REPORT FOR THE MONTH OF OCTOBER 1964

The San Francisco crab season outlook is gloomy indeed -- the best estimate of the catch based on the pre-season survey is 750,000 (600,000-900,000) pounds.

A 'giant' opaleye was examined at the Terminal Island Laboratory. At 13.46 pounds this fish was twice the published record and far exceeded verbal reports, from an unimpeachable source, of an 8 pounder.

Sportfishing catches of bonito and marlin continued at a high, if not record breaking, rate.

During two albacore tagging cruises made aboard MBRF vessels, 182 fish were marked. This brings the season's total to 486.

A fourth California tagged bluefin was recaptured in Japanese waters.

An additional 630 tons of sardines were landed during the month bringing the southern California total to 4,300 tons compared to only about 2,000 for the entire 1963-64 season. Only 500 pounds were caught in Monterey Bay proper.
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This symposium was sponsored by the U.S. Fish and Wildlife Service. The purpose of the meeting was to evaluate all the research conducted on this problem during the past few years. Expanded research, based on interpretation of results to date, is planned. There were 34 participants, of which I was one, plus about 20 observers.

Despite the fact that there has been significant progress, it was apparent that there are still many gaps in an understanding of what triggers and sustains the tremendous blooms of dinoflagellates which result in red tides. This phenomenon is even more serious off the Florida Gulf Coast because the organism involved, Gymnodinium breve, is toxic, and massive fish kills accompany all the severe red tides. On this coast (eastern Pacific), red tides are caused by non-toxic dinoflagellates, principally Gonyaulax polyedra in recent years and only occasional fish kills accompany some of the blooms principally confined to waters of man-made harbors.

None of the research to date, which is being conducted in several laboratories in Florida and at Galveston, Texas, has found evidence that marine pollution is an important factor in red tide occurrences. Some of the most promising leads to the discovery of the mechanism which triggers and sustains red tides point to several trace elements, principally vitamin B12, iron and dolomite (magnesium).

The broad objectives for red tide research, agreed on by the participants at the symposium are:

1. Studies of the growth requirements of Gymnodinium breve and related plankters under controlled conditions.
2. Develop new techniques for identification and estimation of abundance of plankters by water coloration, etc.
3. Studies of plankton succession and the role of predation, competitors, and metabolites.
4. Standardize life history studies of organism.
5. Definitive life history studies of the organism.
8. Study of water movements and meteorological conditions in red tide areas.
10. Evaluation of working hypothesis and control methods utilizing pilot studies.

I believe that a better understanding of the red tide phenomenon in California, where many parallels to Florida red tides exist, has been gained from work already done in the East, and that their expanded research may provide more complete answers in the future. Certainly any planning for research in California should take full cognizance of the accomplished research and the expanded program agreed on at this meeting. -- John G. Carlisle, Jr.
1. BOTTOMFISH

A. Flatfish: Good catches of dover sole were made off Eureka; at Fort Bragg, good landings of petrale and dover sole were made; English sole was predominant in central California.

Channel Fisheries at Santa Barbara remained closed. It was reported that a Eureka company will operate the plant next month.

Marked fish from several experiments dating back to 1960 were processed. A petrale sole released in the Montara deep in 1960 was recovered off the Mendocino coast. This represents the longest northerly movement from spawning area -- a distance of about 80 miles. Several dovers from the 1962 Eureka tagging were recovered as were over 60 petrale released last July.

A status report on Pacific coast trawl fisheries was completed for PMFC.

Analysis of English sole tagging data continued. Compilation of petrale data for age-length analysis was completed.

B. Rockfish: Landings were moderate in central California and low in northern California. A special report on species composition of California landings was completed for PMFC.

2. SHELLFISH

A. Abalone: The commercial abalone fleet at Morro Bay was confined to port for almost the entire first three weeks of the month due to heavy ground swells which made diving impracticable.

Several divers from Morro Bay worked at Pt. Conception and San Miguel Island. They reported that red abalones in these areas were growing rapidly, adding new shell material at a rate comparable to those at Morro Bay.

At Morro Bay, approximately 650 young abalones, survivors of the last August hatch are beginning to develop the first respiratory pore and range in length from 1.5 to 2.0 mm. Adult brood stock abalones have continued to spawn in the tanks but the eggs are malformed and metamorphosis does not occur.

