A BIBLIOGRAPHY OF RESEARCH ON ST. JOSEPH BAY



1. Barnett, E. L., and Gunter, J. S. 1986.

Comprehensive shellfish harvesting survey for St. Joseph Bay, Gulf County, Florida.

Fla. Dept. of Natural Resources, Shellfish Environmental Assessment Section, Tallahassee, Fla.

Key words: Shellfish/Fisheries/Water Quality/Invertebrates.

2. Beck, M. W. 1995.

"The effects of habitat structure on stone crabs: a test of the generality of the demographic bottleneck hypothesis."

Benthic Ecology Meeting, New Brunswick, NJ, March 17-19, 1995, no. 23. [Abstract only.]

A study of the limiting effects of habitat upon the population structure, growth and fecundity of stone crabs, *Menippe mercenaria*, in St. Jospeh Bay.

Crab, Stone/Invertebrates.

3. Beck, M. W. 1995.

"Size-specific shelter limitation in stone crabs: a test of the demographic bottleneck hypothesis."

Ecology 76(3):968-980.

A study of the effects of available sheltering habitat on the reproduction and survival of stone crabs (Menippe mercenaria) in St. Joseph Bay.

Crab, Stone/Invertebrates.

4. Beddingfield, Steven D., and James B. McClintock. 1994.

"Environmentally-induced catastrophic mortality of the sea urchin *Lytechinus variegatus* in shallow seagrass habitats of Saint Joseph's Bay, Florida."

Bulletin of Marine Science 55(1):235-240.

A combination of low air temperatures and extreme tides caused a dieoff of these sea urchins during March 13-14, 1993.

Sea urchins/Invertebrates.

5. Beddingfield, Steven D., and James B. McClintock. 1995.

"Temporal and spatial patterns of dietary resource utilization in the echinoid *Lytechinus variegatus*."

Benthic Ecology Meeting, New Brunswick, NJ, March 17-19, 1995, no. 23. [Abstract only.]

Studied the differences in growth, reproduction and recruitment of this sea urchin in the various seagrass habitats of St. Joseph Bay.

Sea urchins/Invertebrates/Seagrasses.

6. Bologna, P. 1995.

"Bay scallop production among several seagrass habitats."

Benthic Ecology Meeting, New Brunswick, NJ, March 17-19, 1995, no. 23. [Abstract only.]

Studied the scallop growth, population production, and predation rate in various seagrass beds in St. Joseph Bay.

Scallops, Bay/Invertebrates/Seagrasses.

7. Brooks, W. R., and R. N. Mariscal. 1986.

"Population variation and behavioral changes in two pagurids in association with the sea anemone *Calliactis tricolor* (Lesueur)." Journal of Experimental Marine Biology and Ecology 103(1-3):275-280. Two species of hermit crabs (*Pagurus pollicaris* and *P. impressus*) was studied with regard to their anemone-carrying behavior. Two populations were studied, one in St. Joseph Bay and one in Turkey Point, Florida. Crab, Hermit/Sea anemones/Invertebrates.

8. Cake, Edwin W., Jr. 1970.

Some predator-prey relationships involving the Sunray Venus clam, Macrocallista nimbosa (Lightfoot) (Pelecypoda: Veneridae) along the Gulf coast of Florida.

M.S. Thesis, Florida State Univ., Tallahassee, 167 p.

This study included collections of Sunray Venus clams and other invertebrates from St. Joseph Bay.

Clams, Sunray Venus/Invertebrates.

9. Copeland, B. J. 1966.

"Effects of industrial waste on the marine environment." Journal of the Water Pollution Control Federation 38(6):1000-1010.

An assessment of the effects of industrial discharges on the water quality and biota of St. Joseph Bay.

Water quality/Water pollution.

10. Crenshaw, J. W., Jr., P. B. Heffernan, and R. L. Walker. 1991.

"Heritability of growth rate in the southern bay scallop, Argopecten irradians concentricus (Say, 1822)."

Journal of Shellfish Research 10(1):55-63.

