

marfin

**Executive Summary
to the
Annual Report
Marine Fisheries Initiative
(MARFIN)
Gulf of Mexico**

1 October 1987 - 30 September 1988

June 1989

Gulf States Marine Fisheries Commission

Executive Summary to the Annual Report of the Marine Fisheries Initiative Program (MARFIN)

1 October 1987 - 30 September 1988

FY 1988 Program Highlights

- The number of juvenile red drum that move offshore was shown to be dangerously low.
- The spawning stock of red drum was estimated to be down to 123 million pounds in 1987.
- Direct economic impact of recreational red drum fishing is estimated to be over \$200 million per year.
- Two stocks of king mackerel were identified, an eastern and a western gulf stock. These stocks mix in the northern gulf during the warm months.
- The rejuvenation of the king mackerel stocks could lead to an economic value of \$10 - \$50 million for a million pounds of fish.
- Charter and party boats have a significant effect on coastal economics. Catch restrictions could severely hamper this industry.
- First soft (netting only) turtle excluder device (TED) certified for use in shrimp trawls.
- Commercial landings of butterfish continue to increase.
- Data collection enhanced by the use of electronic fish measuring devices.
- First annual MARFIN conference was highly successful.

INTRODUCTION

Commercial Gulf of Mexico fisheries have historically concentrated on the harvest of menhaden, shrimp, reef fish, crabs, oysters, and other traditionally exploited species. Emphasis on the two major resources, shrimp and menhaden, has resulted in little development of additional fisheries. There are, however, a number of potential fishery resources in the gulf which, if fully developed, could contribute substantially to increased landings and value. It is estimated that the coastal herring complex could contribute an additional 2.2 billion pounds annually to U.S. landings.

The harvest of other underexploited resources such as tuna, squid, butterfish, mullet and deep-sea crabs as well as product development of resources that are harvested and discarded such as groundfish and sharks will help meet future needs. For example, an estimated billion pounds of groundfish are discarded annually.

Research must address ways to sustain existing fisheries at current production levels, and to develop products which successfully meet increased competition from imports. Shrimp aquaculture in Latin America, South America, China, and India has had a pronounced impact on the gulf shrimp industry. The 1987 import of shrimp at over 580 million pounds was 2.6 times the U.S. production.

In the three years that MARFIN has been in existence 100 projects have been funded through cooperative agreements, and 29 projects have been completed within NMFS. A total of \$9.5M has been available for these studies and associated contracts.

Most of the effort centered on estuarine fish such as red drum and mullet. King and Spanish mackerel representing the coastal pelagic group also received considerable attention. Transfer of turtle excluder device (TED) technology to the shrimp industry was

enthusiastically pursued. The abatement of TED regulations until 1989 has put some of this work on hold, but activity is expected to increase when the TED regulations are reinstated.

PROGRAM ORGANIZATION

The Director, NMFS Southeast Regional Office (SERO) utilizes recommendations by individual members of the Program Management Board to direct the MARFIN Program. Program coordination and management is provided by permanently assigned SERO staff. Administrative support for meeting and travel arrangements and preparation of meeting minutes is provided by a contract to the Gulf States Marine Fisheries Commission.

Current board members providing recommendations to the Regional Director are:

- Executive Director, Gulf and South Atlantic Fisheries Development Foundation, Inc.
- Executive Director, Gulf of Mexico Fishery Management Council.
- Executive Director, Gulf States Marine Fisheries Commission.
- NMFS representative.
- Director of Seafood Division, Louisiana Department of Wildlife and Fisheries, representing the five Gulf States' fishery management agencies.
- Director, Florida Sea Grant, representing the four gulf Sea Grant programs.
- Executive Director, Southeast Fisheries Association, representing commercial fisheries associations.
- A recreational fisheries representative selected by the regional office's Recreational Fishery Advisory Committee who is currently Director, Department of Biology, University of South Alabama.

Alternative representatives have also been designated and serve as necessary. The Board Chairman and Vice Chairman are each elected for a two-year term with individual Board members appointed by member organizations for staggered three-year terms.

MARFIN operating procedures call for the Board to formulate annual program priorities as close as

possible to the beginning of the fiscal year (October). These priorities are then incorporated by the Program Manager into the notice of availability of financial assistance and published in accordance with established Department of Commerce procedures. Announcement of funds available through financial assistance is made through the *Federal Register*.