At the Pigeon Pt., San Mateo County, site of Mr. W. Budge's hatchery, construction of the building is almost complete. Installation of pumps, tanks, etc. is expected to begin early in November. M.R.O. shellfish personnel are surveying the coastal area from Santa Cruz to Half-Moon Bay for a possible location for a state shellfish laboratory.
B. Crab: The pre-season survey was completed October 21 for the San Francisco area. A total of 70 stations were visited, yielding 3593 market crabs. The average legal catch per trap was 2.8. This is the lowest catch rate of all our pre-season surveys. In 1961 the survey showed 3.2 legals per trap and San Francisco crab fishermen experienced the lowest year of landings on record. Therefore, predictions for the 1964-65 season landings, based on the pre-season survey data, ranged from 600,000 to 900,000 pounds with the best estimate at 750,000 pounds. Thirty-six percent of the legal males were soft.

The average of 2.1 sub-legals per trap was also the poorest sub-legal catch of any pre-season survey. We have no prediction based on the sub-legal catch, but the picture is not bright.

Crab fishermen indicate they will negotiate for very high prices for the opening days of the season.

A similar survey is to be conducted in the Eureka area from November 4 to the 24th by biologists aboard the N. B. SCOFIELD.

C. Oysters and Clams: Sampling of the commercial operations in all major producing bays continued. The oysters remain in excellent condition in both Humboldt and Morro Bays. Harvesting has been curtailed somewhat at Morro Bay because of the Los Angeles food strike during the 3rd week of October and also because of a legal dispute between the owners of one company.

A trip was made to Tomales Bay with Dr. Loosanoff to observe and measure the growth of experimental European oysters. It appears that the oysters did spawn out and are now producing new shell growth and the meats are getting fatter. There are indications that some set was obtained on the trays and adult oysters. All the adult oysters were treated in a salt solution in an effort to destroy the boring sponges on them.

D. Shrimp: The shrimp season officially closes in the state the end of this month. Only one California based shrimp boat expended any effort this month and that was 5 tows in Area B-2 on October 3rd.

Work on temperature relationship to year class strength is continuing and material on macro-organisms associated with the pink shrimp is ready for editing.

On October 16, a general meeting on the progress of shrimp research with the Marine Resources Manager, concluded that our sampling techniques must be refined and that the shrimp program be revised to include a broad ecological study of the shrimp beds. It is to this end that we have devoted ourselves for a good portion of the work month.
3. POINT ARGUELLO SURVEY

Effort during the month continued to be primarily on literature search and compilation of landing records. Preliminary drafts were started on some short sections of the report. These sections cover areas in which there are little data available and poor prospects of finding any more.

4. PELAGIC FISH

A. Sardines: Central California landings, 46 tons, were taken from mixed schools of jack mackerel and sardines in the vicinity of Pt. Estero (Morro Bay). Only 1/4 ton of sardines, mixed with jack mackerel, was caught in Monterey Bay proper.

Southern California cannery landings amounted to approximately 630 tons, a considerable decline compared to 3,500 tons landed during September, but much better than the 200 tons of October 1963. Only 4 to 5 tons were landed at the markets.

About one-half of the southern California catch came from San Nicolas Island where 2,600 tons were caught opening day. The balance of the monthly total was from mixed mackerel catches taken at Cortes Bank, San Clemente Island and Horseshoe Kelp.

Weather during the month was good and did not significantly affect fishing.

Statewide landings for the season approximate 4,300 tons compared to the entire last season catch of 2,000 tons.

Progress on 1963-64 sardine age and length article is slow. Greater progress can be expected when the present mackerel sampler vacancy is filled.

B. Mackerel: Approximately 400 tons of jack mackerel were landed in central California. Catches came from Monterey Bay and near Morro Bay.

Southern California jack mackerel landings were 8,000 tons. Pacific mackerel landings amounted to 2,600 tons. Though this represents a considerable increase in jack landings over September (4,800 tons) it is not unusually high for October. Most catches came from Cortes Bank with lesser amounts from the Seal Beach-Oceanside coastal area, Santa Monica Bank, San Clemente Island and Horseshoe Kelp.

Cannery limits varied between 35 and 75 tons with 50 tons throughout most of the month. These limits tended to hold total landings down. A number of vessels stored over-limit fish in brine tanks and unloaded them the following day.
Forty tons of Pacific mackerel and 17 tons of jacks were landed at the markets.

