FISH DIVISION
Oregon Department of Fish and Wildlife

Marine Region Finfish, Shellfish, Marine Mammal, and Non-game Programs and Plans

This is the equivalent to the R&D Research Review Document.
MARINE REGION FINFISH, SHELLFISH, MARINE MAMMAL, AND
NON-GAME PROGRAMS AND PLANS

Marine Region
Oregon Department of Fish and Wildlife
February, 1985

See Footnote 1, Page 1
## CONTENTS

<table>
<thead>
<tr>
<th>CONTENTS</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Groundfish and Shrimp Management</td>
<td>5</td>
</tr>
<tr>
<td>Groundfish Management</td>
<td>7</td>
</tr>
<tr>
<td>Improved Groundfish Data Collection</td>
<td>11</td>
</tr>
<tr>
<td>Marine Baitfish Management</td>
<td>16</td>
</tr>
<tr>
<td>Albacore Tuna Studies</td>
<td>18</td>
</tr>
<tr>
<td>Sablefish Fishery Data Collection—Analysis</td>
<td>20</td>
</tr>
<tr>
<td>Marine Recreational Fishery Management</td>
<td>22</td>
</tr>
<tr>
<td>Marine Recreational Fisheries Statistics Survey</td>
<td>24</td>
</tr>
<tr>
<td>Black Rockfish Stock Delineation Study</td>
<td>25</td>
</tr>
<tr>
<td>Groundfish Research and Development (stock assessment)</td>
<td>26</td>
</tr>
<tr>
<td>Shrimp Yield and Recruitment Modelling</td>
<td>29</td>
</tr>
<tr>
<td>Environment/predation/competition Variable Database</td>
<td>31</td>
</tr>
<tr>
<td>Bay Clam Management Program</td>
<td>33</td>
</tr>
<tr>
<td>Dungeness Crab Management</td>
<td>36</td>
</tr>
<tr>
<td>Razor Clam Management</td>
<td>39</td>
</tr>
<tr>
<td>Box Crab Management</td>
<td>41</td>
</tr>
<tr>
<td>Scallop Resource Assessment</td>
<td>43</td>
</tr>
<tr>
<td>Squid Resource Assessment</td>
<td>45</td>
</tr>
<tr>
<td>Assessment of the Fishery Potential for Loligo opalescens</td>
<td>49</td>
</tr>
<tr>
<td>Marine Mammal Investigations</td>
<td>51</td>
</tr>
<tr>
<td>Assistant Regional Supervisor—Operations Summary</td>
<td>54</td>
</tr>
</tbody>
</table>

## Figures

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Marine Region Funding Sources for Finfish, Shellfish, Marine Mammal and Non-Game Work by Source and Percent of 83-85 Biennial Budget ($1,486,000)</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Marine Region Projects for Finfish, Shellfish, Marine Mammal and Non-Game Work by Source and Percent of 83-85 Biennial Budget ($1,486,000)</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Functional Organization of Marine Region for Marine Finfish, Shellfish, Marine Mammals and Non Game Work</td>
<td>4</td>
</tr>
</tbody>
</table>

## Table

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Major Software/Systems Development Completed in FY 1983-1984 for Groundfish and Shrimp Investigations</td>
<td>13</td>
</tr>
</tbody>
</table>
The organizational division of the Oregon Department of Fish and Wildlife (ODFW) responsible for the management of the state's fishery resources that depend on saltwater, is the Marine Region. As the management entity it is charged with the care and productivity of the fishery resources and with the maintenance of viable commercial and recreational fisheries through which the benefits flowing from the resources can be realized.

To accomplish this task the region has offices in Coos Bay, Newport, Tillamook and Astoria. There, fishing activities and catches are observed, contact with the fishing public developed and field studies staged. When the need for regulation or operational change is perceived, staff working through supervisors in Newport bring available information to bear and recommend a course of action that will reach the Fish or Wildlife Divisions, the Director or the Fish and Wildlife Commission as appropriate.

Funding to support Regional work comes from three sources with the State General Fund providing $947,000 (63%) in the 83-85 biennium (Figure 1). Federal money coming under the Commercial Fishery Research and Development Act, $286,000; the Pacific Fishery Management Council (PFMC)-Pacific Marine Fisheries Commission (PMFC), $101,000; The Saltonstall-Kennedy Act, $90,000; and from the National Marine Fisheries Service (NMFS), $40,000; totaled $517,000 and (36%). The Oregon Non-Game fund provided $22,000 (1%).

The projects discussed in this report make up 53% of Marine Region's base level biennial budget request. Funding for salmonid work is 36% and the regional administration budget uses 11% of the $3,234,000 requested.

Commercial Fishery Research and Development funds while still an important source of support for investigative work are considerably reduced in effectiveness over earlier years due to (1) level funding of the Act and consequent loss due to inflation, and (2) reduction of Oregon's share of the appropriation. The result has been an inability to do the "at sea" studies that were once supported by this program.

Marine fishery management is an interactive process, requiring contact between the Region and a multitude of government and non-government entities. The most important of these entities is the Pacific Fishery Management Council which currently manages the groundfish resources off Washington, Oregon and California. Any or all other fishery resources in this area are potential candidates for Council management, but all are under state control for the interim—whatever its length. The Marine Region staff is in close contact with all members of the "Council Family" and participates significantly in the process of decision making by the Council. Even for the fisheries managed by Oregon, discussions with other states and other countries regarding resource understanding or regulation impact, occur.

1. The salmonid programs are not included in this report.
2. The halibut resource is the exception being under the control of the International Pacific Halibut Commission.
Figure 1. Marine Region Funding Sources for Finfish, Shellfish, Marine Mammal and Non-Game Work by Source and Percent of 83-85 Biennial Budget ($1,486,000). 1, 2

Figure 2. Marine Region Projects for Finfish, Shellfish, Marine Mammal and Non-Game Work and Percent of 83-85 Biennial Budget ($1,486,000). 1/

1/ As seen on November 10, 1984.

2/ Funding percentages are for dollars in hand. Budget limitations exceeded this total.
The $1,486,000 available for work in the 83-85 biennium is administered through three programs and 12 projects (Figure 2, 3). The programs under the leadership of program managers--two assistant region supervisors and the region supervisor--basically divide work along finfish, shellfish and warm-blooded animal lines. Projects are lead by AB Fish and Wildlife Biologist II's or III's and function to implement management plans or instructions or to develop resources/fishery understanding and assessment techniques useful to management. The position of Program Analyst, while focused primarily towards groundfish and shrimp, offers senior analytical counsel to all the Region's areas of responsibility. Because the incumbent analyst is shared with Oregon State University Fisheries and Wildlife Department (OSU) the position serves as a major communication link between Oregon State University and ODFW.

Planning in the conventional sense has not been a long suit of the Marine Region. Immaturity of resource use, higher government's inattention (or indifference) to marine fisheries and inadequate funding respectively allowed, discouraged, and constrained marine resource planning. The current region leadership has allowed occupation with tasks of the moment, of which there are plenty, to deter planning efforts and to limit fund seeking to appeals at the Department level.

The staff has done short term planning in an effort to accomplish what the State Food Fish Management Policy, in brief, describes as managing for the several benefits for present and future generations for the citizens of this state. Input to both state and Council decision making reflects this requirement. Such efforts generally attempt resource preservation and conservative use. They are driven most often by fishery development and proceed in it's wake. The Council's Groundfish plan is an example of this (Rockfish) while at the same time being ahead of fishery maturity for some resources (Dover sole). What is lacking in this plan and for other resources are long term strategies that anticipate changing conditions and seek to increase benefits using economic and social as well as biological measures. In its absence the current unfortunate condition of the industry has developed.

The lack of long term planning notwithstanding, meaningful resource productivity occurred over the years. Further, on examination, resource viability exists and only two resources (Pacific ocean perch and pink shrimp) can be said to be depressed--perhaps due to overfishing.

The administration 83-85 expenditure for housing and clerical support of the Region's personnel will be about $390,000.
Figure 3. Functional Organization of Marine Region for Marine Finfish, Shellfish, Marine Mammals, and Non Game Work.
PROJECT SUMMARY

Program: Groundfish and Shrimp Management

Title: Shrimp Management

Objectives:
2. Continue and improve upon long-term biological database of shrimp age composition, size and growth, sex ratio, spawning patterns, and catch per unit of effort (Catch-per-unit of effort).
3. Identify and/or respond to need for changes in current regulations to allow for improved use of resources.

Location: Newport, Charleston, Astoria

Personnel: J. Golden, Project Leader (part time)
M.J. Hosie, biologist (part time)
D. Douglas, biologist (part time)
M. Saelens, Technician (part time)
Seasonal personnel, April-October annually, 2-4 (part time)

Cooperators: California Department of Fish and Game (CDFG), Washington Department of Fisheries (WDF).

Duration: Continuing

Funding: General Fund

Summary of Progress in 1984:
Monthly summaries were prepared showing catch and catch-per-unit of effort (catch/vessel trip) by vessels by port and/or statistical catch area for the year. Also summarized were market sample data monthly by statistical area, including age composition and average size (shrimp/pound).

These analyses are based on fish ticket and skippers' logbooks (catch, effort, area, catch-per-unit of effort) and market random samples of shrimp landings at Brookings, Coos Bay, Newport, and Astoria. An annual Information Report on the 1984 Shrimp Fishery is beginning preparation (the shrimp season closed Oct. 31) incorporating the above fishery statistics monthly by State Statistical Area.

This project also monitored shrimp fishery bycatch of groundfish by month and port, by species. The bycatch of groundfish by shrimp trawls is probably larger than for any other gear.

We were able to document some possible effects of El Niño recently on shrimp growth in 1982-84. Late-season occurrence of age-1 and age-0 (1984 yearclass) shrimp in October catches
indicate that a fair volume of shrimp will be available for the 1985 fishery. A long term (1966-83) mean growth month histogram (with confidence limits) indicated 1982-84 growth of age 1 and 2 shrimp were above average but within the confidence limits all three years.

