



NOAA WEEK

U.S. DEPARTMENT OF COMMERCE National Oceanic and Atmospheric Administration

\$209,000 Sea Grant Awarded for Sponge Research

Marine scientists of the New York Zoological Society's Osborn Laboratories of Marine Sciences have been awarded a \$209,000 Sea Grant in an effort to extract and test antibacterial agents from sponges. In the three-year project, the Laboratories' scientists will attempt to isolate certain substances found in sponges that may have therapeutic value as antibiotics, anti-fungal agents, and metabolic inhibitors.

Under the leadership of the Laboratories' Director, Dr. Ross F. Nigrelli, and Dr. Martin F. Stempien, Jr., Assistant to the Director, the researchers then will seek to determine the chemical composition of these substances and to investigate their potential as therapeutic agents. The formal name of the Laboratories' Sea Grant project is "Physiologically Active Substances Extractable from Marine Sponges."

Although sponges have been known and used by man for thousands of years, it is only recently that the biochemical aspects of these animals have been investigated. The studies have been confined for the most part to fresh-water

forms easily maintained under laboratory conditions. The Osborn Laboratories of Marine Sciences are equipped with piped-in sea water, and scientists there have conducted a systematic investigation of the extracts of an extensive collection of sponges from Jamaica and the British Virgin Islands. The presence of antibacterial substances in extracts from 23 of the 125 Jamaican species studied seems to indicate that they are of rather common occurrence.

Under the new grant, the Laboratories will attempt first to isolate from a variety of sponges sufficiently large quantities of the active substances which in pilot investigations have shown interesting possibilities as useful therapeutic agents. They will then seek to characterize chemically the active substances and to compare the physiological and pharmacological activity of the purified fractions with those of the crude mixtures. Finally, they will investigate the potential of the newly derived compounds as therapeutic agents. Modern, sophisticated techniques of purification and analysis--such as column, thin-layer, and gas chromatography--will be used.

Seattle Weather Service Alerts Officials to Avalanche Danger

Frank W. Reanier, National Weather Service principal assistant at Seattle, Wash., recognized a potential avalanche situation in the Cascades (rapid warming trends to 7000 feet with rain over a deep, dry snow base) on Dec. 5, and issued a special avalanche alert to the State Highway Department at 9 a.m. The Highway Department issued an alert to the news media at 9:30 a.m. Avalanches occurred on both sides of Snoqualmie Pass. One avalanche at 11:45 PST blocked Interstate Highway 90 on the west side, and another at 2:14 PST blocked the highway on the east side.

FAIRWEATHER Completes Survey

The NOAA Ship FAIRWEATHER has completed a detailed hydrographic survey of Seattle Harbor, the first in 35 years. The two-month survey was made to update nautical charts of the harbor--a move necessitated by the area's increased marine activity and waterfront development.

Aircraft Modified To Accept Laser System

Duncan Ross of the Sea-Air Interaction Laboratory, AOML, is working in coordination with the Research Flight Facility to modify a DC-6 aircraft to accept the laser wave height measurement system.

International Fisheries Group Meets in Tokyo

Representatives of the Governments of the U.S., Canada, and Japan recently attended the annual meeting of the International North Pacific Fisheries Commission in Tokyo. Ambassador Donald L. McKernan, special assistant to the Secretary of State for fish and wildlife, and Philip M. Roedel, director of the National Marine Fisheries Service, attended as advisors to the U.S. Commissioners. The Commission is responsible for conservation and management of the North Pacific Fisheries resources including salmon, halibut, ocean perch, and other species.

Immediately following the Commission meeting, representatives of the U.S. and Japan met to discuss and review the existing bilateral agreement on king crab and tanner crab of the eastern Bering Sea, and the operation of Japanese fishing vessels inside and outside the 12-mile U.S. fishery zone. Under the latter agreement, Japan is permitted to fish inside the 12-mile zone in certain defined areas off the U.S. coast, mainly along the Aleutian Islands. Principal changes in the new agreement are a drastic reduction (56 percent) in the Japanese king crab quota for the eastern Bering Sea, a reduced tanner crab quota for Japan, and additional measures to avoid gear conflict on the high seas between U.S. fixed gear and Japanese longline and trawl operations near Kodiak Island.

