

**STUDY TITLE:** Gulf of Mexico Polychaeta Standardization Study

**REPORT TITLE:** Taxonomic Guide to the Polychaetes of the Northern Gulf of Mexico, Volumes I through VII

**CONTRACT NUMBER:** 14-12-001-29091

**SPONSORING OCS REGION:** Gulf of Mexico

**APPLICABLE PLANNING AREAS:** Eastern, Central, and Western Gulf of Mexico

**FISCAL YEARS OF PROJECT FUNDING:** 1979; 1981; 1982

**COMPLETION DATE OF REPORT:** 1984

**COSTS:** FY 1979: \$224,525; FY 1981: \$26,990; FY 1982: \$6,087

**CUMULATIVE PROJECT COST:** \$257,602

**PROJECT MANAGER:** B. Vittor

**AFFILIATION:** Barry A. Vittor & Associates, Inc.

**ADDRESS:** 8100 Cottage Hill Road, Mobile, Alabama 36609

**PRINCIPAL INVESTIGATORS\*:** P. Johnson, J. Uebelacker

**KEY WORDS:** Eastern Gulf; Central Gulf; Western Gulf; Texas; Mississippi; Alabama; Florida; Florida Keys; biology; Southwest Florida Shelf; polychaete; standardization; voucher; specimens; shelf; sediment; diagnostic key; life history

**BACKGROUND:** Biological baseline studies carried out on the Gulf of Mexico Outer Continental Shelf (OCS) routinely include infaunal samples taken from soft substrates. Polychaete worms usually predominate these benthic samples however, taxonomic inconsistencies preclude the incorporation of polychaete assemblages in meaningful ecological evaluations. When proper identifications allow, polychaetes are valuable as indicators of distinct faunal assemblages or environmental stress. Hence, polychaetes are of great interest to environmental managers. Recognizing the taxonomic consistency problem, the Bureau of Land Management (BLM) funded a study to standardize all polychaete identifications from major BLM OCS studies conducted in the northern Gulf of Mexico to develop a general polychaete identification guide. The study was expanded and completed under funding from the Minerals Management Service (MMS).

**OBJECTIVES:** (1) To provide taxonomic standardization and develop an identification guide for polychaetes collected during major BLM/MMS projects from the northern Gulf of Mexico OCS.

**DESCRIPTION:** Polychaete specimens were secured from voucher collections of the following BLM/MMS studies: South Texas Outer Continental Shelf Study (STOCS), Mississippi-Alabama-Florida Study (MAFLA), Ecological Investigations of Petroleum Platforms in the Central Gulf (CTGLF), IXTOC Oil Spill Study (IXTOC), and Southwest Florida Shelf Ecosystems Study (SOFLA). A breakdown of polychaete taxa and families initially reported by each study is as follows: MAFLA: 586 taxa, 58 families; SOFLA 250 taxa, 46 families; CTGLF 158 taxa, 56 families; STOCS 312 taxa, 44 families; IXTOC 103 taxa, 36 families. Geographical coverage of these studies includes the continental shelf of the northern Gulf of Mexico from Brownsville, Texas to the Florida Keys and offshore to the 200-m isobath. Inner, middle, and outer shelf water depths were covered during the efforts of most studies. Sediment type reported for each study generally reflected geographic location; the eastern Gulf (MAFLA and SOFLA) consisted mostly of medium to coarse grained sands while the central and western Gulf (CTGLF, IXTOC, and STOCS) sediments were mostly finer sands, silts, and clays. Initially, voucher specimens obtained from the contractors of individual studies were sorted to family then re-examined by taxonomists using various microscopes and mounting techniques. Following examination and detailed taxonomic description of the material, representative specimens were deposited in the National Museum of Natural History, Smithsonian Institution, Washington, D.C. and any additional material was kept in the museum of Barry A. Vittor & Associates, Inc.

**SIGNIFICANT CONCLUSIONS:** A total of 593 polychaete taxa were recognized from the collections; 41% were new to science. The guide is an accumulation of diagnostic keys, based on external features (i.e., setae and parapodia), for the identification of polychaetes from soft bottom areas in the northern Gulf of Mexico. Numerous inconsistencies were discovered during this project that would hinder ecological or zoogeographical analyses. Numerous animal-sediment relationships were also discerned during the course of the study.

**STUDY RESULTS:** The efforts of this study resulted in identification of 593 species in 228 genera and 59 families. Forty one percent of the examined polychaetes were new to science or previously undescribed. Numerous misidentifications were uncovered which will improve geographical and ecological analyses. The identification guide, assembled using the reexamined material, is arranged by polychaete family, into chapters. The chapters, arranged in phylogenetic order, each treat a single family and provide diagnostic characters of the family, biological notes on the family followed by a taxonomic treatment. The taxonomic section of each chapter includes generic keys, generic diagnoses, species keys, and species descriptions. Biological notes include characteristic life history, feeding strategy, reproduction, substrate preference, tube construction, locomotion, behavior, commensalism, parasitism, and larval development are given when possible. Each species description gives a list of BLM/MMS-OCS and any supplementary material examined, a synonymy and ecological and geographical

information when available. Figures are given showing distribution of species in the northern Gulf of Mexico and detailed drawings of characters useful in the identification of particular species are also provided. In addition, figures are given showing the distribution of species in the northern Gulf of Mexico.

**STUDY PRODUCT:** Uebelacker, J. M. and P. G. Johnson. 1984. Taxonomic Guide to the Polychaetes of the Northern Gulf of Mexico. A final report by Barry A. Vittor & Associates for the U.S. Department of the Interior, Minerals Management Service Gulf of Mexico OCS Region, Metairie, LA. Vol. I - NTIS No. PB85-150752; Vol. II - NTIS No. PB85-150761; Vol. III - NTIS No. PB85-150779; Vol. IV - NTIS No. PB85-150787; Vol. V - NTIS No. PB85-150795; Vol. VI - NTIS No. PB85-150803; Vol. VII - NTIS No. PB85-150811. Contract No. 14-12-0001-29091. 7 Vols.

**\*P.I.'s affiliation may be different than that listed for Project Managers.**