Research

This is a continuing project; work done in 1984 will be repeated in 1985. Research plans are summarized in another summary.
PROJECT SUMMARY

Title: Groundfish Management

Objectives: It is our goal to provide the necessary support to our Agency, Fish and Wildlife Commissioners, Pacific Fisheries Management Council (PFMC) family, and public for sound resource management decisions, in keeping with Oregon Statutes and the Fisheries Conservation and Management Act to 1976 (FCMA). In addition, it is our goal to continue to support the research needs of universities and state and Federal agencies active in studying marine groundfish resources and fisheries. To attain these goals we have the following objectives:

1. To monitor and obtain fishery statistics on the commercial groundfish fisheries and resources through interviews, sampling, and through our logbook and fishticket data collection program.

2. To continue longterm data-base collections of age, size, sex composition and maturity of selected species including Dover (Microstomus pacificus), English (Paraphrys vetulus) and green sole (Elopsetta jordani), Canary (Sebastes pinniger), yellowtail (Sebastes flavidus), and widow rockfish (Sebastes mentomenas) and Pacific ocean perch (Sebastes alutus).

3. To determine species composition of trawl, nearshore hook and line caught rockfish, and by-catch from the commercial shrimp fishery.

4. To provide the above statistics to appropriate entities including our Portland Data Services Section and the Pacific Coast Fishery Information Network (PAC-FIN) for use by our agency and the PFMC Groundfish Management Team (GMT) in monitoring quotas; PMFC, and various state and federal agencies requiring data for stock assessments.

5. To provide analysis of management options and to assist in stock assessments using the above data and assist in identifying management related research needs.

6. To provide fishery statistics, proposed management regimes and information on regulations to the fishing industry and public through personal contact, newsletters and communication meetings.

7. Identify and/or respond to need for changes in current regulations to allow for improved use of resources.

Location: Newport, Astoria, Charleston

Personnel: Project Leader: James T. Golden, FWB-3 (part time)
Field Biologist: Michael Hosie, FWB-2 (part time)
Field Biologist: David Douglas, FWB-2 (part time)
Field Technician: Gary Hettman, FWT-3
Field Technician: Neil Richmond, FWT-3
Data Technician: Kathy Murphy, FWT-1 (1/2 time)
Data Technician: Vacant, Admin. Asst. 1 (part time)
Researcher/programmer: Clayton Creech, (OSU contract, part time)
Seasonal Personnel: 2-4

Cooperators:
National Marine Fisheries Service (NMFS), Pacific Fishery Management Council (PFMC), Pacific Marine Fisheries Committee (PMFC), Washington Department of Fisheries (WDF), California Department of Fish and Game (CDFG), Oregon State University (OSU), other region personnel.

Duration: Continuing

Funding: General Fund

Summary of progress in 1984:
One of the major products of the project is an annual summary of groundfish catch and effort statistics by species and area type. The 1983 catch and effort statistics by species and area were summarized in tables for our contribution to the International Groundfish Committee, Technical Sub-Committee report. In addition, groundfish trawl logbook summaries and fishticket data were incorporated into a database on the Oregon State University Cyber computer, in cooperation with Data Services Section. Additional summaries were sent to the Pacific Marine Fisheries Committee for inclusion into a coastwide data series. These summaries form the raw material for management and research functions of the Groundfish Management Team and assessment groups from our agency and other agencies working on stock assessments of groundfish.

Our biological sampling program monitors rockfish species composition (up to 35 species), age, sex, length and maturity of at least four species of rockfish and two species of flatfish. About 600 species composition samples were taken including samples of trawl, midwater trawl, shrimp trawl and rig-caught rockfish. In 1984 we examined 2,000 specimens of canary, 1,000 yellowtail rockfish and 1,800 widow rockfish and 1,500 Pacific ocean perch for age, length and sex. There were 1,750 Dover sole and 1,200 English sole specimens sample. These are approximately figures and do not include other samples taken for length and sex only.

We set sampling guidelines based on performance, allocating samples according to the projected catch by port and setting a rate of sampling per 100 mt landed. Staffing with seasonal personnel was allocated on the basis of projected need and past performance. Minimum sampling rates were based on sensitivity analysis conducted by Washington Department of Fisheries in 1982.

A system was developed for data entry, field summarization and data transmission of biological data (excluding species
composition) to Newport using existing microcomputers in Astoria, Newport and Charleston. The purpose of the system is to allow the field biologists to capture raw data and provide a means of making field summaries as well as sending raw and summarized data to Newport for archiving on the Cyber and future Burroughs systems.

A stratification scheme was developed in 1984 in cooperation with Fishticket and Data Systems sections, to economically sample rockfish landings. Major species groupings were identified on the fishticket along with PMFC statistical area of catch and stratified sampling of these groupings permitted increased accuracy in estimating landed catch by species. A synopsis of current and past species composition estimation techniques was presented at an interagency meeting sponsored by PMFC, in Seattle, Washington. Species composition and area of catch data were entered onto the Department's Evolution computer to provide in-season catch summaries of important rockfish and other groundfish species managed by PFMC. Tapes containing the summaries were submitted to PAC-FIN monthly by Data Systems to update the database.

In 1984, summaries of 1983 catch at age data for widow rockfish were sent to National Marine Fisheries Service in Tiburon, California to support stock assessments leading to harvest recommendations in 1984 and 1985. Similarly, summaries of 1983 and 1984 (1st 5 mo.) data for canary rockfish were completed for inclusion into a canary rockfish status of stock document. Yellowtail rockfish samples taken in 1983 and 1984 were submitted to Washington Department of Fisheries for stock assessments on that species.

Samples of species composition, sex and length of rockfish taken in the commercial hook and line fishery from areas off Pacific City, Depoe Bay, Newport and Port Orford were summarized and presented to user groups at meetings held in Garibaldi and Newport. The meetings conducted in cooperation with the recreational bottomfish project were designed to inform participants of our investigations into recreational and commercial aspects of this growing fishery and to solicit comments about future management and research goals.

This project assisted in the completion of two major status of stock documents for Dover sole and canary rockfish, numerous in-season database retrievals as well as analysis of proposed management options and experimental gear permits. Some of the project leader's time was spent in development of an assessment and management simulation model development including participation in an Adaptive Environmental Management Team Workshop sponsored by NMFS in Seattle.

To provide additional in-season biological data, field biologists, technicians, and seasonal personnel were asked to prepare
or assist in preparation of mid-season status reports for
selected species, and the information was provided in part to a
technical subgroup of the GMT. An update of species composi-
tion by depth by statistical area is also in preparation.

Our daily activities included coordinating vessel trip
declaration for trawlers wishing to change trip frequencies or
management area fished for rockfish, distributing information
on latest and proposed regulation changes and harvest status,
and participating in public meetings on management issues.

Several minor fisheries were monitored, including commercial
Pacific halibut catches in IPHC Area 2A (Oregon), commercial
gillnet permits for thresher shark (no catches reported in
1984), and permit fisheries (trawl) for box crab.

Due to recent cutbacks in charter funds for at-sea sampling,
only "ride-along" trips were taken (at no cost to Department)
to tag a small number of yellowtail rockfish in the area south
of Coos Bay.

Plans for
1985:

Much of the work to be done in 1985 will be a continuation of
the work described above. Specific changes and enhancements
include the following objectives:

1. To provide an annual report and a newsletter to enhance
communications with the fishing industry.

2. To determine the feasibility of an incentive program for
encouraging skippers to maintain quality logbooks to improve
data coverage and quality. This could include a subscrip-
tion service in which summaries of the skippers logbooks
would be provided at a nominal fee.

3. To continue to improve on sampling techniques and determine
the most cost effective sampling strategies for a given
level of desired precision.

4. As an outgrowth of the AEM workshop, this project will be
participating in a Sea Grant project to help develop a
groundfish stock/fleet model to aid in analysing different
management strategies. Specifically, we will summarize
changes that have occurred in regulations, fleet size,
vessel composition, experience level of skippers, total
landings, average landings per vessel, and landings composi-
tion during the last 3 years. This will be accomplished by
analysis of our database and through interviews of fisher-
men. We will also attempt to inventory current gear types
in use (i.e., mesh size and electronics).
PROJECT SUMMARY

Title:    Improved Groundfish Data Collection

Objectives: The goal of this project was to enhance timely (in-season) fishery and biological data collection and reporting from the groundfish fisheries off Oregon and to accommodate additional economic information into data collections for management purposes. To accomplish these goals we set the following objectives:

1. To improve data collection, coding and data entry by adding seasonal personnel to assist during periods of peak demand.

2. To provide timely collections of logbook-based groundfish catch and economic data by reformatting logbook trip summary sheets and transferring our data entry system from the Oregon State University (OSU) Cyber to the Department's Evolution computer in Portland.

3. To provide a rapid data entry, error checking and data summarization environment by creation of new software on the Evolution and Oregon State University Cyber, or by modification of existing software.

4. To provide computer summaries, tapes or written summaries of catch-effort and biological information to PAC-FIN and the Pacific Fisheries Management Council (PFMC) Groundfish Management Team (GMT).

Personnel: Analytical Assistant, Vacant
Seasonal personnel - 2-4

Cooperators: Pacific Marine Fisheries Committee, Pacific Fishery Management Council

Duration: Continuing

Funding: Pacific Marine Fisheries Committee, Pacific Fishery Management Council

Summary of Progress in 1984: Seasonal personnel assisted in data collection and coding of the new logbook trip analysis form as well as species composition data.

A new logbook trip analysis form was developed to allow for more rapid data summaries from the existing coastwide uniform logbook. Economic data elements were accommodated including crew size, time and port of departure and return and fuel consumption.

A new data entry terminal was installed in Newport along with upgrading data communications lines and multiplexer.
Software development on the Portland Evolution computer was co-ordinated between the Data Systems section and project personnel. Programming on the Evolution was done by Data Systems. New programs and enhancements included a data entry error checking package, report and magnetic tape utilities, and modification of records to accommodate area of catch and a finer species breakdown on the fish ticket. Project personnel (under contract) modified and developed new software on the OSU Cyber computer to facilitate report generation and data archiving. A partial list of programs developed for the Cyber is appended.