This study compared genetics and growth rates between populations from Georgia and St. Joseph Bay.

Scallop, Bay/Invertebrates.

11. D'Asaro, Charles N. 1986.

"Egg capsules of eleven marine prosobranchs from northwest Florida." Bulletin of Marine Science 39(1):76-91.

This study describes the egg capsules, developmental pattern, and reproductive behavior of eleven gastropod molluscs: Florida fighting conch (Strombus alatus), eastern murex (Murex fulvescens), Gulf oyster drill (Urosalpinx perrugata), pitted murex (Favartia cellulosa), sharp-rib drill (Eupleura sulcidentata), mauve-mouth drill (Calotrophon ostrearum), cancellate cantharus (Cantharus cancellarius), ribbed cantharus (Cantharus multangulus), banded tulip (Fasciolaria lilium), Florida cone (Conus floridanus), and jasper cone (Conus jaspideus). Samples were taken from stations along the northwest Florida coast, including St. Joseph Bay.

Molluscs/Invertebrates.

12. Eidemiller, Julia A. 1972.

Significant associations of the motile epibenthos of the turtle grass beds of St. Joseph Bay, Florida.

M.S. Thesis, Florida State Univ., Tallahassee, 90 p.

A thorough inventory of the fauna of the seagrass beds, and the predatorprey relationships.

Invertebrates/Fishes/Seagrasses.

 Florida Department of Natural Resources, Bureau of Submerged Lands and Preserves. 1992.

St. Joseph Bay Aquatic Preserve Management Plan.

Fla. DNR, Tallahassee, FL, 116 p.

The purpose of the plan is to protect the plant communities, animal life, geologic features, archaeological sites, and water resources of the preserve, while providing uses and activities that are compatible with resource protection. Plan includes a physical description of the area, biota, and habitats; human uses and their impacts, management and research goals.

St. Joseph Bay Aquatic Preserve/Resource management.

Florida State Board of Health, Bureau of Sanitary Engineering. 1962.
 Survey of St. Joseph's Bay and the Gulf County Canal, October 18 - October 20, 1961.

Fla. St. Board Health, Jacksonville, FL.

This survey found a degradation in water quality of the bay compared with the previous survey done in 1949. The major pollution sources were given as St. Joe Paper Co., Glidden Co., and the sewage treatment plant of the City of Port St. Joe.

Water pollution.

15. Foster, John M. 1980.

"Scallops in St. Joseph Bay, Florida."

Underwater Naturalist 12(3):14-16.

The biology and collection of the bay scallop, *Argopecten irradians* concentricus, is discussed.

Scallop, Bay/Invertebrates.

16. Haines, M. Lynn. 1976.

"The reproductive cycle of the Sunray Venus clam *Macrocallista* nimbosa (Lightfoot 1786)."

Proceedings of the National Shellfish Assoc. 66:6-12.

Clams used in this study were collected from St. Joseph Bay. Results indicated a spawning period of August - November, with a peak in October - November.

Clam, Sunray Venus/Invertebrates.

17. Hasan, A. S., G. A. Hines, and S. A. Watts. 1993.

"Biosynthesis of sex steroids in the echinoid Lytechinus variegatus (Lamarck)."

Journal of the Alabama Academy of Science 64(2):84. [Abstract only.]

This study was conducted with samples of sea urchins form St. Joseph Bay.

Sea urchins/Invertebrates.

18. Hathaway, Ralph R. 1957.

"The crown conch *Melongena corona* Gmelin: its habits, sex ratios, and possible relations to the oyster."

Proceedings of the National Shellfisheries Association. 48:189-194.

A study of the biology of this mollusc, and its predation on oysters. Samples were taken from St. Marks to St. Andrew Bay, including St. Joseph Bay.

Conch, crown/Oysters/Invertebrates.

19. Heck, K. L., Jr. and J. F. Valentine. 1995.

"Sea urchin herbivory: evidence for long-lasting effects in subtropical seagrass meadows."