Project Planning and Funding

In FY 1988, the *Federal Register* notice appeared on April 4. Fifty applications were received by the closing date, May 19, and were reviewed for technical merit by academic and state agency experts and scientists of the NMFS Southeast Fisheries Center (SEFC) and SERO. On July 19-20, the Board met to evaluate the NMFS reviews and members recommended funding 28 of the proposals judged technically superior and likely to fulfill elements of a coordinated program. The Regional Director after reviewing the Board's recommendations forwarded the selected proposals to the NOAA Central Administrative Support Center (CASC) for processing.

In addition to the cooperative agreements, nine NMFS research projects and a contract to the Gulf States Marine Fisheries Commission (GSMFC) for the MARFIN Board support were funded.

Approved 1988 projects are shown in Tables 1 and 2.

Awards and contracts were managed by SERO and CASC with technical monitoring and supervision provided through Program Officers (financial assistance) and Contracting Officer's Technical Representatives (contracts) at SERO and SEFC. Program officers evaluate technical performance and ensure that recipients comply with program administrative policies and procedures.

RESEARCH ACTIVITIES

The First Annual MARFIN Conference was held in Tampa, Florida, on September 19-20, 1988. A summary of this well attended symposium is given below:

Red Drum Research. The red drum fishery has received much attention over the past few years. All of the gulf coastal states, Sea Grant universities, and NMFS have cooperated in collecting and analyzing red drum data. The information gleaned from these data have been invaluable for red drum management by the Gulf

Table 1. Approved Financial Assistance Awards for FY 87*

Recipient	Project	Award (\$)
Gulf Coast Research Laboratory and University of New Orleans	Identification of Red Drum Fishery Stocks and Establishment of a Multivariate Model for Growth and Body Condition	\$59,032
Florida Department of Natural Resources	Estimation of Total Mortality From Systematic Sampling for Stranded Turtles	\$40,000
Florida Department of Natural Resources	Population Assessment of Black Mullet in the Eastern Gulf of Mexico	\$167,170
Florida Department of Natural Resources	Tag/Recapture Program for Red Drum in Northwest Florida and Age Validation for Red Drum in Florida	\$47,025
Florida Sea Grant	Video Training Program for Fishing Tournament Directors and Managers to Facilitate Safety/Resource Awareness/Success in Fishing Tournaments	\$53,764
Gulf and South Atlantic Fisheries Development Foundation, Inc.	Continued Introduction of TEDS and Enhancement of Shrimp Trawl Selectivity in the Gulf Shrimp Fishery	\$535,000
Gulf States Marine Fisheries Commission	Coordination, Planning and Progress Reporting Activities of the State/Federal Plan for Red Drum in the Gulf of Mexico	\$7,000
Gulf Coast Research Laboratory	Life History Studies of Red Drum Populations in Mississippi	\$45,000
Louisiana Department of Wildlife & Fisheries	King Mackerel Tagging and Muscle Tissue Collection off the Louisiana Coast	\$29,000
Louisiana Department of Wildlife & Fisheries	Louisiana Red Drum Research	\$141,818
Louisiana Department of Wildlife & Fisheries	A Survey of Sea Turtles in Louisiana Waters	\$30,000
Louisiana Department of Wildlife & Fisheries	Louisiana Cooperative Shrimp Mark-Recapture Project	\$29,000
Louisiana State University	Biological and Catch/Effort Data Collection from the Domestic Tuna Longline Fishery in the Northern Gulf of Mexico	\$45,187
Louisiana State University	Economic Assessment of the Louisiana Inshore Shrimp Fishery	\$50,159
Louisiana State University	Fishery Independent Characterization of Population Dynamics and Life History of Striped Mullet in Louisiana	\$48,402
Louisiana State University	Expanded King Mackerel and Reef Fish Bioprofile and Catch/Effort Data Collection and Analysis Program in Louisiana	\$28,485
Louisiana Technical University	Stock Inventories of Red Drum, Spotted Seatrout and Black Drum in the Gulf of Mexico	\$37,646
Mote Marine Laboratory	King and Spanish Mackerel Migration and Stock Assessment Study in the Southern Gulf of Mexico	\$64,207
Mississippi Department of Wildlife Conservation	Mississippi/NMFS King and Spanish Mackerel Sampling Program	\$7,000
Nor'Eastern Trawl Systems, Inc.	Development of a High-Speed Pelagic Trawl for Sampling Coastal Herring	\$12,000
Texas A&M Research Foundation	Shrimp Fisheries Management to Increase Economic Returns	\$60,000
University of Florida	Structure and Economics of the Charter and Party Boat Fishing Fleet off the Gulf Coast of Florida	\$59,967
University of Florida	Fishery Development of Deep-Sea Golden Crabs: Geographical and Seasonal Production in the Gulf of Mexico	\$158,517
University of Florida	Biological, Fishery and Product Assessments of the Keoghfish, Gulf of Mexico Resource	\$69,119

