data mined from the Florida diaries of Charles M. Breder, Jr., and concerns the waters and science of Charlotte Harbor in Charlotte and Lee counties, southwest Florida. A prior report (Cantillo *et al.*, 2001) was based on Breder's diaries while on the Dry Tortugas and includes his biography, reminiscences by close friends, and obituary. Breder's many accomplishments included Director of the New York Aquarium, Curator of Fishes and later Director of the Department of Fishes and Aquatic Biology at the American Museum of Natural History, Administrative Director of the Lerner Marine Laboratory on Bimini, and, in 1967, Director of the Cape Haze Marine Laboratory, which soon became the Mote Marine Laboratory. In retirement, he volunteered at Mote's Charlotte Harbor Field Station in Placida. Thus it was that Dr. Breder came thrice to Charlotte Harbor. His memory is honored by the Charles M. Breder, Jr. Chair in Fish Biology, Ecology and Behavior at Mote. Fittingly, this retrospective of Breder's work in Charlotte Harbor comes at the start of a new, multi-disciplinary ecological study of the harbor by Mote scientists and collaborators, a main purpose of which being to honor the memory of William R. Mote (1906-2000).

Breder's many diaries were bequeathed to the Mote Marine Laboratory by his family and the National Ocean Service has chosen the diary of 1942 to illustrate the nature of Charlotte Harbor, science, life and times, and the mind of the diarist. The Palmetto Key field station began in 1938 and ended in 1942 because of World War II (Figure 1, Plate 1). The 1942 diary begins at Pennsylvania Station in New York City on June 1. Breder and his wife arrived at Palmetto Key, the American Museum's field station in Pine Island Sound, on June 3. The party left Palmetto Key thirty days later, on July 11, when Breder noted, "Spent the A.M. in last

[Δ] NOAA Central Library, Silver Spring, MD.
[◊] Director, Mote Center for Coastal Ecology, Mote Marine Laboratory, Sarasota, FL.