NMFS Men To Present Papers At Remote Sensing Symposium

William H. Stevenson and Kirby L. Drennan, both of the National Marine Fisheries Service's Mississippi Test Facility, Bay St. Louis, Miss., will present invited papers at a Symposium on Remote Sensing in Marine Biology and Fishery Resources to be held in College Station, Tex., Jan. 25-26. Mr. Stevenson's paper is entitled "Remote Sensing in the National Marine Fisheries Service." Mr. Drennan will speak on "Some Potential Applications of Remote Sensing to Fisheries." The symposium is cosponsored by the Remote Sensing Center and the Sea Grant Program at Texas A&M University with the support of the Fisheries Biology Branch of the Food and Agriculture Organization of the United Nations and the United Nations Educational, Scientific and Cultural Organization.

Roland Paine Joins PIO Staff

Roland D. Paine, Jr., Public Information Officer for the National Science Foundation since 1965, has joined NOAA's Office of Public Information. Mr. Paine will be the Public Affairs Officer for Oceanic Programs.



A member of the National Association of Science Writers and the Antarctic Society, he received a bachelor's degree in Journalism from Northwestern University, Evanston, Ill., in 1948; a License es Science Politiques from the University of Geneva, Switzerland, in 1949; and a master's degree in Political Science from Northwestern University in 1951. From 1958 to 1965, Mr. Paine was the Press Officer in the National Science Foundation's Public Information Office; Technical Information Officer, Bureau of Ships, Department of the Navy, from 1953 to 1958; and an Administrative Specialist in the Navy Department's Bureau of Ships from 1952 to 1953. Mr. Paine resides in Washington, D.C.

Fredericksburg Geomagnetic Center Lauded

Connecticut's Deputy Transportation Commissioner, Daniel S. Muirhead, recently complimented NOS personnel at the Fredericksburg Geomagnetic Center in Corbin, Va. Connecticut sent a geodetic engineer to Corbin for training in the use of geodimeters. In a letter to NOS Acting Director Rear Admiral Don A. Jones, Mr. Muirhead said, "Your men in Corbin should be commended for their dedication" and added that the personnel involved in the training of the geodetic engineer "not only gave freely of their time during regular working hours, but also returned in the evening for additional training."

Lake Survey Center's Origin Recalled

In 1841 when Congress first authorized funds to chart the Great Lakes--the birth of the Lake Survey Center--the population of Chicago was only 4,470.

A Portion of NOAA's Fleet Pauses at the Pacific Marine Center



Nine NOAA ships were grouped together at the Pacific Marine Center in Seattle, Wash., when Seattle Times photographer Larry Dion snapped this shot. Seven of the ships are of the National Ocean Survey. They are the OCEANOGRAPHER, PATHFINDER, SURVEYOR, DAVIDSON, McARTHUR, FAIRWEATHER, and RAINIER. Two ships of the National Marine Fisheries Service are the MILLER FREEMAN and the KELEZ.

MMTC Completes Second Year With No Lost-Time Accidents

The Marine Minerals Technology Center at Tiburon, Calif., completed its second year (237,115 man-hours) without a single lost-time accident, Dec. 3. In addition, 44 of the Center's 56 employees, including Acting Director, John W. Padan, completed the U.S. Bureau of Mines' course in First Aid Methods during the week ending Dec. 4. All have received Qualification Certificates.

Herbert J. Gudyka, NWS Seattle, Awarded Commerce Medal

Herbert J. Gudyka, presently assigned to the National Weather Service's Seattle Forecast Office, recently received a Department of Commerce Bronze Medal for highly competent service during his 25 years of employment in the National Weather Service. Mr. Gudyka was cited "for his exceptional accomplishments as sub-station network specialist for the State of Washington."