C. Anchovy: About 360 tons of anchovies were landed in central California, all from Monterey Bay. No landings were reported in southern California.

D. Live Bait: Deliveries are down normal for this time of the year. By mutual agreement only one bait hauler works during the week in the Los Angeles-Long Beach harbor. This allows the remaining crews to take time to repair equipment or fish for species other than bait.

E. Aerial survey: The coastline from Piedras Blancas to the U.S.-Mexico border was scouted during the regular monthly survey. Small anchovy schools were found off Carlsbad, Pt. Vicente, and Avila. Bonito, chasing anchovies, were abundant near Pt. Vicente. "Red tide" was noted in the Ventura area, southern Santa Monica Bay, and from Seal Beach to La Jolla.

F. Sea survey: The last of three fall survey cruises covering the coast of Baja California was completed by the ALASKA on October 14. This cruise covered the area from Punta Baja to the U.S.-Mexico border. As in the first two cruises, anchovies were the most abundant fish caught and were found throughout the survey area. Jack and Pacific mackerel, along with a few sardines, were also caught, but not in large numbers. The ALASKA departed again on October 26 for the first of two cruises covering southern and central California.

The computer program for compiling sea survey data into data reports was revised to improve the tables and to present a more comprehensive summary of our work. The revisions are now complete and the program ready to be used on the previously punched cards for the surveys of 1955, 1950 and 1951.

The completion of the computer program does not mean the data reports for these three years will be ready for printing immediately. The computer notes possible errors in parts of the data; these possible errors must be checked and corrections made where necessary. Also, the computer compiles the tables in the report, but a legend of column headings and code numbers of species must be compiled for inclusion in the printed report. Finally, a brief narrative account of the objectives and general scope of the cruises must be prepared for each years work.

Work on completing the reports for these three years, as well as the coding of data for other years, will be suspended until after the first of the year. The press of other duties, including the preparation of a talk for the forthcoming CalCOFI conference, the participation in a survey cruise, and the Christmas Holidays, preclude any further progress this year.
5. TUNA

A. Albacore: Weather continued to govern the commercial fishery north of Point Conception. Both trollers and live-bait boats reported good catches when weather permitted. Toward the end of the month, as the albacore schools began to scatter, many fishermen decided to "call it a season." Several boats, however, fished with moderate success around 60-Mile Bank (southwest of San Diego).

Landings of albacore were still being made at Monterey ports at the end of October. Catches were made 20 to 100 miles off shore between Pt. Piedras Blancas and Monterey Bay. Shipments to southern California tuna canneries have been delayed at times because of a backlog of both imported, frozen, and locally-caught tuna.

Partyboats operating out of San Diego and Morro Bay provided good sportfishing, with several periods of 1000-fish days. Skipjack schools and a few bluefin also appeared on the San Diego grounds and contributed their share to the anglers bag. Passenger loads were very small at months end, as albacore sport fishery for 1964 drew to a close.

Two additional tagging cruises were made aboard the Mission Bay Research Foundation vessels SEASCO and DORSAL. One hundred eighty-two albacore were marked and released bringing the season total to 486. Three tags were recovered in the commercial fishery - two were released a year ago and the other this season. An Oregon Fish Commission tag also was returned to the laboratory and forwarded to Astoria.

A report on the status of the 1964 California albacore fishery was prepared for the forthcoming Pacific Marine Fisheries Commission meeting and then, it was included into a status report for the three Pacific Coast states: California, Oregon and Washington.

All September logs have been edited and forwarded to the Biostatistical section for keypunching. Work continues on determining the age of the 1964 catch.

B. Bluefin Tuna: The 1964 season ended with only a few tons caught during the beginning of October near the 43 Fathom Spot, southern California. The landings reached a total of 21 million pounds; higher than the 15 million pound, 20 year average, but considerably less than the excellent 30 million pound catches of the preceding two years.

A fourth California tagged bluefin tuna has been recaptured by the Japanese. They caught it in the Tsugaru Channel between the islands of Honshu and Hokkaido. It had been released 70 miles northeast of Guadalupe Island on August 16, 1962.
Length frequency and scale samples total 94 for the year. Two-thirds of the scale samples have been processed and read. To date, 520 logs have been collected for 1964 and the first 400 have been abstracted. Work should be complete by January 1, 1965.

A paper on the Age Composition of the 1963 Commercial Catch of Bluefin Tuna, Thunnus thynnus has been prepared by Robert T. Koski and is being reviewed for possible publication.

