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GUAM FISHERIES DATA PROCESSING

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FISHERIES DATA PROCESSING

BACKGROUND

Guam's Division of Aquatic and Wildlife Resources (DAWR) has been collecting fisheries information for the past ten years and, as a result, an enormous amount of fisheries management data has been accumulated. Computers have been used over the past four years by DAWR to store and analyze this data. DAWR personnel, working closely with the National Marine Fisheries Service, have developed and purchased programs for analyzing the Division's offshore and inshore fisheries survey data.

In FY 83, a program entitled the Guam Offshore Expansion System (GOES) was developed based on the current practices of offshore data analysis and, in FY 85, a Guam Inshore Expansion System (GIES) was completed and tested for errors. Since this time, all data collected for the offshore and inshore fisheries surveys have been analyzed by the use of these two programs.

Job 3, Fisheries Data Processing, has continued to improve over the years because of increased computer systems training for DAWR staff biologists and improved hardware and software components. Since its beginning, Job 3 has been jointly funded by the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and the Western Pacific Regional Fisheries Management Council.

OBJECTIVES

The objectives of Job 3 are as follows:

1. Computerize the DAWR's offshore and inshore marine fisheries data and transfer the finalized fisheries data files and reports to NMFS personnel in Honolulu, Hawaii for regional application.
2. Provide technical assistance to DAWR staff biologists in the form of efficient statistical analysis and report generation.
3. Continue training of DAWR staff biologists on the proper use of the present computer hardware and software systems.

PROCEDURES

Guam's offshore fisheries survey data is analyzed by a system of computer programs known as the GOES. This programming package is a 5-step system that summarizes, sorts, and statistically expands the survey data to produce monthly and annual catch, effort, and species composition estimates. Two proportionality constants and a "total participation boat count" are calculated and manually input into the expansion module by the user. Reports are generated by the GOES that give a breakdown of the estimated offshore harvest by gear type on a monthly and annual basis. Also, an estimated harvest by species is generated for each gear type with a corresponding percentage of the total catch for that gear type. A second program, known as the "Guam Tournament" module, is an extension of the GOES that separately analyzes the Guam International Fishing Derby (GIFD) data and then adds the results of this analysis directly to the offshore fisheries harvest estimate.

Guam's inshore fisheries survey data is analyzed by a programming package known as the GIES. The GIES is a 4-step system that relies on two sets of survey data to determine an annual inshore estimated harvest. These two sets of data are referred to as "inshore-participation" and inshore-catch". "Inshore-participation" data consists of fishermen and gear counts obtained by staff biologists when driving around the island and making observations on fishing activity within the fringing reef. "Inshore-catch" data is obtained by fishermen-intercept interviews that usually occur within a predetermined survey region. This data consists of a total catch and catch by species for each interview. Because of the apparent differences in participation and catch-per-unit-effort (CPUE) of the various gear types between daytime and nighttime fishing, a fisheries survey is conducted during each of these two time periods and the data are analyzed separately. Also, data is collected during the seasonal harvest of juvenile rabbitfish (*Siganus spp.*) and bigeye scad (*Selar crumenaphthalmus*), but, because of the dissimilarities between the seasonal fisheries and the routine inshore fisheries, the two are analyzed separately.

RESULTS: FY 87

Offshore Fisheries Survey Data Base Management

The DAWR's offshore fisheries survey data for FY 87 were entered onto computer files and edited for completeness and accuracy. The total number of records for the FY 87 offshore data base are 1,806. This brings the total number of historical and current offshore records to 16,596. Since the FY 87 GIFD data were not entered onto the data base, the total number of fishing derby records remains at 1,986* .

Based upon the expansion calculated by the GOES and the estimated island-wide offshore harvest for FY 87, including the GIFD results, is about 189 metric tons. For more detailed information, see Job 1, "Offshore Fisheries Survey".

Inshore Fisheries Survey Data Base Management

The FY 87 DAWR inshore fisheries survey data were entered onto two data bases. The "inshore-catch" and the "inshore-participation" data bases for this fiscal year contain 1,733 and 2,127 records, respectively. This brings the total number of historical and current "inshore-catch" records to 20,795 and the "inshore-participation" records to 14,775.

Based upon the expansion calculated by the GIES, the total FY 87 harvest estimate for Guam's inshore fisheries, combining day fishing, night fishing, and seasonal fishing, is approximately 146 metric tons. For more detailed information, see Job 2, "Inshore Fisheries Survey".

Other Fisheries Data Bases

During FY 87, a data base was established for the storage and dissemination reef fish data used for Job 8, "Studies of Recreationally Important Reef Fish". Since Job 8 was inactive during FY 87, the total number of records contained in this data base remains at 1,687.

*The "Guam Tournament" module for the GOES could not be used for FY 87 because data collected during the 1987 Guam International Fishing Derby was not complete. Derby totals for FY 87 are estimates based on expanded data. Details are given in the Annual Report for the Guam International Fishing Derby.