Branding, Banding, and Bugging Techniques Aid NMFS Study



NMFS Biological Laboratory tagging team member tags a menhaden.

Over a century ago, the first fish tagging "experiment" was carried out by wealthy landholders in Scotland. The motive--idle curiosity about what happened to the trout and salmon in the streams they owned.

Today, fish and crustacean marking projects undertaken by the National Marine Fisheries Service are a serious and sometimes highly sophisticated business. The marine biologist injecting dye into shrimp, implanting electronic devices in salmon, or attaching a tag to an irate lobster, is looking for specific information needed for the realistic assessment, utilization, and conservation of a fishery resource. The short-term goal may be tracing migration patterns, age-and-growth studies, determination of exploitation rates and natural mortality, or population estimates to aid in prediction and management; but whatever the object, success depends heavily upon the cooperation of commercial and sport fishermen who catch the marked individuals.

Tags are stamped or printed with serial numbers (making it possible to identify the individual fish or crustacean), the name, and sometimes the address of the laboratory or agency conducting the study. When the finder of a tagged specimen reports his catch and returns the tag, he usually receives a nominal reward, with the amount varying from 50 cents for species such as herring to as much as \$5 for sailfish, marlin, or tuna. The most useful reports include date and place of recapture, accurate measurements of the recovered specimen, and in the case of fish, a scale sample.

Fishing and handling methods may be a major factor in selection of the marking technique used. For example, fin clipping is probably the least expensive method now in use, and can be done rapidly with as many as 300 fish marked in an hour. Large numbers of salmon or trout are marked this way before being released from hatcheries. Usually two fins are clipped, since one may grow back, or fish with one fin missing may occur naturally. The chief disadvantage is that individuals cannot be identified when they are caught again, and the method is suitable only for species which are individually handled and examined when caught.

A Peterson tag or disc (named for the Danish biologist who invented it in 1894) consists of two small celluloid or plastic discs fastened with a pin or wire. The tag may be attached to the gill covers or through the fleshy part of the tail of a fish, or to the carapace (hard body covering) of a crab. It has been used successfully on bass, flounders, shad, cod, haddock, salmon, trout, shrimp, and lobsters.

A recent development is the "spaghetti" tag of vinyl plastic tubing. Usually drawn through the back muscles with a needle and tied in a simple overhand knot, this tag is quickly applied, and the plastic material is neither injurious to the fish nor affected by prolonged immersion in sea water. Spaghetti tags are used for haddock, striped bass, spiny dogfish, and tuna. In addition, NMFS biologists have used this tag in studies of the Alaskan king crab, which periodically sheds its carapace--a habit that makes use of the Peterson disc unfeasible for any but short-term projects.

"Collar tags," bands or straps that simply encircle some part of the fish's body, have been tried--but with little success. Body-cavity tags may be inserted through a small vertical incision in the body wall; the wounds heal rapidly, leaving only a small, inconspicuous scar. Metal body-cavity tags are successfully used with fish that are processed into meal and oil. Since great masses of these fish are handled by machines, external tags would not ordinarily be noticed; the internal metal tag is recovered by powerful electromagnets set in the processing lines of fish reduction plants.

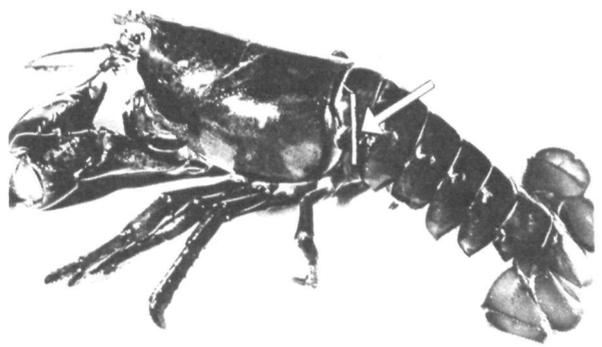
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This technique is being used for the NMFS' menhaden-tagging program--the world's largest fish tagging program. Since the project got underway in 1966, some 1.1 million fish have been tagged. The body-cavity tag is one of the few that can be used for very small fish and crabs, and will remain with the animal as it grows to adult size.