Throughout the year numerous data requests were handled in cooperation with the Groundfish Management and other projects. Weekly reporting of rockfish landings was a necessary part of monitoring quotas.

**Project Plans for 1985:**

We wish to switch some of the routine report generating functions to the Evolution or the new Burroughs systems in Portland. Additional programming changes will be required to generate reports and magnetic tapes for PAC-FIN. Current Evolution programs need modification to accommodate and summarize economic data elements now being collected. Coordination between project and Data Systems staff will be required to continue development of catch and effort reporting system for PAC-FIN and PFMC.

Continued support of seasonal help, programming, and an Administrative Assistant will maintain data acquisition and flow.

Continuation of the federal funds for this project are uncertain after September 30, 1985.
<table>
<thead>
<tr>
<th>System</th>
<th>Program</th>
<th>Purpose</th>
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<tbody>
<tr>
<td>LOGBOOK DATA</td>
<td>ADJUSTLOG (A system of 12 programs)</td>
<td>Replace card batch system with online terminal data entry error checking system to accommodate coastwide uniform logbook.</td>
</tr>
<tr>
<td>ERRORCHECK</td>
<td>LOGCOV</td>
<td>Lists by boat for each port and month the pounds landed and number of landings. The pounds on the logbooks and trips are also listed. The percentage &quot;coverage&quot; of logbook pounds (trips) to fish-ticket pounds (trips) was used by the Port Biologists to gather logs from boats not reporting.</td>
</tr>
</tbody>
</table>
| REPORT-BOTTOM     | PMFC    | Produces a file of nominal ROCKPOP for species comp.  
| TRAWL             |         |  
|                   |         | * does additional range checks for port, area of catch, month and species code.  
|                   |         | * arrowtooth fl. considered separately in 1983.  
|                   |         | * prorates species never hailed any area based on rockfish hails that port-area-month.  
|                   |         | * expands each port separately then sums all ports together.  |
| STATE             |         | Same as PMFC except by State area.                                                                                                     |
| COMPALL           |         | Multiplies aggregated species comp percentages for 35 species by month, port and area for both nominal ROCKFISH and nominal ROCKFISH  |
| LAND83            |         | Boat activity by total pounds landed each ports. Ranks boats by total pounds landed for each port and all ports.  
|                   |         | * Major modification of program activity.  
<p>| THRSH83           |         | 30% threshold - changed format statements for 1983 and added addition data range checks.                                                |</p>
<table>
<thead>
<tr>
<th>System</th>
<th>Program</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>REPORT-MIDWATER</td>
<td>MTSTAT</td>
<td>Summarizes midwater trawl caught groundfish by PMFC area for each month.</td>
</tr>
<tr>
<td>TRAWL</td>
<td>MWTPORT</td>
<td>Summarizes midwater trawl caught groundfish for each Port by month.</td>
</tr>
<tr>
<td></td>
<td>MWTPMFC</td>
<td>Summarizes midwater trawl caught groundfish by state area for each month.</td>
</tr>
<tr>
<td></td>
<td>MWTCLOSE</td>
<td>Summarizes midwater trawl caught groundfish by grounds code expands unknowns by ratio of known to total.</td>
</tr>
<tr>
<td>REPORT-SHRIMP</td>
<td>SHRIMP INCIDENTAL</td>
<td>A magnetic tape of incidental groundfish caught in shrimp gear received from Portland.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Read and processed the two files to produce a report of groundfish species landed by shrimp gear. Port-month and area. Summarized by both state and PMFC blocks.</td>
</tr>
<tr>
<td>SPECIAL DATA</td>
<td>CATCH24</td>
<td>Summarizes landings of groundfish above and below Cape Blanco by species and month for 1983 database.</td>
</tr>
<tr>
<td>RETRIEVALS</td>
<td>STAT3MI</td>
<td>Produces a table of species landed for all ports based on depth contours of 3 mile limit by State area. Expands for each port separately then calculates a total.</td>
</tr>
<tr>
<td>System</td>
<td>Program</td>
<td>Purpose</td>
</tr>
<tr>
<td>---------</td>
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</tr>
<tr>
<td></td>
<td>FREQ500</td>
<td>Summarizes rockfish landings by trip in 500 lb increments.</td>
</tr>
<tr>
<td></td>
<td>FREQNTE</td>
<td>Summarizes rockfish landings by trip. Increment chosen by user.</td>
</tr>
<tr>
<td></td>
<td>CTAG</td>
<td>A program to summarize lingcod coded tag data by movement in N-S and E-W directions. Loran C readings were converted to Latitude and Longitude as an intermediate step.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Summarized frequencies using SIPS package.</td>
</tr>
<tr>
<td>UTILITY</td>
<td>UNBLK</td>
<td>Unblocks magnetic tape from Portland ODFW - specie comp.</td>
</tr>
<tr>
<td></td>
<td>UNBLK3</td>
<td>Unblocks magnetic tape from Portland ODFW - 1983 tickets.</td>
</tr>
<tr>
<td></td>
<td>SELECT</td>
<td>Selects fishtickets by gear type.</td>
</tr>
<tr>
<td></td>
<td>PORTSEL</td>
<td>Selects fishtickets by Port code.</td>
</tr>
<tr>
<td></td>
<td>CHKPC</td>
<td>Sums specie comp percentages by area-month.</td>
</tr>
<tr>
<td></td>
<td>SORTT</td>
<td>Sorts fishticket file by ticket number.</td>
</tr>
<tr>
<td></td>
<td>SORTL</td>
<td>Sorts logbook file by ticket number and strata number.</td>
</tr>
<tr>
<td></td>
<td>BIGSORT</td>
<td>Sorts any length record by 1-3 keys as indicated by user.</td>
</tr>
</tbody>
</table>
PROJECT SUMMARY

Title: Marine Baitfish Management

Objective:
1. Monitor progress of Yaquina Bay roe herring fishery, including terminating of fishery at or near the harvest guideline (presently 120,000 pounds).
2. Continue biological data base of Yaquina Bay spawning herring.
3. Estimate spawning biomass of Yaquina Bay herring.
4. Monitor summer bait fishery for herring in Winchester Bay.
5. Document infrequent fisheries on other bait species (usually anchovy).
6. Identify and/or respond to need for changes in current regulations to allow for improved use of resources.

Location: Newport, Winchester Bay, other ports.

Personnel: Jerry Butler, project leader (part time)

Cooperators: None

Duration: Continuing

Funding: General Fund

Summary of Progress in 1984:

The most notable achievement in 1984 was the implementation of limited entry in the Yaquina Bay roe herring fishery. We had worked very closely with the fishing industry in moving this bill through the 1983 legislature. As a result, ten boats were qualified for the fishery in 1984.

The roe herring fishery was monitored and terminated after it had operated for 12 hours. Total catch was 137,191 pounds, compared to a 120,000 pound harvest guideline.

Herring were sampled from the Yaquina Bay commercial catch; sex, length, maturity state, and age are recorded.

Spawn deposition surveys were done to determine Yaquina Bay spawning escapement. An estimated 530,000 pounds of herring spawned in the estuary. This estimate plus the landings showed the 1984 catch rate to be 20.6% of the total spawning run; we consider a catch rate of 20% to be a conservative harvest.

The 1984 landings by the Winchester Bay bait fishery totaled 37,772 pounds, compared to 24,400 pounds in 1983. The principal use for this product is as fresh bait for the local salmon.
fishery, but some herring are frozen in "bait trays" and distributed along the coast.

A record number of surf smelt, 25,312 pounds, were landed into Brookings in 1984. These were caught almost entirely by two fishermen and went into the bait market.

**Plans for 1985:**  
We plan to continue objectives as outlined above, but to add biological data collection on Winchester Bay herring.
Title: Albacore Tuna Studies

Objectives:
1. Obtain fishery statistics on catch and effort by area of catch for albacore landed in Oregon.
2. Obtain length-frequency and environmental data associated with catches/area.
4. Identify and/or respond to need for changes in current regulations to allow for improved use of resources.

Location: Astoria, Oregon, and principal ports of landing.

Personnel: Larry Hreha, Project Leader (part time)
Seasonal personnel - 3 to 4 each summer.

Cooperators: National Marine Fisheries Service (NMFS), Pacific Marine Fisheries Committee (PMFC), Washington Department of Fisheries (WDF), California Fish and Game (CDFG).

Duration: Continuing, annual.

Funding: General Fund

Summary of Progress To Date:
Albacore tuna fisheries have historically been a high value product in Oregon. Environmental and economic conditions have been unfavorable in recent years, but potential remains high. Through federal funds administered by Pacific Marine Fisheries Committee, we have supervised three seasonal EBA-1's to interview fishermen at Newport, Coos Bay, and Astoria to obtain logbook data giving catch and effort by area of catch, and environmental conditions associated with tuna distribution. We sampled catches for length-frequency to monitor growth and age distribution. We coordinated Oregon's program with other states, the National Marine Fisheries Service Southwest Fisheries Center, and fishermen organizations. Pacific Marine Fisheries Committee coordinates efforts of all west coast States.

As a result of past data gathering by us and other agencies' coordinated sampling and other data collections, as well as recent international cooperative data exchanges, maximum sustainable yield levels (92,000-162,000 mt) have been estimated for North Pacific albacore stocks. Stocks appear to be healthy now but effort increases by foreign nations have occurred and prompted increased interest in an international management program.
We plan to continue ongoing data gathering activities and data exchanges as in 1984 and before. Coordination includes a biennial federal-state agency meeting at Lake Arrowhead, California. This modest program may become more significant if and when international management of Albacore tuna is instituted via multilateral negotiations-treaty creating some form of "Tuna Commission". It may be similar to the Inter-American Tropical Tuna Commission in scope and purpose and probably would include the U.S., Canada, Japan, Taiwan, Korea and perhaps mainland China.