Table 1. Approved Financial Assistance Awards for FY 87* (Continued)

Recipient	Project	Award (\$)
University of Florida	Analysis of Potential Regulatory Changes on the Economic Structure of the Eastern Gulf of Mexico Finfish Industry	\$47,500
University of Miami	Supplemental Length and Sex Frequency Data and Catch per Unit of Effort Information From the Commercial Fishery for Spanish Mackerel off West Florida	\$40,929
University of Southern Mississippi	Derivation of Empirical Red Drum Catch Rate Elasticities for Recreational Anglers in the Gulf of Mexico	\$45,351
Alabama Department of Conservation and Natural Resources	Supplemental Collection of Vital Statistics of Recreationally Caught King and Spanish Mackerel Landed in Alabama	\$20,000
Alabama Department of Conservation and Natural Resources	Age Class Structure of Exploited Red Drum Stocks in the North Central Gulf of Mexico	\$100,000
Alabama Department of Conservation and Natural Resources	Assessment of Mullet Landings and Identification of Essential Population Indicators and Economic Data Base	\$48,900
Louisiana State University	Fishery Independent Data on Coastal Herrings, Carangids, and Red Drum for the Northern Gulf of Mexico	\$120,000
Louisiana State University	Age Structure, Growth Rates and Reproductive Biology of Black Drum in the Northern Gulf of Mexico off Louisiana	\$47,784
Texas Parks & Wildlife Department	King Mackerel Tagging off Texas	\$19,000
Total FY 87 Financial Assistance Awards		\$2,313,962

*FY 87 Cooperative Agreements were completed in FY 88

Table 2. Approved NMFS Projects and Contract (GSMFC) - FY 88

Recipient	Project	Award (\$)
Galveston Laboratory	Evaluation of the Impacts of TED on Shrimp and Catch Rates in the Gulf of Mexico	\$125,000
Galveston Laboratory	Sea Turtle Strandings in Texas and Southwest Louisiana	\$40,000
Gulf States Marine Fisheries Commission	MARFIN Board Support (Contract)	\$48,127
Miami Laboratory	Centralized Tagging for Red Drum	\$30,000
Miami Laboratory	Potential Effectiveness of Recreational Statistics in Quota, Bag Limit and Minimum Size Limit Regulations	\$35,000
Panama City Laboratory	Sea Turtle Strandings in Texas and Southwest Louisiana	\$10,000
Panama City Laboratory	King and Spanish Mackerel Research	\$163,900
Pascagoula Laboratory	Latent Resources Research	\$525,300
Pascagoula Laboratory	Red Drum Stock Assessment Analysis	\$25,000
Southeast Regional Office	MARFIN Program Management	\$75,000
Total		\$1,077,327

of Mexico Fishery Management Council (GMFMC) and the states. The spawning stock was estimated to be down to 123 million pounds in 1987 and could continue to drop unless recruitment can be increased by young inshore fish moving offshore (see Figure 1). This recruitment of young fish has been very low requiring management measures to protect a fish whose economic impact solely from recreational fishing is over \$200 million annually.

King and Spanish Mackerel Research. These fisheries also received attention from all of the Gulf States, Sea Grant universities, and NMFS. Twenty-one cooperators were enlisted into a network of statistical and biological samplers. The major finding of this coordinated effort was the existence of two separate stocks of king mackerel - one in the eastern gulf and another in the western gulf. These stocks mix in the northern gulf during the warm months. If the king mackerel stocks can

be rejuvenated, the increased economic value could be \$50.00 for every pound of fish.