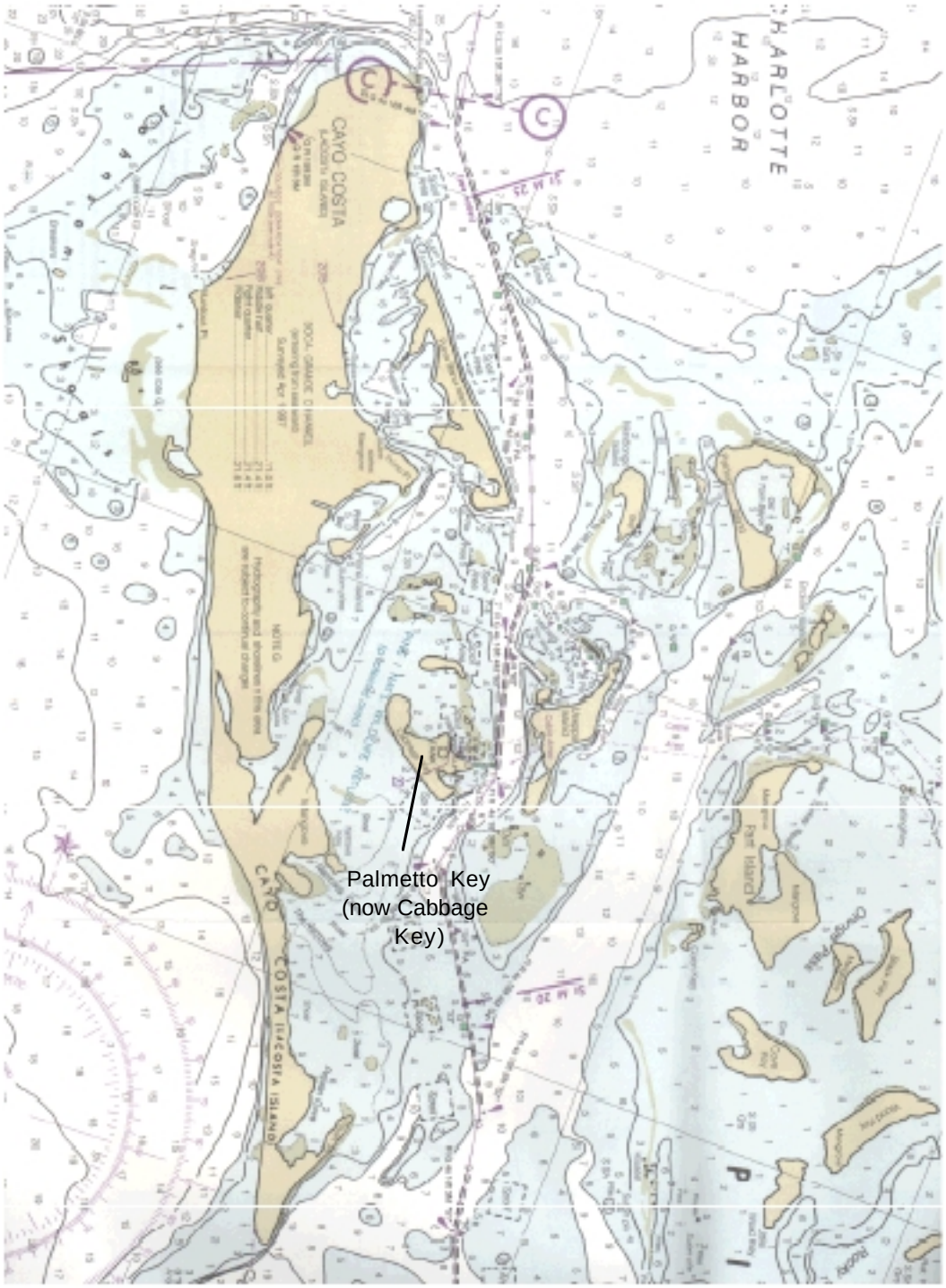

Figure 1. Palmetto Key (Cabbage Key), south of Charlotte Harbor, Florida (NOAA Chart 11427).

Plate 1. This is an aerial view of the Florida coast region where the Aquarium carried out studies of the tarpon. Inside the white circle are the laboratory and dock of Palmetto Key. The large island in the foreground is Useppa; Boca Grande Pass is not far beyond the right side of the photograph. The long island in the background is La Costa, and beyond is the Gulf of Mexico. [Printed in the Bull. of the New York Zoological Society (1939), credited to the Ft. Myers News Press. Original stored at the Arthur Vining Davis Library, Mote Marine Laboratory.]

minute clean up and checking of items, as due to the war it is very uncertain as to the possibility of a return for a long time at least." That month of field study produced several publications; Breder's total output from his experiences in Charlotte Harbor totaled twenty-two papers as sole or first author. Another seven papers were published by colleagues working at Palmetto Key.

Breder's Palmetto Key diary of 1942 ran for 95 pages of notes, tables, diagrams, drawings, lists, and business records and this report presents a variety of fascinating entries. Diaries from other years are shorter or longer but all bear Breder's style of discipline, curiosity, humor, and speculations on nature. Each reader finds points of interest depending on one's training and experience: taxonomists, anatomists, natural historians, embryologists, behaviorists, ecologists, and others are tantalized by the wide range of entries. For example, as a graduate student of comparative invertebrate morphology I was introduced to the favorite question as to why animals have not evolved wheels. And so it was with much relish that I discovered in his 1942 diary Breder's speculations and even drawings on the very question, was this the mind that first birthed the problem? His powers of observation were keen and turned on all things. He and colleagues spent most nights lying on a short dock trying to understand the chaos of fish and invertebrate life playing out under a light bulb, no small feat considering the daunting number of mosquitoes that swarmed over low mangrove islands on hot summer nights. Breder was stuck in the finger by a scorpion fish and this diary faithfully recorded his daily assessment of his digit's look, shape, and feeling. Even during the afternoon swims that marked the end of day's work, he would be distracted by the shapes of wood in beach-wrack; the fishes that hid amongst floating bits, and the nature of cryptic coloration.