Journal of Experimental Marine Biology and Ecology 189(1-2):205-217. A study of the effects of sea urchin (Lytechinus variegatus) grazing upon

seagrass beds in St. Joseph Bay.

Sea urchins/Seagrasses/Invertebrates.

- 20. Heck, K. L., Jr. and K. A. Wilson. 1987. "Predation rates on decapod crustaceans in latitudinally separated seagrass communities: a study of spatial and temporal variation using tethering techniques."
 Journal of Experimental Marine Biology and Ecology 107(2):87-100.
 Studies conducted in New Jersey, Bermuda and St. Joseph Bay, Florida showed that seagrasses provide a significant, though variable, refuge from predation for these invertebrates.
 Invertebrates/Crustaceans/Seagrasses.
- 21. Heffernan, P. B., F. L. Walker, and M. Ryan. 1993. "Second heritability estimates of growth rate in the southern bay scallop, Argopecten irradians concentricus (Say, 1822)." Journal of Shellfish Research 12(1):151. [Abstract only.] This genetics and growth rate study used specimens collected from St. Joseph Bay. Scallop, Bay/Invertebrates.

22. Jolley, John W., Jr. 1972.

Exploratory fishing for the Sunray Venus clam, *Macrocallista nimbosa* in northwest Florida.

Fla. Dept. Nat. Resour., St. Petersburg, Fla. Dept. Nat. Resour., Tech. Ser. no 67, 42 p.

This exploratory fishing survey included stations off of St. Joseph Bay, and included tabular data regarding the benthic invertebrate fauna and fishes present in samples.

Clam, Sunray Venus/Invertebrates/Fishes.

23. Joyce, Edwin A., Jr. 1970.

"History and current status of the Sunray Venus clam fishery in northwest Florida."

American Malacological Union, Annual Report 1970:29-30.

A report on the fishery for this clam, *Macrocallista nimbosa*, in St. Joseph Bay.

Clam, Sunray Venus/Invertebrates.

24. Kuhlmann, M. L. 1994.

"Indirect effects of a predatory gastropod in a seagrass community." Journal of Experimental Marine Biology and Ecology 183(2):163-178. The ecological interaction between the pen shell, *Atrina rigida*, and its predator, the horse conch, *Pleuroploca gigantea*, in St. Joseph Bay, and its indirect effects upon other species.

Conch, Horse/Pen shell/Invertebrates.

25. Kuhlmann, M. L. 1995.

"Horse conch foraging behavior and indirect effects on fish reproduction."

Benthic Ecology Meeting, New Brunswick, NJ, March 17-19, 1995, no. 23. [Abstract only.]

The effects of predation of the horse conch (*Pleuroploca gigantea*) upon populations of pen shells (*Atrina rigida*), and its indirect effects on Florida blenny (*Chasmodes saburrae*) reproduction in St. Joseph Bay. Conch, Horse/Pen shell/Blenny, Florida/Invertebrates/Fishes.

26. Kuhlmann, M. L. 1994.

"Indirect effects of a predatory gastropod in a seagrass community." Journal of Experimental Marine Biology and Ecology 183(2):163-178.

A study of the interactions among benthic populations in St. Joseph Bay. The study found that horse conchs (*Pleuroploca gigantea*), while preying upon other gastropods such as pen shells (*Atrina rigida*), create habitat for shell-occupying or shell-nesting species, such as crabs, octopus, and fish such as blennies (*Hypsoblennius hentzi*, *Chasmodes saburrae*) and clingfish (*Gobiesox strumosus*).

Conch, Horse/Pen shell/Blennies/Clingfish/Invertebrates/Fishes.

27. McNulty, J. Kneeland, William N. Lindall, Jr. and James E. Sykes. 1972.

Cooperative Gulf of Mexico Estuarine Inventory and Study, Florida: Phase I, Area Description.

U.S. Dept. of Commerce, NOAA, Seattle, WA, NOAA Technical Report NMFS CIRC no. 368, 126 p.

Summarizes environmental information for St. Joseph Bay, including biota, hydrography and pollution sources.

General works.