Coastal Herrings. The development of the potentially large fishery composed mainly of herrings and sardines has remained an elusive goal. Yet, fishery independent studies are beginning to zero in on estimates of spawning stock and how it is affected by environmental variables.

A prototype trawl was developed for use with the NOAA vessel CHAPMAN. Although large concentrations of fish were not encountered, the net (when viewed by remote television and/or SCUBA) did successfully contain the fish that entered the net (see Figure 2).

Butterfish. The use of satellite data has helped to increase commercial butterfish landings. The development of onboard handling methods, aid in retrofitting

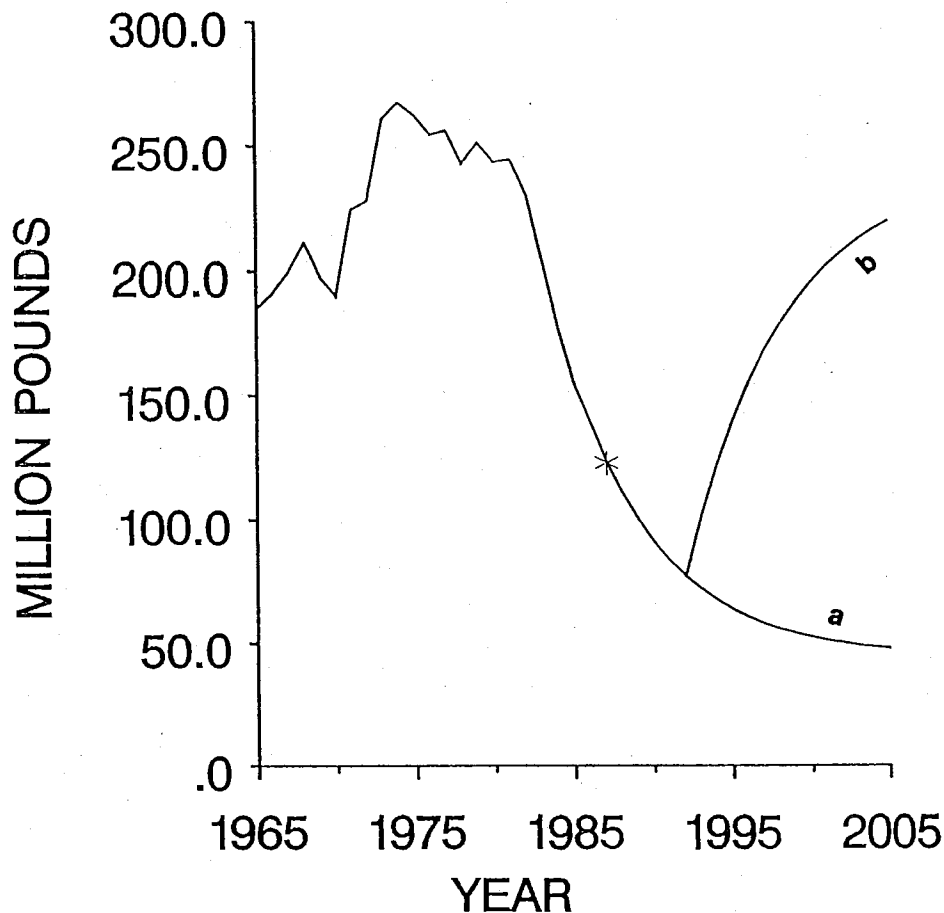


Figure 1. Red Drum Adult Stock Projections

- a. Recruitment at recent levels
- b. Recruitment at previous levels

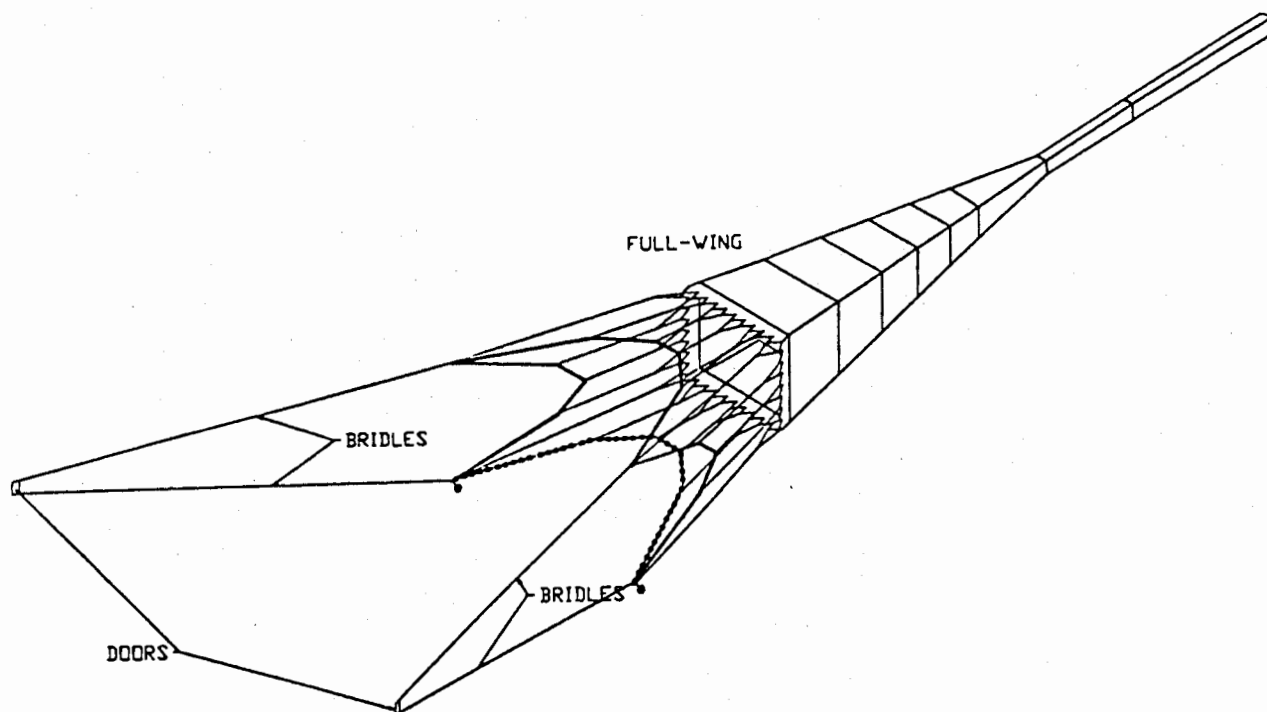


Figure 2. Coastal Herring Pelagic Trawl

vessels to fish for butterfish, and technology transfer meetings have also helped to spur interest in developing this underutilized resource.

Mullet. The striped mullet fishery in Louisiana has expanded 1500% since 1975 and is virtually unexploited in the western gulf. The dynamics of this fish population are being examined to maintain this fishery. Florida is likewise assessing its black mullet population which accounts for 75% of the mullet landed in the gulf. Alabama cites MARFIN as the funding source that provided data to conserve its mullet fishery.

Reef Fish. The giant eel or keoghfish is an unexploited Gulf of Mexico resource that has the potential to become a viable component of the established offshore snapper/grouper and shark fisheries. These large fish which grow to over 30 pounds are generally smoked and shipped to European and Far East markets. They live in mud bottoms, but search for food around structures such as oil rigs and reefs. Since little is known of the habitat and biology of this fish, MARFIN funded research is providing valuable information for this new fishery.

Charter and party boat surveys are now being analyzed to determine the social structure and economics of this industry. Snapper and grouper are the main targeted species. Catch restrictions on these and other prized fishes could hamper an industry that has a significant effect on coastal economics.

Shellfish. The biggest moneymaker in the gulf is still the shrimp industry. MARFIN is investigating the inshore fishery in Louisiana, shrimp migration in the central gulf, and management of the shrimp fishery to increase economic returns.

The deep-sea golden crab fishery can be expanded as we increase our knowledge of crab locations. In areas with rock outcroppings densities are about 36 crabs per hectare.