Preparation of a directory for the California purse seine fleet began this month. This is a supplementary project, to be completed as time permits.

6. SPORTFISH

A. Partyboat: Approximately 4,560 trip logs from 244 partyboats were submitted for September. Preliminary partyboat catch totals, accumulated through September, compare with 1963 as follows:

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<thead>
<tr>
<th>Through September</th>
<th>1964</th>
<th>1963</th>
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<tbody>
<tr>
<td>Bonito</td>
<td>1,093,608</td>
<td>635,861</td>
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<tr>
<td>Kelp and Sand Bass</td>
<td>990,066</td>
<td>1,105,274</td>
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<tr>
<td>Rockfish</td>
<td>733,813</td>
<td>781,887</td>
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<tr>
<td>Barracuda</td>
<td>279,305</td>
<td>427,479</td>
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<td>Calif. Halibut</td>
<td>110,452</td>
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<td>Salmon</td>
<td>82,298</td>
<td>68,839</td>
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<tr>
<td>Yellowtail</td>
<td>36,192</td>
<td>41,419</td>
</tr>
<tr>
<td>Striped Bass</td>
<td>20,523</td>
<td>42,367</td>
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Work was continued on a partyboat catch bulletin, with most attention directed to the early history of the fleet.

Of three tagged sand bass recovered in October, there was no information concerning one; a second was at liberty 69 days and grew 10mm but didn't go anywhere; the third was at liberty 140 days, moved 12 miles but growth data were not available.

A 13.46 pound opaleye examined here at the laboratory establishes a new size record as far as known. The previous F&G record, Bulletin 91, was 6 1/8 pounds and a local surf fishing columnist has seen an 8 pounder - but this is a "big" one!

Contacts with partyboat operators were continued in the field and at the T.I. office.

B. Environmental and Behavioral Studies of Coastal Sport Fishes (DJ F22R-1)

Typing was begun on the manuscript "Artificial Reef Ecology." When typed and proofed the manuscript will be submitted to the editor.
Turner, as Diving Officer, conducted an inspection tour of Region I, diving with Regional and MRO divers in that area.

Survey dives were conducted at 4 of the artificial reefs. A good sand bass population was noted on both the Hermosa and Huntington Beach reefs. Considerable time was spent relocating the buoys on the Huntington reef. The Torrey Pines reef in San Diego county is still in an early successional stage, having been placed in April 1964, but considerable fish life was in evidence. Over 1600 resident and semi-resident species were estimated on 1/2 the reef area. Invertebrate and plant growth is becoming prominent on the rock surfaces. The Imperial Beach pier reef was visited on October 20. A large perch population was observed but few kelp or sand bass were present. Modest numbers of boccacio, sculpins and cabezon were also observed.

C. Blue Rockfish Management Study (DJ F19R4): Routine party-boat and skiff sampling was conducted from Princeton to Avila.

Fish trapping was conducted at Monterey, Pacific Grove, and Santa Cruz. Juvenile blue rockfish and juvenile copper rockfish were the most common species taken. Several small (3 inch) ocean whitefish were trapped at Monterey Pier.

Eighty-two tagged blue rockfish were re-captured at the Monterey Breakwater. These fish were taken to obtain necessary data for growth studies.

A meeting was held at Menlo Park with E. Greenhood to discuss Marine sportfishing and MRO planning. An additional planning meeting was held with Greenhood and Phillips on October 19 at Monterey. Project F12R data was submitted for inclusion in the recreation planning report.

Advise on developing an ecological survey of the Bodega Head region was given to Mr. Bissell at Menlo Park on October 28.

D. Southern California Marine Sport Fish Survey (DJ F20R3):

Sampling of sport fishing activities from skiffs and yachts at southern California launching and mooring sites continued on a routine basis.

Sport fishing activity declined sharply with the end of the summer season. Marlin fishing was reported good. Interest in this fish appears to be growing steadily.

The second draft of the manuscript on the pier and jetty survey of 1963 was completed at month's end. After a smooth typing and general review it will be submitted to the M.R.O. editorial board.
7. SPECIAL PROJECTS

A. Southern California: A conducted tour was made of the Whittier Narrows Sewage Treatment Plant where 12 million gallons of sewage water a day are reclaimed and used to supplement the underground water supply.