Historians of science and of southwest Florida will find much of interest, from detailed sketches of the laboratory building (which still stands, on what today is called "Cabbage Key"), to numerous notes on the environment and natural history of the Gulf of Mexico, barrier islands and inlets, Charlotte Harbor, and its adjoining inshore waters. The combined population for all of Lee and Charlotte counties at that time was only 21,000, so the population of people living on and near the Harbor was small. The Harbor became famous in the 19th and early 20th century as a place of great natural beauty, and already enjoyed a world-wide reputation for its abundant bird life, shelling, and game-fishing. Hunting and fishing lodges scattered around the Harbor drew the wealthy and leisure classes, and journalists reported enormous exports of wildlife products, trophies, museum specimens, and fresh fish and shellfish to northern markets.

One experiment demonstrates the notes' accuracy. Breder wrote, on June 22, of fish-watching at "dead low water and very low tide" around 10:00 pm. A quick check with computer software predicting tides for Pine Island Sound on that date verified slack low water at just the time Breder and company worked the overhead light at the end of the dock! To historians and biologists goes the task of modernizing place-names and the nomenclature of plants and animals listed in the diary, but the effort will be worthwhile.

CONTRIBUTIONS FROM THE PALMETTO KEY LABORATORY

1939

Breder, C. M., Jr.

Report of the Director of the Aquarium (in the 43rd Annual Report N. Y. Zool. Soc., p. 36-50.)

On the Trail of the Tarpon. Bull. N. Y. Zool. Soc., 42(4):98-110.

The Tiniest of Tarpon now at the Aquarium. Bull. N. Y. Zool. Soc., 42(5):154-155.

On the Life History and Deyelopment of the sponge blenny, *Paraclinus marmoratus* (Steindachner). Zoologica, 24(31):487-496.

1940

Breder, C. M., Jr.

Report of the Director of the Aquarium (in the 44th Annual Report N. Y. Zool. Soc., p. 49-76.)

Story, M.

Suppression of two generic names (*Auchenopterus* and *Cremnobates*) of tropical American blennoid fishes, with notes on systematic characters. Copeia, (2):81-87.

Bishop, M. B.

Notes concerning two broods of young of Natrix compressicauda.Copeia, (2):128.

Breder, C. M., Jr.

The expulsion of young by the male of *Hippocampus zosterae*. Copeia. (2):137-138.

The spawning of *Mugil cephalus* on the Florida west coast. Copeia. (2):138-139.

Merriman, D.

Morphological and Embryological studies on two species of marine catfish, *Bagre marinus* and *Galeichthys felis*. Zoologica, 45(13):221-248

Shlaifer, A., and Breder, C. M., Jr.

Social and respiratory behavior of small tarpon. Zoologica, 25(30):493-512

Breder, C. M., Jr., and Springer, S.

On the electric powers and sex ratios of foetal *Narcine brasiliensis*. Zoologica, 45(26):431-432.

1941

Breder, C. M., Jr., and Krumholz, L. A.

On the uterine young of *Dasyatis sabinus* (Le Sueur) and *Dasyatis hastatus* (De Kay). Zoologica, 46(10):49-53.

Shlaifer, A.

Additional social and physiological aspects of fespiratory behavior in small *Tarpon*. Zoologica, 46(11):55-60.

Breder, C. M., Jr.

On the reproduction of *Opsanus beta* Goode and Bean. Zoologica, 26(21):229-232.

On the reproductive behavior of the sponge blenny, *Paraclinus marmoratus* (Steindachner). Zoologica, 26(22):233-236.

Respiratory behavior in fishes not especially modified for breathing air under conditions of depleted oxygen. Zoologica, 26(25):243-244.

1942

Breder, C. M., Jr.

Social and respiratory behavior of large tarpon. Zoologica, 27(1):1-4.

On the reproduction of *Gobiosoma robustum* Ginsburg. Zoologica, 27(11):61-64.

An octopus on guard. Animal Kingdom, 454):91-94.

On the phenomenon of locomotor disorganization induced by strong light in small plectognath fishes. Copeia, (4):211-213.

On the behavior of young *Oligoplites saurus* (Bloch and Schneider). Copeia, (4):267.

1943

Breder, C. M., Jr.

The eggs of *Bathygobius soporator* (Cuvier and Valenciennes) with a discussion of other non- spherical teleost eggs. Bull. Bingham Ocean. Coll., 8(3):1-49.