The departure of Castle and Cook, Inc. (Bumble Bee Seafoods) from Oregon and, more recently, other major tuna processors from the west coast will tend to make Oregon landings of tuna somewhat lower in value and magnitude than in past, but we believe this valuable product will continue to be important to Oregon fishermen in the future even so, particularly when favorable environmental conditions return.
PROJECT SUMMARY

Title: Sablefish Fishery Data Collection-Analysis

Objectives: Plan, conduct, and coordinate management and research studies on Oregon sablefish fisheries and resources, especially fixed-gear in cooperation with other Marine Region projects.

Location: Astoria, Newport

Personnel: Larry Hreha, project leader (part time)
Jim Golden, Bob Demory
Seasonal personnel

Cooperators: National Marine Fisheries Service (NMFS), other Region 6 personnel.

Duration: July 1983 and Continuing.

Funding: General Fund

Summary of Progress To Date:

This fishery was a minor one in Oregon (and Washington) until 1979. An expanding Japanese market and gear development (pots) led to a very substantial increase in effort and catch in 1979 and since with some fluctuations annually. In 1983, Oregon sablefish landings totaled over 4,500 mt, about 13% of the total groundfish catch. Trawl gear took about 2,800 mt (60%); pot gear, 1,330 mt (28%); and longline gear 522 mt (11%) of the total. We project 1984 landings will be about 4,900 mt, with gear proportions similar to 1983 levels. Sablefish landings and ex-vessel value now is third among all species/species groups in the groundfish complex, following flatfish and rockfish. Before 1979 almost all returned (landed) catch of sablefish was incidentally caught in effort directed at flatfish and rockfish by trawlers.

Since 1983, we have distributed ODFW logbooks to fixed-gear fishermen as opportunity allowed. Only we and California have done so to date, using non-standardized (but similar format) logbooks pending federal or Pacific Fishery Management Council funding of a regular coastwide logbook program. We have collected these data on an opportunistic and voluntary basis. Examination of log data began, with the view of formulating standards of analysis and effort. Our catch statistics by catch area is and has been our best data source. Fish tickets list catch by gear and size category (small-medium-large) and port of landing. These data are being collated to form a time series from Portland fish ticket files. The size category includes mostly younger and recruiting fish. We have done some modest sex-maturity data analysis and also obtained and analyzed data on dressed round-weight conversion factors used to base poundage fee charges on. The National Marine Fisheries Service did considerable tagging in the 1970s. These data are being collected and analyzed by National Marine Fisheries Service
researchers. Recent analyses by Alaska and Canadian biologists indicate young sablefish may display different migration-movement patterns than older fish.

National Marine Fisheries Service research personnel and the Groundfish Management Team (GMT) Pacific Fishery Management Council (PFMC) are attempting to coordinate and begin an integrated, standardized research-assessment program for the entire Pacific coast. Funding and personnel constraints in conjunction with other groundfish (and salmon) assessment needs deemed more acute has made a significant state or regional sablefish program unfeasible to date, except a biennial pot index survey by National Marine Fisheries Service. We have participated in the National Marine Fisheries Service surveys off Oregon.

Research Plans for 1985:

We plan to participate in regional sablefish assessment planning sessions in 1985 as they occur. Beyond that, and until funding is available for seasonal and travel needs, we plan to confine our activities to our capability--fish ticket and logbook collection, collation, and analysis. A time series showing catch by size category by port and area of catch will be constructed. This should give us at least some indication of changes/trend, if any, in young vs. older fish. Along with the rockfish and Pacific ocean perch complex, in-season data on total catch will be obtained and fed to the Pacific Coast Fishery Information Network (PACFIN) for Pacific Fishery Management Council and Groundfish Management Team use in advising the Council and other entities of fishery performance against quotas in 1985. Logbook effort and Catch-per-unit of effort (CPUE) for the fixed-gear fisheries will be examined and analysis begun as time and funds permit.

We need to begin age-composition and growth rate studies for use in modelling yield. This probably will have to rely on a federal-state integrated program, however. Associated with this, discard information is needed, likewise contingent on federal funding.
PROJECT SUMMARY

Title: Marine Recreational Fishery Management

Objectives:
1. Document catch of and directed effort toward non-game species in Oregon's ocean boat fishery during the ocean salmon angling season.
2. Gather biological data on selected bottomfish species, principally in the charterboat fishery out of Garibaldi.
3. Assist citizen-involvement groups, such as the SCUBA club presently doing habitat-enhancement work in Tillamook Bay.
4. Identify and/or respond to need for changes in current regulations to allow for improved use of resources.

Location: Entire coast

Personnel:
- Jerry Butler, project leader (part time)
- Elaine Stewart (Pacific Marine Fisheries Committee) (part time)
- Carol Madden (Pacific Marine Fisheries Committee) (part time)
- Phyllis Shelley (Pacific Marine Fisheries Committee) (part time)

Cooperators: Ocean Salmon Investigation personnel

Duration: Ongoing

Funding: General Fund (staff, except Butler, are Pacific Marine Fisheries Committee (PMFC) employees, not state)

Progress in 1984:
Angler catch by time, area, and species for the 1984 summer ocean boat fishery is currently being compiled.

Aging structures from four species of bottomfish were collected from the Garibaldi charterboat fishery. These are currently being aged.

Considerable time was spent with the "Tideriders", a Portland scuba club, helping them plan and design a fish habitat improvement project in Tillamook Bay.

Concerns expressed by Garibaldi, Depoe Bay, and Newport charterboat operators over an expanding hook-and-line commercial fishery on black rockfish were received. These led to increased sampling of the recreational and commercial catch. We held two informational meetings (in Newport and Garibaldi) with both user groups, presenting our current data base information and discussing future management plans. Tensions between these two groups seem to have been lessened by bringing them together.
Plans for 1985:

Biological data collection on black rockfish will be expanded to include more work along the south coast.

We also plan to expand our work on the surfperch resource, which parable Sales is the object of an increasing fishery.

We would like to do substantially more work toward documenting and assembling a more adequate data base on species sought by marine anglers. Until/If an increased budget is available this work will continue to be an unrealized objective.

We have submitted a program improvement package (see attachment) that would be supported by marine recreational angling license fund. If this becomes a reality, we will be in a good position to deal with future management needs.
PROJECT SUMMARY

Title: Marine Recreational Fisheries Statistics Survey

Objectives: Determine (by field interview) several parameters pertaining to the marine finfish angler and catch. These are:

1. Descriptive information on users, such as, area of origin, avidity, and target species sought,
2. Distribution of angling effort by time and area,
3. Species composition of catch and catch rate per trip,
4. Length of all fish seen in catch.

Location: Entire coast

Personnel: Jerry Butler, project leader (part time)
            Elaine Stewart, biologist (full time)
            Carol Madden, technician (full time)
            Phyllis Shelly, technician (full time)
            Seasonal personnel (20 months per year)

Cooperators: Pacific Marine Fisheries Commission
            National Marine Fisheries Service (funding source)

Duration: Since July, 1979, but funded on an annual calendar-year basis.

Funding: Pacific Marine Fisheries Committee (staff, except Butler, are Pacific Marine Fisheries Committee employees, not state)

Summary of Progress in 1984:

By the end of 1984, we will have done over 8,100 angler interviews (against an annual goal of 7,600).

These interviews (each one consisting of 35 questions) are conducted and edited by us. The forms are then sent to a San Diego data-processing company that prepares tapes for submission to National Marine Fisheries Service.

Plans for 1985:

Continuation of 1984 work, pending funding approval by National Marine Fisheries Service (Note: a cut of $15,18,000 in our proposed CY 1985 budget will probably be necessary according to R. Porter, Pacific Marine Fisheries Committee (pers. comm., Nov. 9, 1984).
PROJECT SUMMARY

Title: Black Rockfish Stock Delineation Study

Objectives: Determine movements of black rockfish.

Location: Newport and Garibaldi

Personnel: Jerry Butler, project leader (part time)
Robert Demory, biologist (part time)
Numerous agency people (340 person days)

Cooperators: National Marine Fisheries Service (funding source)
Newport charterboat operators
Garibaldi charterboat operators

Duration: October 1, 1984 to September 30, 1985

Funding: Saltonstall-Kennedy Act

Summary of Progress In 1984:
During May, 1983, we tagged approximately 2000 black rockfish out of Garibaldi using donated charterboat time. We are presently analyzing tag returns from that pilot study to aid in decisions regarding our 1985 program.

Plans for 1985:
Informational meetings will be held (during January) with charterboat operators in Newport and Garibaldi. Input and advice from these people, as well as commercial hook-and-line fishermen will be used to identify exact reef areas to be fished.

Approximately 4,000 fish will be tagged in both areas from April 1 through June 30, 1985.

Tag recovery documentation efforts will follow for several years. Early recoveries (1-3 months after release) will be very valuable. We hope that these will yield data on short-term movements that will be the first step toward understanding "temporary depletions" that are often reported. All possible effort will be expended to pinpoint exact reef locations of the early tag recoveries.
PROJECT SUMMARY

Title: Groundfish research and development (stock assessment)

Objectives:
1. Determine status of Dover, English and petrale sole and canary rockfish in the INPFC Columbia-Vancouver areas.

2. Determine allowable biological catch (ABC) of Dover, English and petrale sole and canary rockfish in the INPFC Columbia-Vancouver areas.

Location: Analysis was conducted at Newport. Data collection occurred from about Cape Blanco, OR to Cape Flattery, WA.

Personnel: Robert L. Demory: Project Leader
Project Assistants: William F. Barss, biologist
James T. Golden, biologist
Dr. Ellen K. Pikitch, Oregon State

University: National Marine Fisheries Service, Washington Department of Fisheries, California Department of Fish and Game, Oregon State University.

Duration: October 1, 1982 to September 30, 1984.

Funding: Commercial Fisheries Research and Development Act

Summary of Progress to Date:
Assessment methods used survey data and comprehensive information on catch, effort, age composition and other biological and fishery information. The choice of model used depended on the amount and type of data available. In the case of Dover, English and petrale sole extensive age composition data was available dating to the early 1950s for Dover sole and since 1966 for English and petrale sole. Data from trawl surveys conducted by ODFW during 1971-76 was also available. Much less data was available for canary rockfish. Usable age data were available only for 1980-83 and survey estimates of biomass were not considered to be reliable.