Endangered Species. Research, development, and technology transfer have been directed at preventing capture of sea turtles by shrimp trawls. Most of this effort involves technology transfer among industry, Sea Grant, and NMFS. Fishermen were given another

choice of TEDs when the Morrison Soft TED (see Figure 3) was certified for use in shrimp trawls. In order to monitor the effectiveness of the TED Program, turtle stranding data collection has been augmented in Gulf States. Expansion of the Kemp's Ridley Sea Turtle Head Start Program also may help to bolster the rapid decline of this endangered species.

General. Projects in this area include video training for

fishing tournament directors and managers, analysis of potential regulatory changes on the economic structure of eastern Gulf of Mexico finfish, educational tools for recreational fishermen, enhancement of the recreational fishery statistics program, and the development of an electronic data collection and entry system for field sampling of fisheries (see Figure 4). The apparatus generated from this study has greatly simplified and improved the collection of biological data in the field.

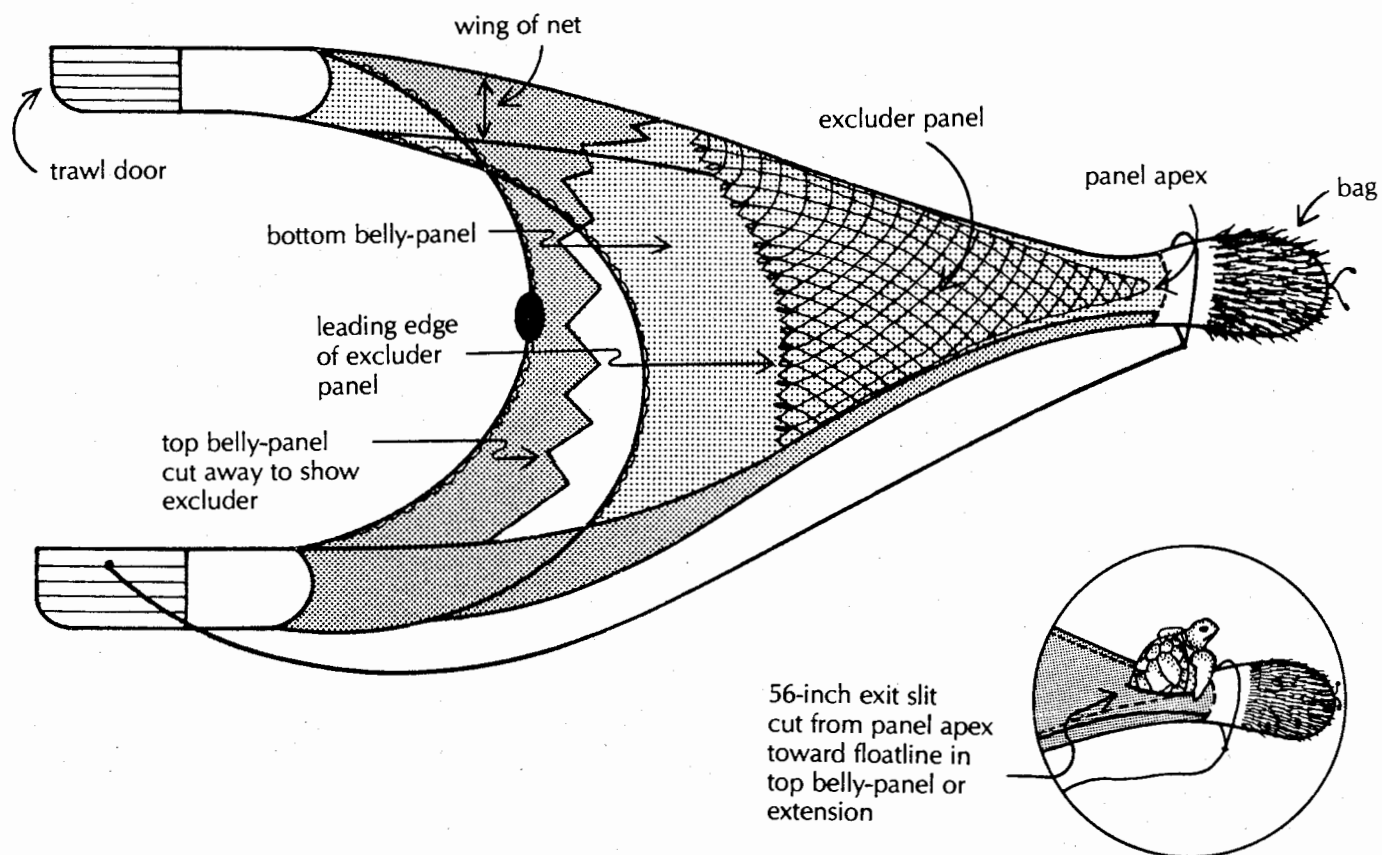
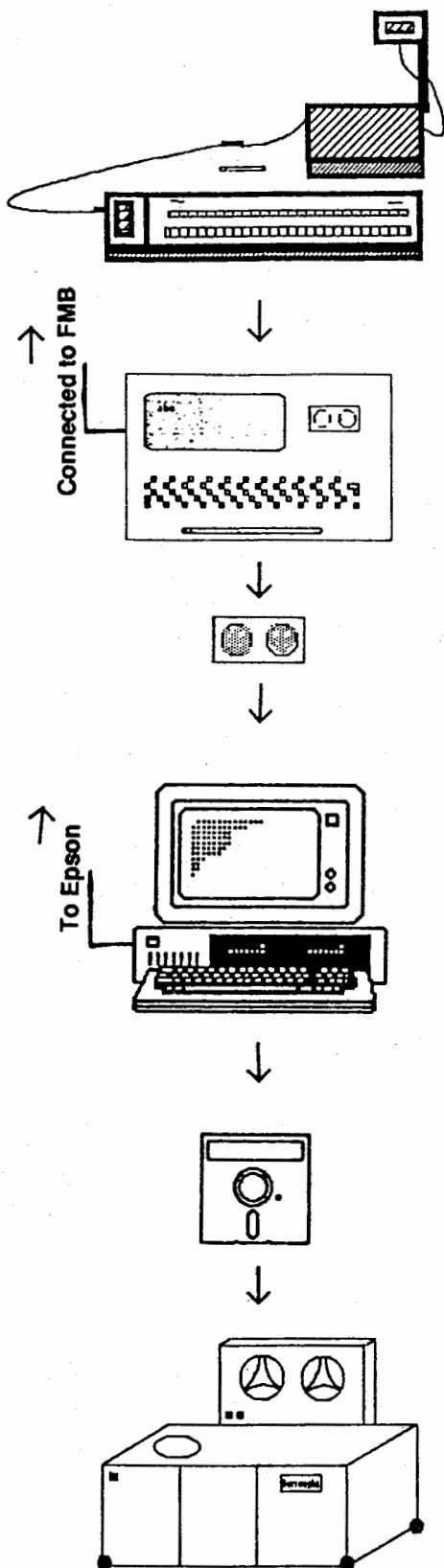


