

**STUDY TITLE:** Assessment and Reduction of Taxonomic Error in Benthic Surveys

**REPORT TITLE:** Preparation of an Interactive Key for Northern Gulf of Mexico Polychaete Taxonomy Employing the DELTA/INTKEY System

**CONTRACT NUMBER:** 14-35-0001-99-CA-30951-16801

**SPONSORING OCS REGION:** Gulf of Mexico

**APPLICABLE PLANNING AREA(S):** Western, Central, and Eastern Gulf of Mexico

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**KEY WORDS:** taxonomic quality control, polychaete, database, DELTA/INTKEY

**BACKGROUND:** An accurate inventory of fauna at the species level is a prerequisite for the development of regional-size and longer time-scale syntheses of how benthic fauna varies naturally and in response to human perturbations. Without a consistent means of correct identification across separate projects, any attempt at synthesis may be plagued by errors in identification. Minerals Management Service has previously addressed this problem by supporting the compilation of faunal keys for the polychaete worms in the Gulf of Mexico and general invertebrate fauna in the Santa Barbara basin region. Over the past 20 years taxonomy has made increasing use of computer databases to record and study organism traits. Dedicated taxonomic software has been developed that allows for progressive improvement of these databases and the creation of interactive keys.

**OBJECTIVES:** The primary objective was to evaluate the effectiveness of computer aided identification by a careful examination of previously published traditional keys to Gulf of Mexico polychaetes and the creation of an interactive key.

**DESCRIPTION:** As an assessment of how difficult identification of polychaetes using traditional keys is a trial was conducted using preserved specimens and undergraduate students. Following this exercise, the information on traits contained in Uebelacker and Johnson's Taxonomic guide to the polychaetes of the northern Gulf of Mexico. Was restructured and coded into a database using Descriptive Language for Taxonomic Analysis (DELTA) software. An interactive key was then created using the associated program INTKEY.

**SIGNIFICANT CONCLUSIONS:** Computer-Aided Identification systems such as DELTA/INTKEY afford ecologists an effective means of identifying invertebrate specimens. For a program manager, the creation and updating of a trait database provides a highly effective means of capturing the scientific output of experts whose current product is limited to identifications.

**STUDY RESULTS:** Identification of polychaetes to family by untrained students using a traditional key was hindered most by compound questions dealing with parapodia and chaetae. A trait database and interactive key were produced that broke these compound questions into simpler statements that can be answered in any order the user prefers. The interactive key produced was quite complex. Taxa were limited to 476 families and genera and 185 traits needed for full resolution.

**STUDY PRODUCT(S):** Carney, R.S. 2003. Preparation of an interactive key for the northern Gulf of Mexico polychaetes taxonomy employing the DELTA/INTKEY system. U.S. Dept. of the Interior, Minerals Management Service, Gulf of Mexico OCS, New Orleans, La. 46 pages, OCS Study MMS 2003-065

Carney, R.S. 2003. A DELTA/INTKEY interactive key to the polychaetes of the northern Gulf of Mexico. Available online at: <http://biodiversity.bio.uno.edu/delta/www/data.htm>.