Biomass estimates derived from survey data were used for the three flatfish species as well as biomass derived from virtual population analysis (VPA) for Dover sole. VPA was not performed for English and petrale sole because of time constraints.

Forward stock reduction analysis (SRA) was used to estimate biomass available in 1985. This model decays an initial estimate of biomass (survey) accounting for total mortality, catch and recruitment. The SRA model assumes constant recruitment, which in the case of Dover and petrale sole, did not present a problem since recruitment indices were without trend. The SRA model did not provide realistic results for English sole because recruitment has shown a consistent decline for the past six yearclasses.
Estimates of exploitable biomass and allowable biological catch (ABC) for 1985 in the INPFC Columbia-Vancouver Areas are shown below. All values are in metric tons (rounded).

<table>
<thead>
<tr>
<th>Exploitable biomass:</th>
<th>Dover sole</th>
<th>English sole</th>
<th>Petrale sole</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRA</td>
<td>92,900-94,800</td>
<td>5,400</td>
<td>8,700</td>
</tr>
<tr>
<td>VPA</td>
<td>111,497</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ABC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SRA</td>
<td>13,800-17,400</td>
<td>800</td>
<td>1,740</td>
</tr>
<tr>
<td>VPA</td>
<td>20,405</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum sustainable yield (MSY)</td>
<td>10,400-12,400</td>
<td>3,300</td>
<td>1,730</td>
</tr>
</tbody>
</table>

Estimate of ABC85 for canary rockfish was 2,900 mt and was based on a mean catch model in conjunction with biological characteristics of the species. Sufficient data were not available for other analyses.

In 1985 potential aging error will be determined for Dover sole. Aging methods include scales, surface readings of otoliths, and readings of broken and burned otoliths. Not only will comparisons be made of readability (agreement) within and between methods but also a determination of the effects on the estimation of total instantaneous mortality rate (Z) between methods. Based on the examination of scales from tagged fish we have determined that some aging error is present with the scale method, but the magnitude of the error has yet to be determined.

Also in 1985 cohort analysis will be performed on English and petrale sole in the INPFC Columbia-Vancouver area. In conjunction with the cohort analysis we will investigate a decline in mean length of age 4-7 female English sole. A similar decline has also been noted for age 10 female Dover sole. Whether this effect was caused by long term changes in growth, selectivity by trawl mesh size or a combination of both is not yet known. It is also possible longterm "drift" of acceptable market size has affected these statistics.

Preparation of stock assessment documents, mandated by regional council management, exposed several data gaps. One of the most serious was that of discard, resulting from regulation and market (economic) forces.

Knowledge of discard is vital to any age structured model because the discarded fraction represents a sizable mortality that is poorly documented. We plan to cooperate and assist in a Sea Grant proposal for such research, if funded, to the extent we can.

One of the most fundamental needs is an index of recruitment of key groundfish species. Our present method of indexing recruitment is to track one or more age groups of the same yearclass.
after they are recruited to the fishery. This method always occurs after the fact and may lag the birth of a year class by more than 10 years. A more rational approach would be to create one or more indexing sites that could be sampled periodically to index juvenile fish of key species (particularly flatfish) 2 to 5 years before they are recruited to the fishery. Such a program requires adequate and secure funding because a long term data base is essential.

In a more general sense preparation of stock assessment documents has also challenged traditional methods of data collection and processing. The need for accurate and timely information is now greater than at any time in the history of groundfish fisheries. Without support for data collection, processing and analysis, information needed for rational management will become even more "quick and dirty".
PROJECT SUMMARY

Title: Shrimp Yield and Recruitment Modelling

Objectives:
1. Complete mathematical modelling of the 1966-81 pink shrimp data set and evaluate growth overfishing and recruitment overfishing relationships with respect to recent changes in stock and effort characteristics within this fishery.
2. Examine predator-prey relationships which should potentially be included in pink shrimp population models.
3. Test size selectivity of 1 inch mesh net cod-end against 1-1/8 inch mesh used in previous studies, and extend and verify low-end shape of the net selectivity curve which is needed for developing model parameters. Summarize net selectivity study data into a data report.

Location: Newport, Oregon, and at-sea along the Oregon coast.

Personnel:
Malcolm H. Zirges, Project Leader
Mark R. Saelens, Technician

Cooperators: Dr. David R. Bernard cooperated in the development of our present pink shrimp recruitment model while at Oregon State University; Dr. Bernard continues to advise in model development from a position with Alaska Department of Fish and Game. Dr. Ellen Pikitch, Oregon State University.

Duration: October 1, 1984, to September 30, 1986

Funding: Commercial Fisheries Research and Development Act

Summary of Progress to Date:
Gear studies have provided us with a preliminary net mesh selectivity curve, and yield-per-recruit analysis indicated that yield would not be improved by increasing legal net sizes. There is a need to extend and verify this selectivity curve and we have obtained a smaller (1 inch mesh) net to do this, but the abundance of small shrimp has been too low recently to test this gear effectively.

A recruitment model has been developed that shows promise of predicting recruitment of age II shrimp to the fishery quite well. An Information Report describing this modelling work is nearly complete. We have begun compiling recent fishery history to compare with and test model performance.

Fishery parameters such as Catch-per-unit of effort (CPUE) have been organized, examined, and standardized to provide a more descriptive data base. In particular, we have determined that effort standardization between double- and single-rigged (towing two versus one net) vessels should now be based on double-rig units because of changes in the character of the fishery.
The pink shrimp recruitment model will be tested with recent (depressed) fishery performance. The model will be improved if this is indicated, and will be written up in a "working" form to be readily updated year-by-year as new data points are obtained and new recruitment projections are required.

When abundance and availability of age-1 (pinhead) shrimp warrants, fishing will be conducted from a chartered commercial shrimp trawler using a 1" mesh net cod-end. Selectivity of this mesh will be compared to previous tests, and a new, extended, net selectivity curve will be calculated. Market sampling in October 1984 indicates a strong 1984 yearclass may be present; thus we anticipate this work can be completed in 1985.

Effort parameters will be standardized to double-rig units (per CPE studies), and will be added to the modelling database.
PROJECT SUMMARY

Title: Environment/predation/competition Variable Database

Objectives:
1. Improve database available for shrimp stock modelling through examination of environmental factors which may be driving the variability observed in (a) shrimp cohort strength, and (b) availability of shrimp to fishing gear.

2. Design and compile a database of environmental information for Oregon nearshore waters, particularly near shrimp beds, and develop a microcomputer-based system to allow testing relationships at low cost.

3. Repeat #1 and #2 above using predator/competitor fish stock information to allow integration of interspecies relationships into future models.

4. Design and document the product of objectives 1-3 above for application to the range of marine species managed in Oregon and adjoining waters, and prepare for multispecies modeling.

5. Determine if there are discrete substocks of pink shrimp along the Oregon coast which may have different mortality or maturity rates and require modelling separately.

Location: Newport, Oregon

Personnel: Malcolm H. Zirges, Project Leader
            Mark R. Saelens, Technician

Cooperators: None

Duration: October 1, 1984 to September 30, 1986

Funding: Commercial Fisheries Research and Development Act

Summary of Progress To Date:

A considerable body of environmental data including upwelling indices, sea temperatures, current patterns, salinity regimes, and bottom type and topography have been collected.

Sea-bed drifters have been released over shrimp beds since 1982 and recoveries are providing considerable information on bottom current characteristics that are affecting shrimp. We have recovered almost 7% of the 900 drifters released to date which is very good compared to other studies of this type.

A number of methods of representing and examining environmental data have been studies, and a microcomputer-based graphics package has been used to develop 3-dimensional maps of the sea bed off Oregon which are expected to prove useful for data overlay and study.
Environmental and predator/competitor fish stock data now in hand will be further organized into a microcomputer database, and additional data will be added as it is discovered. This will include development of a standard data organizational format and graphic study/simulation system usable by other projects within ODFW or outside agencies.

This information will initially be used to improve the shrimp recruitment model, but will also be set up in a format that will allow initial modeling of multispecies interactions with yields of shrimp.

Recruitment, cohort yield histories, and Catch-per-unit of effort (CPUE) will be correlated with environmental and predator/competitor stock size parameters to examine mechanisms affecting recruitment and availability of shrimp to fishing gear.
PROJECT SUMMARY

Title: Bay Clam Management Program

Objectives: To maintain a scientifically sound clam management program.

1. Conduct annual survey of recreational clam diggers using nine Oregon estuaries. Data collected includes species composition, size and age of clams, digging effort, and digger origin.

2. Conduct annual surveys on subtidal clam stocks in areas having commercial harvest potential. Data collected includes species composition, size, weight, and age of clams, depth, and substrate type.

3. Coordinate and oversee an ongoing subtidal commercial clam fishery.

4. Pursue stock enhancement.

5. Identify and/or respond to need for changes in current regulations to allow for improved use of resources.

Location: Entire Oregon coast, all estuaries containing clams (Nehalem, Tillamook, Netarts, Nestucca, Yaquina, Alsea, Siuslaw, Umpqua, Coos, and Coquille estuaries).

Personnel: Project Leader: Tom Gaumer FWS-3

Duration: Continuous

Funding: General Fund

Summary of Progress in 1984:
Recreational clam interviews were conducted on 39 tideflats. Preliminary data revealed that 1798 interviewed diggers had dug 33,922 clams in 2,566 hours of effort. Catch/effort for the diggers was 18.9 clams/trip or 10.5 clams/hour.

Softshells comprised a majority of the clams observed making up 36.9% of the take, followed by gaper clams (25.7%), cockle clams (22.7%), butter clams (7.8%), littleneck clams (6.3%), and bentnose clams (0.6%).