As part of a research program initiated by the Atlantic States Marine Fisheries Commission to obtain information on migration, growth, and survival of deep-ocean lobster stocks, scientists with the NMFS Biological Laboratory at Boothbay Harbor, Maine, have tagged and released lobsters along the edge of the Continental Shelf off southern New England. Several of the recaptured lobsters had made extensive shoreward migrations--one covering 77 miles in 28 days; another, 97 miles in 27 days. Scientists at the Boothbay Harbor laboratory are working on development of a suitable lobster tag that will remain with the lobster after molting. The types of lobster tags available at present are so large that it is necessary for the lobster to be two years old before it can even carry the tag.

Meanwhile, biologists at the Massachusetts State Lobster Hatchery and Research Station, Vineyard Haven, Mass., have used selective breeding to produce lobsters of distinctive color (all-red, albino, and yellow spotted, as opposed to the normal dark green shell with small spots of brown, white, yellow, and red). It is felt that the "color coded" lobsters can be used as "natural tags," thus simplifying the study of their movements.

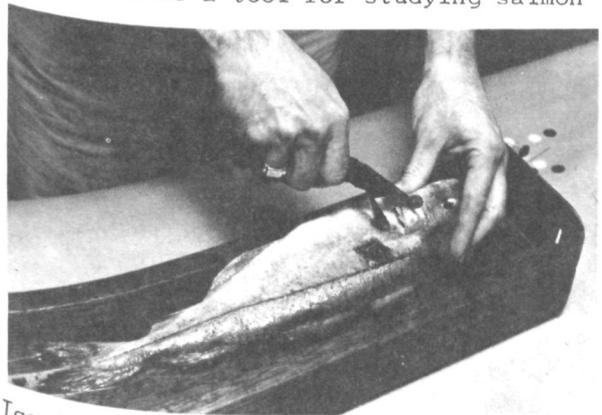
A sonic tag and hydrophone monitors to pick up its signal were developed in 1955 by the NMFS Biological Laboratory in Seattle as a tool for studying salmon



Tag used by NMFS scientists to determine lobster movements.

and steelhead migrations on the Columbia River. The first crude models transmitted for only eight hours, and the tag, attached to the back of the salmon, frequently tore loose. Advances in space technology have since produced miniature transmission packages that make it possible to reduce the size of the sonic tag to a fraction of the original bulk, and increase transmission time to three months. In addition, these tags can now be inserted into the stomach of the salmon, where they may remain until the fish dies after spawning. The Fisheries Research Board of Canada has used shore monitors and technical assistance provided by NMFS to gather data from sonic-tagged Atlantic lobsters which the Canadians hope to resettle in British Columbia waters. Similar equipment has been loaned to track shad in the Connecticut River, and to track bull sharks in the Rio San Juan of Costa Rica.

For the past few years, NMFS scientists at Auke Bay, Alaska, and Seattle have used branded fish in salmon studies. Small branding irons are made of copper or brass with tips of solid silver for efficient transfer of heat. The irons may be either heated in boiling water (212°F.), or chilled with liquid nitrogen (-324°F.) for "freeze branding." The iron is then held lightly against the skin of an anesthetized salmon for about one second, and the fish is marked with a visible brand that can last a lifetime. "Freeze branding" has also been tried with lobsters and other crustacea. A unique "natural tag" is the "parasite tag." Scientists at Boothbay Harbor have found that populations of herring from particular locations can be identified by the type and degree of parasitic infestation by certain organisms, so that the fish's parasites provide a partial clue to its migrations.



Tagging a haddock with a Petersen Disc Tag.

