

STUDY TITLE: Southwest Florida Shelf Hydrographic Study, Year II

REPORT TITLE: Southwest Florida Shelf Ecosystems Study, Marine Habitat Atlas, Volume 1: Map Series

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APPLICABLE PLANNING AREAS: Straits of Florida; Eastern Gulf of Mexico

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CUMULATIVE PROJECT COST: \$1,866,916

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KEY WORDS: Straits of Florida; Eastern Gulf; Southwest Florida Shelf; baseline; hydrography; biology; hard-bottom; maps; distribution; faunal zones; videotapes; geophysical; epifauna; infauna; habitat; benthic photographs

BACKGROUND: In 1980, the U.S. Department of the Interior sponsored a multi-year environmental characterization of the southwest Florida continental shelf. The first two study years involved benthic station sampling, hydrographic station sampling, and benthic habitat mapping

OBJECTIVES: To map the distribution of substrate types and benthic community types on the southwest Florida shelf.

DESCRIPTION: Five east-west transects and one north-south transect over the southwest Florida shelf were surveyed, covering an area from Charlotte Harbor in the north to Dry Tortugas in the south. Each transect was surveyed with towed geophysical and photographic systems. Navigation and positioning was achieved with a Decca Hi-Fix radio-positioning system and an onboard plotting system. The transects consisted of three parallel lines, spaced approximately 800 m apart. Geophysical surveys consisted of simultaneous data collection from depth sounders, side-scan sonar, and subbottom profiler. Television and still camera surveys were conducted using a towed television/still camera system. This system was towed at a height of one to three

meters off the bottom. Survey cruises were conducted over a two-year period: four cruises during Year 1 and three cruises during Year 2. During Year 1, the first cruise consisted of geophysical surveying of the five east-west transects in water depths ranging from 40 to 200 m. On the second cruise, underwater television and still cameras were towed over the same transects in water depths of 20 to 100 m. The two remaining cruises collected hydrographic and biological data. During Year 2, the first cruise included simultaneous towing of photographic and geophysical equipment along a north-south transect and along the five east-west transects in water depths ranging from 100 to 200 m. The two remaining cruises collected biological and hydrographic information.

SIGNIFICANT CONCLUSIONS: Six primary substrate types were recognized from the geophysical mapping efforts of the southwest Florida shelf. Nine depth-related biological assemblages were mapped across the shelf. A series of 43 habitat maps (scale 1:48,000) included post-plot shiptrack data, bathymetry, biological assemblages, and substrate types.

STUDY RESULTS: Over 2,438 km of geophysical data were collected during the two geophysical survey cruises. In addition, a total of 193 lease blocks were traversed during the surveys. Biological assemblages include: Inner and Middle Shelf Sand Bottom Assemblage (20 to 90 m); Inner Shelf Live Bottom Assemblage I (20 to 27 m); Inner and Middle Shelf Live Bottom Assemblage II (25 to 75 m); Middle Shelf Algal Nodule Assemblage (62 to 108 m); *Agaricia* Coral Plate Assemblage (64 to 81 m); Outer Shelf Sand Bottom Assemblage (74 to 200 m); and Outer Shelf Low-Relief Live Bottom Assemblage (108 to 198 m). Six primary substrates were identified from the photographic surveys: sand/soft bottom; thin sand over hard substrate; rock outcrops/hard bottom; coralline algal nodule layer over sand; algal pavement with *Agaricia* accumulations; and coarse rubble with attached crinoids. Secondary substrates included circular depressions ranging in size from 5 to 30 m across and 2 to 3 m deep, and pinnacles comprised of dead coral heads in water depths of 135 to 170 m. Thin sand over hard substrate was the most frequently encountered substrate type.

The base map used for the 1:48,000 scale habitat maps was a Universal Transverse Mercator (UTM) Projection using the Clarke 1866 spheroid. Summary maps were at a scale of 1:50,000. The 1:48,000 maps were presented on a series of 43 sheets. Each sheet covered up to six lease blocks in north-south or east-west directions. The top section of a map sheet shows lease block boundaries, UTM, and Lat/Long coordinates. The central section shows the marine habitat, including bathymetry, substrate type, biological assemblage, and characteristic biota. At the bottom, a geological profile shows subsurface strata and shallow geologic features.

STUDY PRODUCTS: Woodward-Clyde Consultants and Continental Shelf Associates, Inc. 1983. Southwest Florida Shelf Ecosystems Study, Marine Habitat Atlas. Vol. 1, Maps. A final map series for the U.S. Department of the Interior, Minerals Management Service Gulf of Mexico OCS Office, Metairie, LA. Open File Report 83-02. Contract No. 14-12-0001-29144. Index map (1:50,000); 43 Map sheets (1:48,000).

Woodward-Clyde Consultants and Continental Shelf Associates, Inc. 1983. Southwest Florida Shelf Ecosystems Study, Marine Habitat Atlas. Vol. 2, Narrative. A final report for the U.S. Department of the Interior, Minerals Management Service Gulf of Mexico OCS Office, Metairie, LA. NTIS No. PB84-113315. Contract No. 14-12-0001-29144. 38 pp.