Carlisle represented M.R.O. at the site dedication of the San Onofre Nuclear Power Plant on October 19.

A meeting was held at Marina Del Rey with Byron Paige, Assistant Director of Los Angeles County Department of Small Craft Harbors and other officials to discuss their request, for cooperation in obtaining an artificial fishing reef for the area.

A meeting was held in Oceanside with Ernest Taylor, Assistant City Manager to make final plans for the W.C.B. artificial reef installation there.

Carlisle attended the Red tide Symposium at St. Petersburg Beach, Florida, October 28-30.

B. Northern California: The October cruise of the NAUTILUS covered all regularly sampled stations of the San Francisco Bay Study. One day was spent collecting live fish for Mr. Robert C. Allan of the Nevada Fish and Game Department. Mr. Allan brought a truck load of water from Walker Lake, Nevada and deposited it in a tank at Steinhart Aquarium, San Francisco. This water is brackish and may be suitable for ocean fish as is the Salton Sea. Fish collected for experimentation were California sanddabs, shiner perch, pile perch, starry flounder, brown rockfish, bay gobies, and English sole.

October 9, Dr. Harry T. Harvey of San Jose State College accompanied the NAUTILUS to collect fish for the college.

October 23, the NAUTILUS participated in the water sampling program of the Bay Area Regional Water Pollution Control Board. This trip concludes their current program.

Two shipments of ayu eggs air expressed from Japan were inspected and transshipped to Humboldt State College for hatching.

October 16, Aplin met with Drs. Robert Cooper and Demosthenes Papagiannis of the University of California in Berkeley to discuss progress of the study of fish disease spread by sewer effluent.
8. BIOSTATISTICS

A. Data Processing

Regular Reports:

September cannery and processor reports were completed and the tuna case pack letter was prepared and distributed.

Statistical reports summarizing July landings and shipments were completed.

Reports summarizing the 1963 landings of abalone, anchovy, rock crab, herring, lingcod, and sablefish were completed.

Statistical reports showing the 1963 catch by block by species were completed.

Reports showing the August and September marine partyboat catch were prepared and letters summarizing the results were distributed.

Special Reports:

A report showing December 1963 daily catches of lobster by origin was prepared for Robert Begun of E. Bollay Associates, Goleta, California.

The 1964 landings in Los Angeles Harbor were summarized for the San Pedro News Pilot.

The 1963 fish landings and their value at Fort Bragg were transmitted to Mr. C. W. Sauer, Chairman, Noyo Harbor Commission.

A report comparing the catch of a vessel damaged in a collision to the catches of other vessels of comparable size was prepared for a Long Beach attorney.

A list of Fish and Game employees was tabulated for the Personnel Office.

A new fisheries chart for the southern California area was outlined and sent to the State Printer. Cliffa Corson of the Sacramento office prepared the original copy. The chart, covering a larger area and with larger lettering than the previous chart, should be available within two weeks.

Work in Progress:

September market fish receipts are being edited.

Work is continuing on the 1963 Catch Bulletin.
Field:

Contacts were made in Oxnard, Santa Monica, Redondo, San Pedro, Newport, and San Diego. Questions pertaining to fish receipts and processor reports were taken to dealers in these cities. The questions concerned boat number, species, fisherman's name, and weight determinations.

B. Technical Assistance and Biometrical Analysis

Statistical and Mathematical Analysis:

Shrimp data from "random" cruise stations were being analyzed to determine the feasibility of a stratified random sampling plan for future shrimp cruises. We hope to get an idea of the number of tows which will be needed to estimate the relative sizes of the different year classes with specified degrees of precision.

A design for a probability sampling method of estimating the abalone population within the Pt. Estero-Cambria area was developed at a meeting with the abalone project.

Computers:

BGC III, a program for fitting Bertalanffy growth curves to back-calculated length data was de-bugged on Computer Sciences' UNIVAC 1107.

Manual Computation:

The 1963 sablefish boat catch analysis was completed.

9. BIOLOGICAL NOTES

On October 22, a 13-inch bigmouth sole, Hippoglossina stomata, was taken in about 40 fathoms of water south of Santa Cruz, Monterey Bay. The catch was made while the boat "Three Sisters" was engaged in bottom trawling for flatfish. The geographical range for this species is reported as Pt. Conception south into the Gulf of California. The fish has been taken off Morro Bay by trawlers about 110 miles farther north.