28. Osborne, Nathaniel, M. 1979.

The influence of sediment characteristics and seagrass species on the distribution and abundance of polychaetous annelids in north Florida seagrass beds.

M.S. Thesis, Florida State Univ., Tallahassee, FL, 41 p.

A study of the polychaete worm community and the influence of seagrass and sediment habitat on the worm populations.

Polychaete worms/Invertebrates/Seagrasses/Sediments.

Phillips, Ronald C., Mary K. Vincent, and Robert T. Huffman. 1978.
 Habitat development field investigatinos, Port St. Joe seagrass demonstration site, Port St. Joe, Florida: summary report.

U.S. Army Waterways Experiment Station, Vicksburg, MS, Technical Report no. D-78-33, 52 p.

This transplant study of shoal grass, *Halodule wrightii*, indicated that the plant could be successfully propagated on dredged material. Seagrasses.

30. Roller, R. A., and W. B. Stickle. 1993.

"Effects of temperature and salinity acclimation of adults on larval survival, physiology, and early development of *Lytechinus variegatus* (Echinodermata: Echinoidea)."

Marine Biology 116(4):583-591.

This study was conducted with sea urchins taken from St. Joseph Bay. Sea urchins/Invertebrates.

31. Rudloe, Anne. 1985.

"Variation in the expression of lunar and tidal behavioral rhythms in the horseshoe crab, Limulus polyphemus."

Bulletin of Marine Science 36(2):388-395.

Lunar and tidal activity patterns in breeding and foraging behavior of these crabs in St. Joseph Bay were studied for a 3-year period. Crab, Horseshoe/Invertebrates.

Sargent, Frank J., Timothy J. Leary, and David W. Crewz. 1995.
 Scarring of Florida's seagrasses: assessment and management options.
 Florida Dept of Environmental Protection, Tallahassee, FMRI Technical Report no. TR-1, 46p. + maps.

This study includes information on the status of seagrass beds in St. Joseph Bay.

Seagrasses.

33. Savastano, K. J., K. H. Faller, L. W. McFadin, and H. Holley. 1981. Mapping of submerged vegetation using remote sensing technology. NOAA, NSTL Station, MS, U.S. Dep. Commer., NOAA Tech. Memo. NMFS-SEFC no. 73, 101 p.
St. Joseph Bay was the site of an experimental aircraft-supported remote sensing program for determining the location of seagrass beds.

Seagrasses/Remote sensing.

34. Savastano, K. J., K. H. Faller, and Richard L. Iverson. 1984.

"Estimating vegetation coverage in St. Joseph Bay, Florida with an airborne multispectral scanner."

Photogrammetric Engineering and Remote Sensing 50(8):1159-1170.

Remote sensing techniques were used to construct a computerized map of the bay bottom features such as various bottom types and seagrass coverage.

Seagrasses/Remote sensing.

- 35. Stauble, D. K., and D. A. Warnke. 1974.
 "The bathymetry and sedimentation of Cape San Blas shoal and shelf off St. Joseph Spit, Florida."
 Journal of Sedimentary Petrology 44(4):1037-1051.
 Sediments/Bathymetry.
- 36. Stewart, Richard A. 1962.
 Recent sedimentary history of St. Joseph Bay, Florida.
 M.S. Thesis, Florida State Univ., Tallahassee, FL, 82 p.
 Includes geologic history, hydrography, and sedimentary analyses.
 Geology/Sediments/Hydrography.
- 37. Stewart, Richard A., and Donn S. Gorsline 1962. "Recent sedimentary history of St. Joseph Bay, Florida." Sedimentology 1:256-286. The geological history and sedimentary profile of this bay. Sediments/Geology.
- 38. Stokes, Randall J., Edwin A. Joyce, Jr., and Robert M. Ingle. 1968. "Initial observations on a new fishery for the Sunray Venus clam, Macrocallista nimbosa (Solander)."
 Fla. Dept. Nat. Resour. Mar. Lab., Tech Ser. no 56 27 p.
 This exploratory fishing survey was conducted in St. Joseph Bay. In addition to clam landings and growth rate, it included hydrographic information (salinity and temperature) and listings of other species caught.
 Clam, Sunray Venus/Invertebrates/Fisheries/Fishes.
- 39. Thayer, G. W., J. J. Govoni and D. W. Connally. 1983.
 "Stable carbon isotope ratios of the planktonic food web in the northern Gulf of Mexico."
 Bulletin of Marine Science 33(2):247-256.
 This study of carbon content in the marine food web was conducted with samples taken from off Louisiana and Cape San Blas, Florida.
 Carbon/Plankton/Cape San Blas.