Figure 3. The Morrison Soft TED



1. The Fish Measuring Board (FMB) is connected to the METTLER digital scale via cable.

2. When the FMB is turned on with the magnetic probe and the scale is turned on, the system is ready.

3. Individual fish are placed on the FMB. Species ID codes are entered by touching the probe to the keypads on the FMB.

4. Length is automatically entered by touching the probe to the measuring line where desired.

5. Weight is automatically entered by placing the fish on the scale and touching the probe to the weight function key of the FMB.

6. At this point, the sampler may enter information about biological samples taken from the fish (scales, otoliths, gonads, stomachs, etc.) by touching the probe to specially marked function keys on the FMB.

7. The process is repeated, fish by fish, until all individuals have been recorded. The data are then saved by touching the probe to the save data key. The FMB can now be turned off.

8. The data may be downloaded from the FMB to the Epson HX-20 microcomputer and stored on a micro-cassette. A hard copy of the raw data (for locating errors) is obtainable at this point by turning on the Epson's printer.

9. At the end of each week's sampling, the field sampler sends in that week's data, on micro-cassette, to the Beaufort lab via the mail system.

10. The data may now be transferred from the Epson to the lab's IBM microcomputer. Editing of the data into final form is now done.

11. The edited data are now backed up onto floppy disks. Individual files may be created for each sampling incident.

12. The data are sent, via phone lines, to the Northwest Fisheries Center in Seattle for storage on the Burroughs mainframe computer. The data are now easily retrievable by the reef fish research team for analyses.

Figure 4. Electronic Data Collection

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