Of the clam diggers interviewed, 52.8% were residents of Oregon living outside of the county where they were digging, 42.7% were residents of the local county, and 4.4% were residents living outside of Oregon. Data on size and age composition is not summarized yet.

Surveys of subtidal clam stocks were made in Nehalem, Tillamook and Yaquina bays. The data shows that recruitment of gaper clams continues to be poor and has been since 1975. Since 1976 gaper clam numbers in Tillamook Bay have decreased from 7,004,000
to 1,462,000 and since 1983 in Yaquina Bay from 7,680,000 to 5,600,000. This reduction is from natural mortality since we have had no commercial fishery on those stocks. All other clam species are generally holding their own or increasing in numbers.

Commercial clam landing for 1984 are incomplete. Preliminary data through Oct. 29 shows 83,686 pounds landed coastwide. Littleneck clams have been the major species landed with 40,325 pounds reported. Tillamook Bay has produced 40,628 pounds (48.5%) of the total. In 1983, 37 commercial clam diggers reported making 811 landings that produced 136,185 pounds. Seven of the commercial diggers had ODFW permits to mechanically harvest clams; six were issued for Coos Bay and one for Yaquina Bay. Coos Bay produced 95,717 pounds (70.3%) of the total followed by Nehalem Bay with 31,856 pounds (23.4%). Gaper clams were the principal species harvested producing 95,091 pounds (69.8%).

A new and expanding hand fishery for clams has started in Tillamook Bay. This fishery has targeted primarily on littleneck clams with cockle and butter clams taken in good numbers. The subtidal fishery in Yaquina Bay has dried up due to poor market conditions of the gaper clam.

In 1984 we continued our program of introducing Manila littleneck clams into Tillamook Bay. Approximately 6200 adult clams brought to Oregon from Washington and 4000 set (produced by Oregon State University under laboratory conditions) were planted in Tillamook Bay. In 1983 we introduced 11,000 adult Manila clams and in excess of 2 million set into Tillamook Bay.

We plan to continue our program of monitoring the recreational clam fishery in our major clam producing bays. Unfortunately reduced available manpower will necessitate reducing sampling effort and possibly eliminating surveys on some bays. This is untimely since the accumulated data base is starting to show important trends in clam digger preference/clam availability and is our main contact with the digging community.

We will expand our subtidal clam inventory program to Coos Bay in 1985 in response to evidence of poor clam production. We will continue to inventory the subtidal stocks in Nehalem, Tillamook, and Yaquina bays.

The commercial clam fishery will be monitored. In response to changes in clam stock characteristics, we will consider changing our management approach to the commercial harvest of bay clams. Of particular concern is the poor recruitment of gaper clams. Items to be considered are:

1. Requirement of a permit to participate in the clam fishery—both hand and mechanical harvest.
2. Require a logbook by all commercial diggers.

3. Harvest allocation by area, quota, harvest method.

Plans have been finalized with Washington Department of Fisheries shellfish staff to bring in approximately 1000 pounds of adult Manila littleneck clams to continue our enhancement program. In addition to our seeding program in Tillamook Bay, sites are being considered for Yaquina and Coos bays.
PROJECT SUMMARY

Title: Dungeness Crab Management

Objectives: Maximize the economic return from the ocean commercial fishery by:

1. Adopting seasons which optimize meat-yield and socio-economic benefits and minimize wastage from discard handling of soft-shelled crabs.
2. Encouraging the use of harvest methods and gear types that minimize negative impacts on the resource.
3. Minimizing gear conflicts and losses of crab through damage by other fishing gear or activities.
4. Reducing of losses of crab due to loss of crab pots which continue to fish.
5. Regulating escape port sizes to minimize discard handling mortality by allowing escapement of crabs below a selected size.
6. Adopting size limits to provide optimum meat production while providing adequate breeding stock.
7. Investigating the use of regulations governing the size, mobility, and the extent of capitalization of the fleet.

Minimize adverse social and economic impacts of management. Factors considered include:

1. The setting of fishing seasons as a means of minimizing adverse social and economic impacts on traditional fishery patterns.
2. The economic and social impacts from present and possible future changes in the market.
3. Maintenance of a quality product acceptable to the consumer.

Promote orderliness in the fishery by working with adjoining states in:

1. Regulations
2. Data Collection
3. Research

Maintain recreational fishery in estuaries.

1. Promote wise use of available product.
2. Minimize user conflicts.
Location: Entire Oregon coast

Personnel: Project Leader: Darrell Demory FWB-3
Project Assistant: Terry Link FWB-2

Duration: Continuing

Funding: General Fund

Summary of Progress in 1984:
Field work on crab commences December 1 when the ocean season opens. We sampled at the docks in Astoria, Newport, and Brookings for size and condition on a monthly basis for the first three months of the season then again in late July and August. We also sampled at sea (day trips) seven times, and noted size, condition, and the amount of sorting of sublegal males, females, and legal softshelled crab.

Sampling data were summarized and will be included in an annual crab harvest report.

Fish ticket data were edited and also summarized for the annual report. The summaries include harvest, number of landings, number of boats, and number of pots by port and month, boat lengths by port and average price per month.

In September 1983, 756 legal Grade II crabs were tagged with Peterson discs off the Columbia River just after the season closed to obtain data on crab movement. To date 150 tags have been returned and preliminary analysis suggests movement is in all directions.

In January 1984, a series of meetings was held in Tillamook, Newport, Coos Bay, Portland, and Eugene to obtain public comment on sport and commercial crabbing in estuaries. Data was later presented at a public hearing and resulted in commercial crabbing in estuaries being prohibited on all weekends and holidays and rings only with no more than 15 per boat.

Staff also prepared and gave statements at two other public hearings concerning season and gear. The season will close August 15 and crab buoys must be branded with a number effective November 25, 1985.

One short term project entailed comparing crab widths with the length of a leg section. The reason for doing this was to obtain evidence for a pending court case where a commercial crabber landed backed crab which made direct size measurements impossible. Our analysis indicated that most of the backed crab were legal size with a low probability that only 3 were sublegal. The case was dropped.

Plans for 1985: Crab size and condition will be monitored on a monthly basis at the four major ports: Astoria, Newport, Coos Bay, and
Brookings. Sampling will also be done at sea, hopefully on an expanded basis, but budget restrictions on travel may hamper this.

A crab plan for Oregon will be commenced and include discussions with Washington and California biologists where appropriate. We will discuss strategy with Portland staff on the crabber/fishing gear conflicts, especially the drag fishery issue.

Sport crabbing regulations will be reviewed during the year with thought given to reducing the bag limit, increasing the size limit, and gear restrictions and modification.
PROJECT SUMMARY

Title: Razor Clam Management

Objectives: Promote wise use of available resource by:
1. Stressing food rather than bait use
2. Minimizing user conflicts
3. Determining economic value of resource
4. Minimizing wastage
5. Identify and/or respond to need for changes in current regulations to allow for improved use of resources.

Location: Entire Oregon coast

Personnel: Project Assistant: Terry Link FWB-2

Duration: Continuing

Funding: General Fund

Summary of Progress in 1984:
Razor clams are dug coastwide, but the main fishery and sampling effort are concentrated on Clatsop Beaches between the Columbia River and Seaside. Both sport and commercial diggers were sampled on each minus tide series from March through September on a programmed basis. From October through December minus tides occur at night and digging is greatly reduced so sampling was geared accordingly. Data gathered included clam age, lengths, number dug including wastage, the number of diggers, their place of residence, and area dug. Data were summarized and will be presented in the annual harvest report. To date in 1984, 91,000 clams were taken by 9,300 diggers.

Razor clam digging is more sporadic on the beaches south of Clatsop Beach, but small fisheries exist at Cannon Beach, in the Newport area, near Coos Bay, and at Bailey and Myers Creek beaches on the south coast. Excellent digging occurred at Bailey and Myers Creek beaches in 1983, but produced little in 1984.

The 1983 harvest of razor clams off Clatsop Beach was the lowest on record with an apparent loss of older clams for unknown reasons. The same thing occurred on Washington beaches and was believed to be caused by a gill cell disease dubbed NIX (unknown nuclear inclusion). The disease was found in Oregon clams as well, but the incidence was very low and researchers speculated that it was unlikely that NIX was the cause of the clam loss in Oregon. Samples of clams were collected at intervals from several areas and delivered to Dr. Bob Olson at the Marine Science Center in Newport for analysis. Sea Grant funding is being sought to continue and expand this program.
Plans for 1985:

Monitoring of the fisheries will be continued. Also, the commercial fishery will be reexamined. In recent years we have become aware that a number of commercial diggers are taking clams under their commercial license for personal use or for crab bait without reporting their catch or paying the poundage fees. Unlimited access to the fishery is the major problem and cause of conflicts between user groups. As more commercial diggers enter the fishery, more conflicts occur. Ways to reduce commercial effort will be studied carefully and a management strategy will be prepared.
PROJECT SUMMARY

Title: Box Crab Management

Objectives: Determine basic biological data for Oregon stocks:

1. Spawning and molting time
2. Sex ratio
3. Size/age composition
4. Size at maturity
5. Size/weight relationship

Encourage development of the fishery

1. Crab location and abundance
2. Gear
3. Fishing methods
4. Meat yield over time/sex

Monitor fishery

1. Regulations
2. Catch/effort area
3. Conflicts with other fisheries

Identify and/or respond to need for changes in current regulations to allow for improved use of resources.

Location: Entire Oregon coast

Personnel: Project Leader: Darrell Demory FWB-3
Project Assistant: Terry Link FWB-2

Duration: Continuing

Funding: General Fund

Summary of Progress in 1984:

Box crabs have been taken incidentally by trawlers for many years but discarded at sea. In 1982 trawlers were allowed to land trawl caught box crab if taken outside state waters. In 1982 and 1983 the catches were 500 and 16,000 pounds, respectively. In 1984 the catch jumped to 271,000 pounds and industry interest and capability make the potential for an expanded fishery great. The primary market interest is Japan.