U.S. Environmental Protection Agency. 1978.
 Evaluation of the city wastewater treatment plant, Port St. Joe, Florida.
 EPA, Denver, Colorado, EPA-330/2-78-009.
 Sewage treatment.

41. Valentine, J. F., K. L. Heck, Jr., P. Harper, and M. Beck. 1994. "Effects of bioturbation in controlling turtle grass (*Thalassia testudinum* Banks ex Koenig) abundance: evidence from field enclosures and observations in the northern Gulf of Mexico." Ecology 178(2):181-182.

This study found that neither stingrays (Dasyatis americana) nor sand dollars (Mellits quinquiesperforata) were the cause of the unvegetated patches in St. Joseph Bay. Stone crab (Menippe spp.) burrows did cause loss of turtle grass habitat at the seaward edge.

Seagrasses/Stingrays/Sand dollar/Crab, Stone/Invertebrates/Fishes.

42. Valentine, J. F., and K. L. Heck, Jr. 1993.

"Mussels in seagrass meadows: their influence in macroinvertebrate abundance and secondary production in the northern Gulf of Mexico." Marine Ecology Progress Series 96(1):63-74.

A study of the mussel *Modiolus americanus* and other macroinvertebrate populations in the various seagrass beds of St. Joseph Bay. Seagrasses/Invertebrates/Mussels.

43. Valentine, J. F., and K. L. Heck, Jr. 1991.

"The role of sea urchin grazing in regulating subtropical seagrass meadows: evidence from field manipulations in the northern Gulf of Mexico."

Journal of Experimental Marine Biology and Ecology 154:215-230.

Found sea urchin densities sufficient to cause overgrazing of seagrasses in St. Joseph Bay.

Sea urchins/Invertebrates/Seagrasses.

44. Valentine, J. F., and K. L. Heck, Jr. 1990.

"Studies on the effects of the sea urchin *Lytechinus variegatus* in *Thalassia testudinum* seagrass meadows in St. Joseph Bay, Florida." Northeast Gulf Science 11(1):88. [Abstract only.]

This study found sea urchin densities sufficient to overgraze the seagrass meadows.

Seagrasses/Sea urchins/Invertebrates.

45. Vetter, R. D. 1985.

"Elemental sulphur in the gills of three species of clams containing chemoautotrophic symbiotic bacteria: a possible inorganic energy storage compound."

Marine Biology 88(1):33-42.

Three species of clams (ringed lucine, *Lucinoma annulata*, Florida lucine, *Lucina floridana*, and *Calyptogena elongata*) from St. Joseph Bay were analyzed for sulphur content.

Clams/Invertebrates.

46. Walker, R. L., and P. B. Heffernan. 1993.

"Age, growth rate, and size of the southern surf clam, Spisula solidissima similis (Say, 1882)."

Journal of Shellfish Research 12(1):157. [Abstract only.]

The Florida population, from St. Joseph Bay, tended to grow larger and live longer than the Georgia population.

Clam, Southern surf/Invertebrates.

47. Walker, R. L., and P. B. Heffernan. 1994.

"Age, growth rate, and size of the southern surf clam, Spisula solidissima similis (Say, 1822)."

Journal of Shellfish Research 13(2433-441. [Abstract of the same study appeared in the 12(1) issue.]

This study compared growth rates of clams from Wassaw Island, Georgia, and St. Joseph Bay.

Clam, Southern surf/Invertebrates.