Cox, R. T., and Breder, C. M., Jr.

Observations on the electric discharges of *Narcine brasiliensis* (Olfers). Zoologica, 28(8):45-51 .

Krumholz, L. A., and Breder, C. M., Jr.

On the locomotor and feeding behavior of certain postlarval Clupeoidea. Zoologica, 28(10):61- 67.

1944

Breder, C. M., Jr.

The metamorphosis of *Synodus foetens* (Linnaeus). Zoologica, 29(3):13-16.

Materials for the study of the life history of *Tarpon atlanticus*. Zoologica, 29(19):217-252.

1946

Breder, C. M., Jr.

An analysis of the deceptive resemblances of fishes to plant parts, with critical remarks on protective coloration, mimicry and adaptation. Bull. Bingham Ocean. Coll., 10(2):1-49.

1947

Breder, C. M., Jr., and Clark, E.

A contribution to the visceral anatomy, development and relationships of Plectognathi. Bull. Amer. Mus. Nat. Hist., 88(5):287-320 (in part).

1955

Breder, C. M., Jr.

Special features of visibility reduction in flatfishes. Zoologica, 40(8):91-98 (in part).

PHOTOGRAPHS

The photographs reproduced in this document (Plates 1 - 15) were first published in the Bulletin of the New York Zoological Society in 1939 and are reprinted with permission of the Society. The photographs are a wonderful visual companion to the written diary since many of the people and places repeatedly mentioned and described by Breder are included. The aerial photograph of Palmetto Key (Plate 1), when compared to the NOAA chart of the area (Figure 1), show that little topographic changes occurred in the area. The laboratory is shown in Plate 2, and its interior in Plate 3. Breder's description of the laboratory in the diary is excellent. The landscape around the laboratory and the tarpon pool are shown in Plates 4 through 6. The incomparable Mr. Bishop and his wife are in Plates 7, 8 and 13. Various sampling and tagging activities are shown in Plates 9 - 12, 14 - 15. Breder is shown working on the docks in Plates 14 and 15.

Other photographs of Palmetto Key field station activities are part of the Arthur Vining Davis Library collection at Mote Marine Laboratory and are reproduced with their permission (Plates 16 - 23). These photographs include originals of the ones used in the Bulletin of the New York Zoological Society. The people and places in the photographs are not identified.

DIARY AND TRANSCRIPTION

The handwritten diary of Dr. Breder's field activities Palmetto Key was written in a bound black and brown notebook in ink.

The diary was transcribed by hand. Minor editorial changes, such as closing parenthesis were made. Indecipherable entries were noted with "[?]". Editorial comments such as current names of species were noted in brackets and/or capital letters. Numbers outside the margin of the transcribed text are the page numbers of the original notebook.

Scans of the diary pages are included as individual JPG files in the CD and can be referred to as needed.

ACKNOWLEDGMENTS

The editors wish to thank the Breder Family, S. Stover, M. J. Bello, S. Baker, L. Pikula, E. Clark and the staff of the Mote Marine Laboratory for their assistance. Mote Librarian Susan Stover aided in all stages of the project. J. Castro, K. Duchon-Allard, E. D. Estevez, T. Fraser, F. W. King, K. Leber, C. Luer, and C. Walsh provided much useful assistance in deciphering obscure terms. Plates 2-15 are reprinted with permission from the Wildlife Conservation Society. The transcription is part of the Coastal and Estuarine Data/Document Archeology and Rescue (CEDAR) project funded by NOAA/COP for the South Florida Ecosystem Restoration, Prediction and Modeling Program and the South Florida Living Measurements Resource Program. This project was funded in part by the Mote Scientific Foundation's Charlotte Harbor research program.

Plate 2. The Palmetto Key laboratory and its two boats at the dock. The larger one was used for working in and around the passes, and the smaller one, supplied by Mrs. Mary Roberts Rinehart, was used for working in tight, shallow places among the mangroves. [Reprinted from the Bull. of the New York Zoological Society, (1939).]

Plate 3. "The main room of the laboratory, simple in its appointments, nevertheless is conveniently arranged for the purposes of the investigators and has sufficient equipment so that a considerable amount of work can be accomplished by the staff in a relatively short time." [Reprinted from the Bull. of the New York Zoological Society, (1939).]

