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WORKSHOP ON PACIFIC INSHORE FISHERY RESOURCES
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COUNTRY STATEMENT - GUAM

BY

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**Guam Country Statement
Workshop on Pacific Inshore Fisheries Resources
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Background

The Division of Aquatic and Wildlife Resources (DAWR) is a federally funded agency with the primary responsibility managing and protecting Guam's recreational finfish resources. Since these resources are also utilized by both subsistence and small-scale commercial fisheries, it is necessary for management strategies to encompass these as well. Although Guam's territorial waters extend only 3 miles from shore, stocks present on several nearby banks are shared with Guam's reefs as well as utilized by Guam's fisheries. The largest of these fisheries is the troll fishery which harvests highly migratory offshore pelagic species whose effective management must ultimately result from international consensus. Slightly smaller in terms of landings, but considerably larger in terms of numbers of participants as well as cultural and social significance and accessibility, is the inshore reef flat fishery. This fishery includes stocks that are utilized by a single method as well as stocks that are utilized by a variety of methods.

Fisheries Management Program of the Guam Division of Aquatic and Wildlife Resources

The DAWR fisheries management program consists of both research projects and development projects. In addition, considerable time and energy is spent as technical assistance to other government agencies (both federal and local) in order to protect both the fishery resources and the fishermen from potentially detrimental effects of rapid growth and development.

Fisheries Research

For the past 10 years the core of the fisheries research program has been the inshore and offshore fishery surveys. The primary objectives of these surveys have been to quantify fishing participation, effort, and catch, and to collect biological data from the catch that can be used to manage and protect the fisheries. The biological data is needed to expand the sampled parameters to estimates of actual fishing as well as to yield information on individual stocks. The inshore fishery survey covers all fishing that does not utilize boats, or that occurs inside the reef margin from boats, and the offshore survey covers all fishing that occurs from small boats (including all troll-rigged boats, recreational or commercial, but excluding all larger non-troll-rigged commercial vessels). Since 1983, a data processing project has been in place. This resulted in computerized expansion systems for the offshore (Guam Offshore Expansion System or GOES) and inshore (Guam Inshore Expansion System or GIES) fisheries surveys. All data collected in the surveys has been expanded and summarized by these computerized data bases. During the past 3 years, the objectives of the data processing project have been to continue to refine the GOES and GIES, and to provide technical assistance to staff biologists in the form of statistical analysis, report generation, and the use of computer hardware and software.

The goals of the fisheries surveys and data processing have been met with mixed success. The surveys have resulted in reliable annual and monthly estimates of participation, catch, and effort for some fisheries, but not for others. Reliability of the survey results tends to decrease with decreasing frequency of a given fishery. The surveys do provide good catch per unit effort (CPUE) and catch composition information for the most widespread fisheries for a number of years. The data base is versatile enough to be broken down by area as well as time periods. However, this remains to be done and the reliability of the results will be depend on the area in question.

A large body of biological information in the form of individual length and length-weight data on most species encountered has resulted from the surveys. However, much of this information

remains to be analyzed. Although collectively there may be 2,000 or more length measurements taken during most years for both the inshore and offshore surveys, there are considerably fewer measurements for any given species. With the exception of a few troll-caught species, there are no more than about 250 individual measurements for a given species for any one year. There are very few species with even 100 measurements per year. It is clear that supplemental data collection will be required to determine critical life history parameters on most if not all major species. This can be done by one or more of the following methods: expanding the existing surveys, concentrating on taking data on selected species of interest during the surveys, or conducting case studies of selected species.

In addition to the fisheries surveys and data processing jobs, a number of other studies have been recently conducted, or are currently underway or planned. These include studies of the feeding ecology of recreationally important pelagic fishes, studies of recreationally important reef fishes, and a biomass and stock assessment of reef fishes. The status of each is given below:

Studies of Recreationally Important Inshore Reef Fishes

Biological data from the GIES data base has been summarized for the FY 1980 to FY 1984 period for two species, *Siganus spinus* and *Mulloides flavolineatus*. This was followed by a separate study of their reproductive biology which is nearing completion. Similar studies on the biology of carangids and lethrinids are currently underway. Similar studies of "offshore" reef fishes important in the GOES sampled fisheries have not been initiated due primarily to a manpower shortage.

Pelagic Fish Feeding Study

The contents of over 1300 stomachs of five important gamefish species (mahimahi, wahoo, skipjack tuna, yellowfin tuna, and blue marlin) were examined. Fishes, primarily epipelagic species, formed the bulk of the diets of all five gamefishes. Epipelagic or mesopelagic squids, crustaceans, and fishes were significantly important in the diets of one or more of the gamefishes. Epipelagic young of reef fishes comprised a small but consistent and significant portion of the diets of all five gamefishes, forming an important link between coastal and oceanic habitats. Some of these juveniles were also observed to aggregate around FADs.

Biomass and Stock Assessment

This project is designed to obtain density estimates of reef fish stocks by means of permanent visual transects. Preliminary methodologies have been determined, and some representative sites have been selected. However additional staff will have to be hired before this project can get underway.

Fishery Development

Fishery development projects are designed to increase catches or increase the accessibility of fisheries to potential participants. Projects currently underway include fish aggregating devices (FADs), and the redesign and construction of a public pier. The Division has refurbished 14 Navy surplus buoys and expects to deploy 5 of them as FADs in the third quarter of FY 88 (April to June). Materials for an additional 5 mooring systems will be held in reserve. Funds for the redesign and construction of the Merizo public pier are being contracted out through the Department of Public Works under the supervision of DAWR.

Summary reports describing the offshore fisheries survey, the inshore fisheries survey, and the data processing job are contained in background papers 43, 44, and 45 to this meeting.