Little is known about the box crab other than its existence. Our management approach so far has been to let the fishery develop unhindered for awhile so we can obtain fishery data. At this time, the fishery is the only method by which we can obtain information. During the three years of record effort has been 1, 16, and 24 boats. However, the bulk of the catch was from one boat using modified Dungeness pots.
Most of the box crab has been landed at Newport then trucked to
Charleston for processing. Data collected were names and number
of boats, area and depth fished, pounds landed, gear used, sex
ratio, size and meat yield.

A short term management strategy has been drafted.

Sampling at the dock and close contact with the processor will
be continued. Also, we plan to sample at sea to observe fishing
methods and incidental catch.

Potential problems include placing stationary gear in areas used
by mobile gear (trawlers) at that time of year. We also have
had a few Dungeness crab fishermen leave their pots out past the
closed season claiming they are after box crab. Although
Dungeness crab are not landed during their closed season the
gear effectively keeps other fisheries from operating in the
area and reserves that location for said fishermen when the
Dungeness season reopens.

The potential for a rapidly expanding hence disorderly fishery
is present. Communication between staff and the industry will
continue.
PROJECT SUMMARY

Title: Scallop Resource Assessment

Objectives:
1. Test gear and techniques for suitability of catching juveniles for year class assessment.
3. Map distribution and relative abundance of scallops caught in commercial fishery.
4. Use research and catch data to estimate scallop abundance.
5. Identify and/or respond to need for changes in current regulations to allow for improved use of resources.

Location: Oregon coastal waters, Newport

Personnel:
Project Supervisor: T.F. Gaumer FWB-3
Project Leader: R.M. Starr FWB-2
Project Assistant: J.E. McCrae FWB-2

Cooperators: Oregon State University

Duration: Continuing

Funding: General Fund

Summary of Progress in 1984:
In 1984 we finished an ODFW Information Report that detailed results of our gear trials and age and growth studies. Results from the gear trials suggested that liners in research dredges increase the catch of juveniles, but reduce the catch of adult scallops. Liner size also influences the size distribution of prerecruits caught. Large liners caught more juvenile scallops than smaller liners, but did not catch as many young-of-the-year, indicating a pressure wave affected the catch of small scallops.

Results of the age and growth studies indicated that one strong year class dominated the Coos Bay area, but recruitment was more uniform off Tillamook Head and Yaquina Head. Growth rates were variable between areas, but consistently greater in shallow water. Growth curves generated for each year class indicated that there may be some annual variation in growth off Coos Bay, but that growth off Tillamook Head is remarkably constant.

Our analysis of the growth curves identified the occurrence of Lee's phenomenon, in which faster growing scallops die early and slower growing scallops live longer. We suggested that this is caused by size selective natural mortality. Mortality of fast
growing scallops is caused by a shell infesting polychaete worm. The faster growing animals may have thinner shells which leads to shell weakening by the worms.

**Research Plans for 1985:**

Due to funding and personnel limitations, our work in 1985 will be limited to collecting and compiling vessel logbooks. We will continue to compile logbook data to obtain catch-per-unit-effort data, and for future population estimates. We submitted a program improvement request to continue scallop work to help fulfill the remaining objectives for this project. Without additional support we will be unable to obtain abundance and yield estimates. If the current scallop license moratorium is modified, these estimates will be needed.
PROJECT SUMMARY

Title: Squid Resource Assessment

Objectives: 1. Collect and consolidate existing information pertaining to squid life history and management.
2. Develop a squid information retrieval and data analysis system.
3. Evaluate the selectivity, efficiency, and impact of gear used to harvest squid.
4. Describe the biology and life history of Loligo opalescens in Oregon waters.

Location: Oregon coastal waters, Newport and other ports.

Personnel: Project Supervisor: T.F. Gaumer, FWB-3
Project Leader: R.M. Starr, FWB-2
Project Assistant: J.E. McCrae, FWB-2
Seasonal Assistants: 2 (8 mm in FY 85)

Cooperators: National Marine Fisheries Service
Oregon State University
Southwest Oregon Community College
Washington Department of Fisheries

Duration: March 1984 through September 1986.

Funding: Commercial Fisheries Research and Development Act

Summary of Progress in 1984: Oregon fishermen have long known that market squid (Loligo opalescens) congregate to spawn off the Oregon coast, but only recently have attempted to fish for squid. Interest in the fishery and amount of product harvested have geometrically increased since the inception of the fishery in the spring of 1982. We currently know little about squid off our coast; our primary management concerns revolve about the abundance of the species and potential for overharvest, the impact of harvest on other species, and the impact of harvest techniques on the reproductive capability of the resource. After the 1983 spring harvest we initiated a research program to provide information needed to develop a squid management plan. The research program has four primary goals:

1. Understand those aspects of the population dynamics of Oregon squid stocks which are needed for the development of a squid management plan.
2. Evaluate the commercial harvest of squid to determine harvest capability, gear efficiency, and gear impacts.
3. Understand the social and economic variables influencing the harvest of squid.

4. Develop management plan alternatives.

Successful accomplishment of the project objectives will help us to understand squid stocks and squid harvesting techniques in Oregon. The first year of the study was devoted to identifying information gaps, identifying problems associated with the fishery, and to learning about the basic biology of squid in our waters.

We accomplished an initial objective of collecting existing information about squid, by writing to federal agencies and other states and countries, by sponsoring a workshop to discuss squid research on the west coast, by obtaining references from publications, and by conducting computerized literature searches through the Oregon State University and National Marine Fisheries Service libraries. We worked on a data retrieval and analysis system for handling research and fishery data. We will collect references and develop data analysis techniques throughout the course of this project.

In the first year of this project we wanted to identify resource problems associated with the fishery itself. We are interested in the efficiency and impact of the gear used to harvest squid and thus instituted a vessel logbook program to help determine gear efficiency. We are especially concerned about the impact of fishing gear on squid egg capsules and the incidental catch associated with harvest. An observer program was established to witness harvesting operations; to look for gear conflicts, assess gear efficiency, and estimate incidental catch. We observed fishing activity of 70% of the vessels participating in the 1984 fishery, and observed 24% of the landings by number and 26% of the landings by pounds. Personnel observed 36% of the landings by weight of shrimp trawls, 27% of purse seines, and 6% of lampara nets.

Vessels with shrimp trawls harvested an average of 507 pounds of squid per hour, vessels with purse seines caught 11,388 pounds per set, or close to 6000 pounds per hour, and vessels with lampara nets caught 1025 pounds per set, or about 500 pounds per hour. Only a small incidental catch occurred on vessels fishing on known concentrations of squid. The bycatch of speculative tows was greater. The incidental catch of vessels observed primarily included species of smelt, herring, anchovy, whiting, and flatfish. We occasionally saw Dungeness crab, rockfish, and salmon species caught. This year we observed about 400 pounds of rockfish, and two juvenile and three adult salmon caught incidentally to harvesting squid. The potential catch of other species still concerns us; however, since we observed over 1000 pounds of black rockfish caught incidentally in one tow in 1983.
An objective the first year of this study was to collect biological data to use for stock delineation and to learn about squid distribution and school behavior. We especially were interested in learning about the population structure and basic characteristics of each spawning school. These data are important components of an ultimate goal of estimating squid abundance, maximum sustainable yield, and factors influencing annual fluctuations in abundance and distribution.

We collected samples of 200-250 squid three times per week when squid were harvested. We measured dorsal mantle length, whole weight, mantle weight, and recorded the sex and gonad condition of each animal. We also recorded the date and area of catch, the depth of catch, the vessel and gear type used to catch the squid, and the time of day the squid were caught. Environmental data were also recorded for samples taken from trips with ODFW observers. These data may provide clues to the behavioral characteristics of the squid population and the relationship between groups of squid.

The mean dorsal mantle length of all squid collected was 110.8 mm, the mean whole weight and mantle weights were 29.9 gm and 13.9 gm, respectively. The mean mantle length decreased over the season, an unexpected phenomenon. The mean length of squid harvested was 120.9 mm from the first area, 113.0 mm from the second area, and 85.1 mm from the third area. The mean mantle length of squid sampled from the third area was considerably smaller due to the presence of many juveniles in the sample, as evidenced by frequency histograms. Analysis of the variance about the mean lengths in each sample helped us to determine a statistically valid sample size.

Regressions of whole weight and mantle weight to dorsal mantle length indicated that weight decreased as squid maturity stage increased. Regressions analysis and analysis of variance techniques helped to identify differences between times and areas of squid harvest. We expect that future data will allow us to differentiate between gear types and time of day as well. This information may allow us to differentiate groups of squid in an area to obtain better estimates of abundance. It may also prove helpful to delineate different stocks of squid off the Oregon coast.

We participated in research cruises conducted by Oregon State University (OSU) Southwest Oregon Community College (SWOCC). Oregon State University researchers evaluated the use of hydroacoustic techniques as a method to assess squid abundance. SWOCC researchers attempted to collect squid for market analysis and development. We collected and analyzed samples from the research cruises.

Research Plans for 1985:

We propose to continue to observe fishing activity at sea to quantify the amount of egg capsules picked up by the gear, to quantify the amount of the incidental catch, and to document
fishery conflicts within and between fleets. We will continue to use vessel logbooks to collect effort and location of catch data.

We will continue to collect biological data to delineate stocks and learn behavioral characteristics of the schools. It is important that we continue this work to identify geographic and annual variability in the location, structure, and timing of squid spawning schools. We are working with the Washington Department of Fisheries to determine if genetic differences occur between Puget Sound and Oregon squid.

We plan to collect egg capsules to estimate fecundity of Oregon squid, and to provide egg capsules to the University of Houston for squid rearing and biomedical studies. This work may identify lethal or sublethal affects of disruption of the egg capsules.
PROJECT SUMMARY

Title: Assessment of the Fishery Potential for Loligo opalescens

Objective: To estimate the biomass of squid in several major squid spawning areas on the Oregon coast.

Location: Oregon coastal waters between Cape Lookout and Heceta Head, Newport.