National Weather Service Forecaster Training Course Held



The second of four Forecaster Training Courses was completed at National Weather Service headquarters, Dec. 19. Twenty-six forecasters from the six Weather Service regions, the National Meteorological Center, the Air Weather Service, and the NOAA Research Laboratories attended the three-week course. Participants were:

Standing, left to right: Billy R. Rice, A&FD, NMC; Lief Lie, Anchorage, Alaska; Russell Younkin, A&FD, NMC; Alonzo Smith, Development Division, NMC; Charles E. Syverson, Boise, Idaho; Robert J. Whalen, Minneapolis, Minn.; Clair D. Mills, Kansas City, Mo.; Kenneth T. Harlen, New Orleans, Louisiana; Lacy B. Padgett, Memphis, Tenn.; Lester L. Levy, Baltimore, Md.; Neil M. Coulter, Casper, Wyoming; Kenneth K. Cooper, Kwajalein; Earl F. Robinson, Great

Falls, Montana; Raymond E. Biedinger, Washington, D. C.; Charles D. Vieth, Des Moines, Iowa; Richard B. Neave, Albany, New York; Robert Derouin, NWSH, Harry E. Hamilton, San Juan, P.R.; Frederick P. Ostby, NWSH; Richard Lay, San Francisco, California; Frank E. Lambrecht, Medford, Oregon; James R. Thompson, Cleveland, Ohio; John Gordon, A&FD, NMC; Vernon Bohlen, A&FD, NMC; Maurice Pautz, NWSH; Jordan Fischler, NWSH.

Seated, left to right: Major Karl F. Hebenstreit, AWS; Kurt Hemmerich, Anchorage Alaska; John Gruber, Chicago, Illinois; Dr. Duane S. Cooley, NWSH; Frank S. Nishimoto, Portland, Oregon; Samuel L. Shaw, Albuquerque, New Mexico; Norman C. Kennedy, ARL, Las Vegas, Nevada; Leonard L. Wills, Fort Worth Texas.

Director of Sea Grant Program To Keynote Mariculture Meeting

Robert Abel, Director of the Sea Grant Program, will be the keynote speaker at a Symposium entitled "Critical Aspects of Mariculture," to be held in Galveston, Tex. This symposium will precede the symposium of the World Mariculture Society, scheduled for Jan. 28-29.

NOS Field Party Unearths Marker In Alaska Dating Back to 1890

The National Ocean Survey's Field Party G-25, headed by Lt. Cdr. Jeffrey G. Carlen, has unearthed a geodetic marker in Haines, Alaska, dating back to July 1890. The marker is a large circle around a cross with a lead-filled hole in the center that is chisled into a rock at the foot of the old city wharf about three feet below the surface of the ground. The date is carved into the rock.

Captain Munson of NOAA Corps Cited For Outstanding Service



Captain Robert C. Munson, of the NOAA Corps (right), was recently presented a Certificate of Merit for outstanding service as Tsunami Advisor to the Hawaii State Office of Civil Defense. The award was presented to Capt. Munson by Civil Defense Director Benjamin J. Webster (left). Capt. Munson, who served as Tsunami Advisor for almost three years, was lauded by Mr. Webster for contributing to the effectiveness of the warning system in Hawaii.

Monday Holiday Law Explained

The new Monday Holiday Law goes into effect on January 1, 1971. Federal holidays will be observed on the following dates:

New Year's Day, January 1; Washington's Birthday, third Monday in February; Memorial Day, last Monday in May; Independence Day, July 4; Labor Day, first Monday in September.

A new holiday, Columbus Day, will be observed the second Monday in October; Veterans Day, fourth Monday in October; Thanksgiving Day, fourth Thursday in November; Christmas Day, December 25; and Inauguration Day (Washington, D.C. area only), January 20, observed every fourth year after 1965.

The new holiday observances are covered under Public Law 90-363. If those holidays not necessarily falling on Monday fall on Saturday, the preceding Friday is considered a holiday. This includes such holidays as New Year's Day and Christmas Day. If the holiday falls on Sunday, the following Monday is considered a holiday.