Plate 4. The interior of Palmetto Key. [Reprinted from the Bull. of the New York Zoological Society, (1939).]

Plate 5. Artifical pond for holding tarpon under study. The ripple in the foreground is a tarpon coming to the surface for air. [Reprinted from the Bull. of the New York Zoological Society, (1939).]

Plate 6. Catching tarpon using a gill net. [Reprinted from the Bull. of the New York Zoological Society, (1939).]

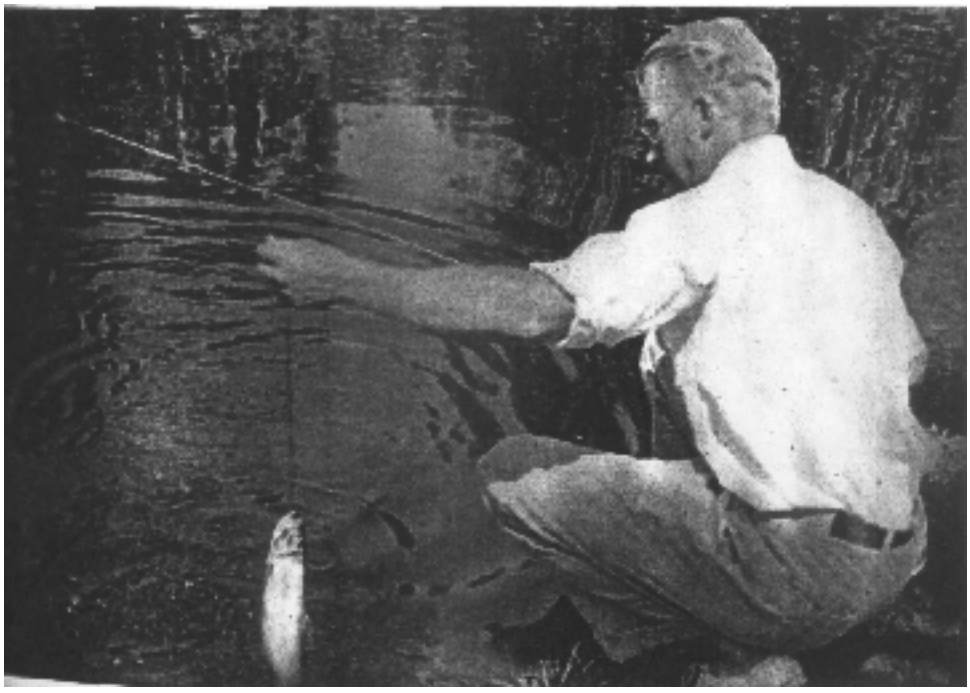

Plate 7. Mr. Bishop lands a tarpon using light fishing gear and brings it to shore for tagging. [Reprinted from the Bull. of the New York Zoological Society, (1939).]

Plate 8. Mr. Bishop tags a freshly caught tarpon prior to release. Mrs. Bishop records the number of the tag, size of the fish, and other data. [Reprinted from the Bull. of the New York Zoological Society, (1939).]