Personnel: Project Supervisor: T.F. Gaumer FWB-3
Project Leaders: R.M. Starr (ODFW), Dr. W.G. Pearcy (OSU)
Project Assistant: J.E. McCrae FWB-2
Seasonal Assistants: 2 (6 mm in FY 85)

Cooperators: Oregon State University

Duration: October 1984 through September 1985

Funding: Saltonstall-Kennedy Act

Summary of Progress in 1984:

An accurate biomass estimate is needed for our management program. When the large interest in squid as a commercial product became apparent our immediate concern was the possibility for overharvest of the resource in the absence of abundance information. We were concerned that the industry could overharvest a school or stock thus impacting the reproductive capability of the species and damaging the nearshore food web.

The Oregon Fish and Wildlife Commission, responding to this concern, enacted a harvest guideline of 4.5 million pounds for 1984. When fishing vessels started harvesting large amounts of squid from one small area near Newport, Director Donaldson issued an administrative order limiting the daily harvest to 20,000 pounds per vessel. The order was issued in part due to our concern about potential overharvest from one squid school.

This year we assisted Oregon State University research efforts to develop hydroacoustic techniques for estimating squid abundance. We cooperated in a cruise in which we tested hydroacoustic equipment. We used a dual beam echo sounder with a 10° and 20° beam width transducer to measure the reflectivity (target strength) of individual squid in the water and an echo integrator to estimate densities of squid in the survey area.

The research cruise proved the feasibility of using echo sounders as an assessment tool. The measured target strength of individual squid and echo integration data yielded estimated densities of 3.1 tons per square nautical mile in a sparsely populated area, and 33.1 tons per square nautical mile in an area known to have densely aggregated squid. The density estimates provided an expanded abundance estimate of 682,000 pounds for an area in which commercial harvest occurred.
Our analysis of the biological data indicates that more than one group of squid entered the survey area to spawn over a three week period. Therefore, the abundance estimate is only valid for a single day during the survey, but is within a range we consider reasonable for a point in time.

We plan to begin a statistically rigorous sampling program to estimate squid abundance. We intend to intensively sample several squid spawning schools to verify the techniques we helped develop, and to obtain accurate abundance estimates. Oregon State University will cooperate on research design and data analysis.

Based on data we collected this year, a squid school will complete spawning within five weeks of aggregating in an area. We propose to fly from Cape Lookout to Heceta Head once every ten days from April 1 to June 1 to locate major squid schools. Once located we will systematically sample the area through time to obtain an estimate of abundance. We will analyze biological data to note the presence of a new group of spawning squid. We will investigate the use of integrating an abundance versus time curve to obtain an estimate of total spawning abundance.
PROJECT SUMMARY

Title: Marine Mammal Investigations

Objectives: Design and conduct research on pinnipeds in Oregon to include assessment of:

1. Abundances
2. Distributions (including movements)
3. Food habits
4. Interactions with commercial and sport fisheries
5. Population status relative to determining optimum sustainable populations (OSP) for pinnipeds in Oregon.

Development management recommendations and prepare a marine mammal management plan for the State of Oregon.

Submit management plan to National Marine Fisheries Service and request for return of management of selected pinniped species.

Location: Coastwide research centered in Newport

Personnel: Program Leader: William Haight, Non-game Chief
Project Supervisor: Larry Bright, Wildlife Research Supervisor
Project Leader: Robin Brown, FWB-3, Marine Region

Cooperators: National Marine Fisheries Service, National Marine Mammal Laboratory, Washington Department of Game (WDG), Oregon State University, (OSU) Oregon State University (College of Veterinary Medicine), Portland State University.

Duration: April 1, 1984 to July 1, 1987

Funding: National Marine Fisheries Service

Summary of Progress in 1984:
A cooperative research agreement between the National Marine Mammal Lab, National Marine Fisheries Service, Seattle, and ODFW became effective on June 1, 1984. The primary objective of this first year research agreement is to conduct population assessment study of pinnipeds in Oregon. Knowledge of seal and sea lion abundance and trends in population growth is essential to determining OSP levels for pinnipeds (as required for return of management to the state level). It is planned that such an agreement will be renewed each year for three years with the scope of the objectives broadening to include those listed above.

Meetings were held in April with National Marine Fisheries Service, Washington Department of Fisheries (WDG), California Department of Fish and Game (CF&G) personnel to discuss strategies for assessment of regional seal and sea lion populations. Information needs were identified, methodology was reviewed, and the degree of cooperation between Oregon and Washington marine mammal programs in areas of mutual interest was covered (e.g., regional harbor seal surveys, Columbia River studies).
Aerial photographic surveys of pinnipeds along the Oregon coast began in late April. Color slide film is used to photograph pinnipeds on haul-out areas along the coast, on offshore rocks, and in estuaries. These slides are later projected on a screen and the animals are counted. The primary purpose of these surveys is to detect trends in pinniped abundance and distribution on an annual basis. Since 23 April, 20 surveys of the Oregon coast have been completed and analysis of the photographs has begun.

One of the targets of surveys between late April and late June is the enumeration of reproductive female harbor seals with pups on haul-out areas. Surveys of harbor seals are also centered around the molting period in August, when large numbers of animals can be counted. Steller sea lions are surveyed primarily in late June and early July when occupation of the rookeries at Orford and Rogue Reefs by all age-sex classes is at an annual peak. Pup counts are also made at this time. Surveys of California sea lions are made monthly between October and April during the winter occurrence of this species in Oregon.

The project leader has represented ODFW at two meetings of the Northwest Marine Mammal Stranding Network; the second meeting was hosted by ODFW at Newport. Numerous strandings of seals, sea lions, and whales on the central Oregon coast have been responded to by ODFW in conjunction with Oregon State University. The data collected from these incidents will aid in our understanding of feeding habits and causes of mortality in various age and sex classes of marine mammals in Oregon.

Research Plans for 1985:

In 1985, aerial photographic surveys of seals and sea lions in Oregon will continue. Depending upon the level of federal funding secured for the second year, project staffing will be increased, and new research tasks will include the following:


2. Field observations at major harbor seal pupping areas to assess pup production and conduct ground truth counts for aerial surveys.

3. Capture and radio-tagging of harbor seals in selected estuaries to determine movements, use of different haul-out sites by individuals, haul-out site fidelity, and haul-out patterns. Knowledge of these parameters will aid in estimating population size from aerial survey counts.

4. Food habits analysis by collection of feces from haul-out sites of all species and by examination of gastro-intestinal tracts of beachcast animals.
5. Begin assessment of the types of marine mammal-fishery interactions that occur in Oregon waters and the extent to which these interactions impact the fisheries and the mammals involved.
Title: Marinecellany (everything except the kitchen sink)

Objectives:

1. Marine Mammals. Coordinate and supervise the marine mammal program and see that the necessary data is gathered to request return of state marine mammal management. Respond to marine mammal strandings as needed.

2. Environmental Management. Coastwide review of all projects that may have an environmental impact on marine resources and coordinate comments with southwest, northwest or Columbia region's district biologists where needed. Respond to accidents such as oil spills, shipwrecks etc. that may have an environmental impact on marine resources. Actively participate in plastic pickup from beaches and develop public awareness of a resource problem. Review and comment on environmental impact statements related to marine resources. Give out free bird houses.

3. Nongame. Conduct beached bird surveys every other week. Monitor brown pelican return to Oregon in an attempt to enumerate by aerial or ground survey. Enumerate nesting sea birds in the Newport and seafair areas by photography. Conduct winter raptor surveys on established transect line and assist in snowy plover surveys. Work with wildlife rehabilitators and encourage development of centers for care of nongame species. Monitor whale movement for public information.

4. Information and Education. Become as knowledgeable as possible in all aspects of fish and wildlife conservation and management. Present this information on request to sportsmen, civic groups, service organizations, schools, radio and television. Write timely or needed articles for the Wildlife Magazine and news releases for the media. Develop weekly fishing report and stay abreast of unusual sightings such as white sharks and sea turtles.

5. Wildlife. Keep informed on hunting regulations, seasons and changes. Answer questions regarding the above. Keep informed on trapping regulations, see that catch records are maintained during the seasons and arrange for putting ownership tags on bobcat and river otter skins. Maintain close working relationship with Northwest Region wildlife biologists and handle those nongame, game and furbearer damage complaints when possible. Certified meat inspector if needed.

6. Approve purchase documents, function as safety officer, issue scientific collecting permits and answer correspondence on most subjects including job applications.
Location: Newport, Oregon and entire Oregon coast.


Cooperators: National Marine Fisheries Service;
U.S. Fish and Wildlife Service

Duration: Ongoing -- No end in sight as long as we have people to contend with.

Funding: ODFW Administrative Budget

Summary of Progress in 1984:

Maintained cooperative Oregon State University pinniped aerial surveys, negotiated marine mammal program contract with the National Marine Fisheries Service and hired full-time marine mammal biologist to collect essential data for request of return of state management.

Reviewed many dredge and fill applications, riprap projects and environmental impact statements. Responded to a shipwreck and accompanying oil spill at Yaquina Bay and in cooperation with USFWS supervised rehabilitation.

Conducted beached bird surveys, assisted in plastic cleanup program, gave out 200 bird houses, photographed sea bird colonies, maintained Sea Lion Caves sea lion count, conducted winter raptor survey, started pelican counts, assisted in snowy plover survey, negotiated contract for marine mammal rehabilitation and aided Northwest Wildlife Rehabilitation Center to obtain bird and mammal food.

Wrote five articles for wildlife magazine, did two T.V. shows with Bud Beechwood for "This Land" channel six. Appeared on four, one-hour radio talk shows and wrote several news releases as well as presenting several talks at schools and civic organizations.

Supervised collection of data on "lost" tags, answered questions on season. Now preparing for trapping season. Responded to numerous wildlife damage complaints and gave advice, issued blood meal or referred to northwest region.

Normal office routine and authored an unknown number of letters on a variety of subjects including several for the Director's or Governor's signature.

Plans for 1985:

Maintain the status quo in all areas and improve methods of data collection where possible. Expand nongame work to include at least two small mammal census surveys in coastal dunes or marsh area.