

1-1-2004

Microfauna as Tracers of Sediment Transport: Ft. Pierce Dredge Spoils Sediment Study

Patricia Blackwelder

University of Miami, pblackwe@nova.edu

Carlos Alvares Zarikian

University of Miami

Terry Hood

University of Miami

Charles M. Featherstone

NOAA-Atlantic Oceanographic and Meteorological Laboratory

John Proni

NOAA-Atlantic Oceanographic and Meteorological Laboratory

See next page for additional authors

Find out more information about Nova Southeastern University and the Halmos College of Natural Sciences and Oceanography.

Follow this and additional works at: https://nsuworks.nova.edu/occ_facreports

 Part of the [Marine Biology Commons](#), and the [Oceanography and Atmospheric Sciences and Meteorology Commons](#)

NSUWorks Citation

Patricia Blackwelder, Carlos Alvares Zarikian, Terry Hood, Charles M. Featherstone, John Proni, and Jules Craynock. 2004. Microfauna as Tracers of Sediment Transport: Ft. Pierce Dredge Spoils Sediment Study .Annual Report to NOAA 2004 : 81 -82. https://nsuworks.nova.edu/occ_facreports/90.

This Report is brought to you for free and open access by the Department of Marine and Environmental Sciences at NSUWorks. It has been accepted for inclusion in Marine & Environmental Sciences Faculty Reports by an authorized administrator of NSUWorks. For more information, please contact nsuworks@nova.edu.

Authors

Patricia Blackwelder, Carlos Alvares Zarikian, Terry Hood, Charles M. Featherstone, John Proni, and Jules Craynock



Microfauna as Tracers of Sediment Transport: Ft. Pierce Dredge Spoils Sediment Study

Project Personnel: Pat Blackwelder, Carlos Alvares Zarikian, Terry Hood (UM/RSMAS); Charles Featherstone, John Proni, Jules Craynock (NOAA/AOML)

Long Term Research Objectives and Strategy to Achieve Them:

Objectives: To monitor sediment transport in coastal waters so as to assess human impacts such as dredging. **Strategy:** To develop a method in which microfaunal indicator species can be used as tracers of sediment sources.

Link to NOAA Strategic Plan Goal:

Goal 1: Protect, Restore and Manage the Use of Coastal and Ocean Resources Through Ecosystem-based Management

Research Summary:

This study facilitates the use of particular indicator species of microfauna (foraminifera and ostracods) as natural tracers of transported sediment. Samples were collected offshore of Ft. Pierce, Florida, from sampling sites prior to and after dredging operations. Microfaunal populations were assessed from samples collected from 19 sites pre-dredging (2000) and subsequently collected post dredging in 2001, 2002, and 2003. These sites include nearshore, harbor and shelf localities. Total and relative *foraminifera* and *ostracod* abundance and diversities (Shannon-Weiner) were assessed. In addition, we characterized the total taphonomic and living population as well as the richness, evenness or individual indicator species.

This work provides a data set on microfaunal community characteristics in the study area before sediment movement induced by dredging. Sample locations included the sediment source (harbor), the planned dumping sites, and a location removed from the impacted sites. Subsequent reoccupations of the sites will enable us to identify sediment movement. Individual species of *foraminifera* and *ostracods* demonstrated potential as indicators of channel and harbor sediments. Q-mode cluster analyses indicated distinct faunal clusters for fresh water, lagoonal and continental shelf assemblages were present.

Results indicate that during initial re-sampling there was no evidence of inshore sediment spe-

Theme 4: Human Interactions with the Environment

cies at the continental shelf population sites. The last phase of the work will complete the analyses of collected samples to examine the potential re-distribution of these sediments over the three year sampling interval.

Research Performance Measure:

The initial objective - the collection and species assemblage characterization of samples - has been completed as planned. The conclusion as to whether the assemblages will be useful as indicators of dredged sediment will depend on the outcome of the continuing studies carried out as dredging progresses.

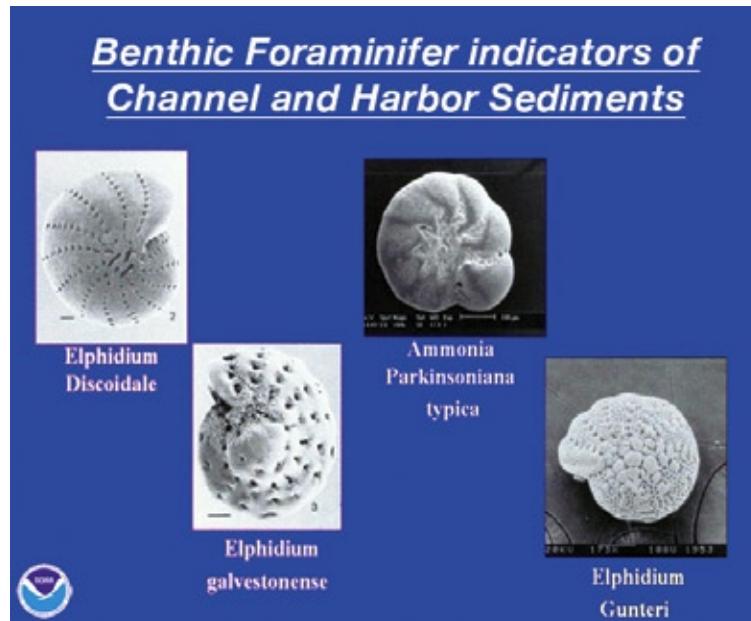


Fig. 1- Benthic *Foraminifer* Species Indicative of Channel and Harbor Sediments

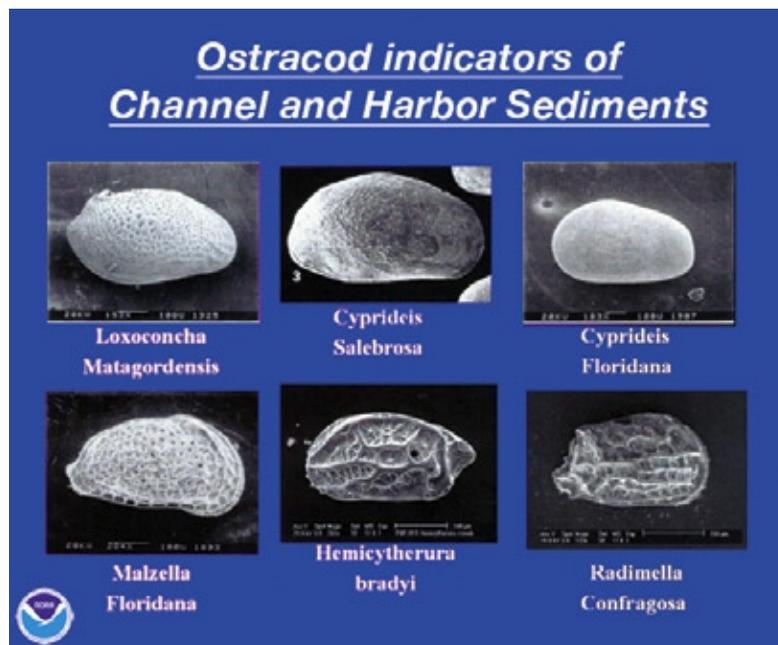


Fig. 2- *Ostracod* Species Indicative of Channel and Harbor Sediments