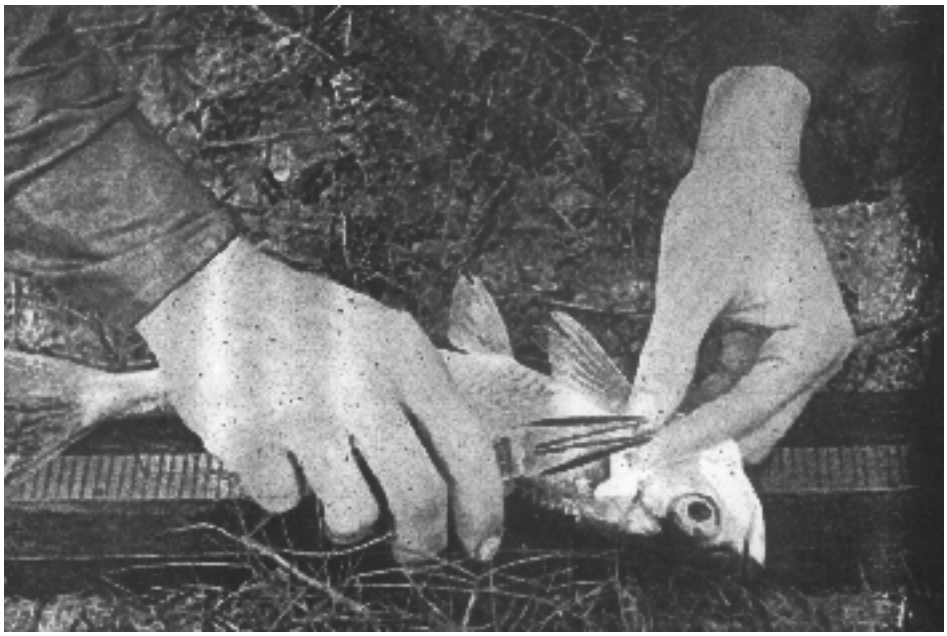

Plate 9. Close-up of the tagging operation [Reprinted from the Bull. of the New York Zoological Society, (1939).]

Plate 10. In some places the shore line prevented the catch from being beached so the seine was closed when still well off shore. [Reprinted from the Bull. of the New York Zoological Society, (1939).]

Plate 11. The seine drawn to shore and specimens are collected for live shipping to New York. [Reprinted from the Bull. of the New York Zoological Society, (1939).]

Plate 12. A bottom dredge going overboard to pick up, in a small silk net, eggs stirred up from the bottom. [Reprinted from the Bull. of the New York Zoological Society, (1939).]

Plate 13. Mrs. Bishop mending a cast net. [Reprinted from the Bull. of the New York Zoological Society, (1939).]

Plate 14. Dr. Breder collecting eggs from fishermen's catches to use in fertilization studies. [Reprinted from the Bull. of the New York Zoological Society, (1939).]

Plate 15. Dr. Breder working at the "temporary laboratory" set up on the dock at Boca Grande Pass to perform preliminary examination of fish eggs. [Reprinted from the Bull. of the New York Zoological Society, (1939).]

Plate 16. The Palmetto Key laboratory (note white railings covered with a tarp in Plate 2). [Reprinted with permission of the Arthur Vining Davis Library, Mote Marine Laboratory.]

Plate 17. Group at the entrance of the Palmetto Key laboratory [Note that the group appears to be standing at the large entrace at the back of the laboratory (see Plate 16). Dr. Breder may be the man standing in the center holding a cigarette. Ethel may be the woman next to him.]. [Reprinted with permission of the Arthur Vining Davis Library, Mote Marine Laboratory.]

Plate 18. Sorting catch at the end of the Palmetto Key laboratory dock. (Mr. Bishop may be the person seated at the right. Note the dock railing.) [Reprinted with permission of the Arthur Vining Davis Library, Mote Marine Laboratory.]

Plate 19. Night sampling off the Palmetto Key laboratory dock. [Reprinted with permission of the Arthur Vining Davis Library, Mote Marine Laboratory.]

Plates 20a-20c. Sampling in the mangroves. [Reprinted with permission of the Arthur Vining Davis Library, Mote Marine Laboratory.]

Plate 21. Small sampling vessel. [Reprinted with permission of the Arthur Vining Davis Library, Mote Marine Laboratory.]

Plate 22. Laboratory work. [Reprinted with permission of the Arthur Vining Davis Library, Mote Marine Laboratory.]

Plate 23. Aquarium. [Reprinted with permission of the Arthur Vining Davis Library, Mote Marine Laboratory.]

REFERENCES

Breder, C. M. (1939) On the Trail of the Tarpon. Bull. N. Y. Zool. Soc., 42(4):98-110.

Cantillo, A. Y., E. Collins and E. Clark (eds.) (2001) Charles M. Breder, Jr.: Dry Tortugas 1929. NOAA/Mote Marine Laboratory Joint Publication. CD NOAA Technical Memorandum NOS NCCOS CCMA 150. NOAA LISD Current References 2001-2. Mote Technical Report No. 802. NOAA/NOS/NCCOS, Silver Spring, MD. 79 pp.