On October 23, a 22-pound opah, Lampris regius, was caught 20 miles westerly of Pt. Piedras Blancas. The catch was made while the commercial boat "Galileo" was engaged in trolling for albacore. The opah, sometimes called moonfish, is of world-wide distribution in warm waters. In the past, specimens have been taken infrequently off the Pacific Coast, during the summer months, from southern California to Alaska.

Specimens received at Eureka Laboratory included a sixgill cowshark, Hexanchus griseum, several flapjack devilfish, rattails and a deep sea sole, Embassichthys bathybius.
While hook and line fishing for rockfish off Lover's Pt., Pacific Grove, on October 3, commercial fisherman Sal Mineo of Monterey had a sea otter leap into his skiff, while his back was turned. Sal used an oar to persuade the otter to reverse his leap, but when he became somewhat aggressive and bit the oar Sal let him ride to Monterey, a distance of two miles. There, at a wholesale fish market the otter was hoisted to the dock. Captain Shebley of the local Fish and Game office, with other help, slipped a rope around the animal and transported him to the beach at Lover's Pt. When last seen, the sea otter was headed for a kelp bed where other, less adventurous otters were resting.

10. VESSELS

ALASKA

On the 14th the ALASKA returned to San Pedro from the third annual Pelagic Fish cruise, conducted in Mexican waters.

On the 26th the vessel sailed for the coastal waters of southern California and Channel Islands, to conduct Pelagic Fish Study.

Both cruises were to measure the density, age, and size composition and recruitment of inshore populations of sardines, anchovies, Pacific mackerel and jack mackerel.

N. B. SCOFIELD

From the 1st through the 24th the N.B. SCOFIELD conducted pre-season crab population study.

Balance of the month crew on C.T.O.

NAUTILUS

The vessel engaged in two weeks Delta and San Francisco Bay study.

MOLLUSK

Secured the entire month.

11. MISCELLANEOUS

A. Meetings, Talks and Visitors:

October 5  - Planning meeting for Marine Resources. Dahlstrom, Jow, Orcutt.

October 6  - Baxter presented a talk on fish identification to the Reserve Wardens at an evening meeting, Terminal Island Laboratory.
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<tr>
<td>October 6</td>
<td>D. Kauffman of Washington Department Fisheries and two personnel officers from Olympia on recruiting trip.</td>
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<td>October 7</td>
<td>Regular M.R.O. monthly staff meeting held at T.I.</td>
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<td>October 7</td>
<td>Dr. Wilhelm Brandhorst, Head of the oceanographic section of the Institute of Fisheries Development, Valparaiso, Chile, conferred with Baxter concerning a Chilean scientist to participate at CalCOFI Conference at Lake Arrowhead, November 23-25.</td>
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<td>October 8</td>
<td>Roedel and Turner attended a meeting of the Kelp Habitat Advisory Committee at Scripps.</td>
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<td>October 13</td>
<td>Discussion of reef ecological studies with personnel from Ocean Systems Inc., Terminal Island Office - Turner, Ebert, Given.</td>
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<td>October 20</td>
<td>Greenhood met at Pacific Grove with Julie Phillips and Dan Miller regarding Planning.</td>
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<td>October 21</td>
<td>Abalone talk to San Jose Skin Divers. K. Cox.</td>
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<td>October 21-22</td>
<td>Greenhood and Roedel attended a Planning meeting and presented MRO inventories and proposed approach to demands for marine fish in the year 1980 to members of the Department and consultants.</td>
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<td>October 22</td>
<td>Baxter participated in the CalCOFI meeting at La Jolla.</td>
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<td>October 26</td>
<td>Meeting with personnel of Water Pollution Control Board No. 8. Discussion of proposed diving survey in the vicinity of the Orange County Sanitation District's ocean outfall, Terminal Island office - Turner.</td>
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<td>October 27</td>
<td>Meeting to discuss working relationships with Region 1 at Eureka. Gotshall, Orcutt, Roedel, O'Brien, Lahr, Gray.</td>
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<td>October 29</td>
<td>Discussion of sampling program for Pacific Grove and Eureka at nuclear reactor sites. Bissell, Miller, Aplin, Orcutt.</td>
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B. Personnel:

October 22 - Leona M. Sharp, Senior Account Clerk resigned after 18 years with the Department.

October 28 - James G. Smith transferred from Menlo Park to Eureka.

John E. Fitch
Acting Manager

jg/85