Lake Survey Center Describes Water Sources of Great Lakes

Water, one of our greatest blessings, is used indiscriminately, wasted, polluted, and taken for granted. The average individual hardly notices that it's there--until something goes wrong, until there's too much or too little of it to suit his particular purpose or need. The waters of the Great Lakes are no exception.

The Great Lakes are the world's greatest concentration of fresh water. They have a surface area of nearly 100,000 square miles and, because of their vast size and immense storage capacity, provide one of the best naturally regulated water systems to be found. The Lake Survey Center has been actively associated with these waters since 1841.

The principal source of supply for the huge system is precipitation (rain and snow) on the lakes and their tributary land areas. It usually averages about 31 inches a year. When either high or low water supplies occur for an extended period, corresponding extremes develop in the levels and flows. These tend to persist after the factors causing them have returned to normal because of the physical characteristics of the system. Water supply from the lakes' land drainage areas is an indirect contribution to the lakes. It varies with respect to the precipitation, since the amounts reaching the lakes as runoff are controlled by several factors. Most of the water that falls on the land never reaches the lake. A large percentage is evaporated, used by growing plants, or to replenish soil moisture. However, precipitation on the lake surfaces is a direct contribution of water to the lakes, and the lakes will rise in an amount almost equal to that which falls on the surface. Precipitation over water differs considerably from that over lakes, due to the so-called "lake effect." Lakes discourage precipitation in summer because of their cooling effect, while in winter they encourage it by heating the cold air masses above them, resulting in added moisture.

Lack of precipitation, flow through outflow rivers, and evaporation are the main natural causes of loss of water. The rate of evaporation from the lake surfaces is determined by wind, rain, humidity, temperature and sunshine. Artificial factors also have an effect on lake levels. These include diversions of water

Great Lakes (continued)

to, from and between the lakes, deepening and widening of the outflow rivers for navigational purposes, as well as the dams which control the levels of Lakes Superior and Ontario. Here again, the ultimate effect is not attained immediately upon completion of the work because of the large storage and small outlet capacities of the lake or lakes involved. However, compared to the natural variation in lake levels, changes in levels caused by artificial factors are relatively small.

The Lake Survey Center has a continuous record of the levels of the five Great Lakes since 1860, and of Lake St. Clair since 1898. Information from over 50 Lake Survey and 36 Canadian water level gages located around the Lakes are used to record, tabulate and disseminate lake level data. The data is supplied to scientists, engineers, researchers, navigational interests and the general public. Two of the main handouts supplied on the subject are a hydrograph and a monthly bulletin of lake levels, both in graph form. The hydrograph shows the monthly mean levels of the Great Lakes from 1860 to date and of Lake St. Clair from 1898 to date. The Monthly Bulletin of Lake Levels shows the current levels of the Great Lakes and Lake St. Clair, levels of the prior 12 to 23 months, and probable levels of the next six months. They are furnished without charge.

Length-of-Service Awards

Length-of-service awards are due to be presented to the following NOAA personnel during January:

Washington-Area

35 years - Arthur W. Youmans (NWS), and Alfred W. Helm (NOS). 30 years - William J. Luedke, Ernest W. Vogt, and John S. Cook (ADTECH); George M. Krahl and Gilbert R. Wright (NWS); Irving C. Glass, Carrollton E. Reese, Caroline C. Meighan, and Alex G. Manrico (NOS). 25 years - Morton H. Bailey (Int'l. Affairs); Leonard S. Williams (ADTECH); Francis K. Schwarz (NWS); Matthew McCree (NOS). 20 years - Albert Jay Hull and Lenora M. Barber (NWS); Melvin W. Boone and Salvatore J. Donato (NOS).

Case of Over-Polite Computer Solved by NWS

The National Weather Service's communications switching computer at Suitland, Md., was brought up to be very polite. When it's "talking" (sending out pulses over lines), it's also "listening" with at least one ear (checking to determine if the information is being transmitted properly). The end result is that any time it thinks someone else is trying to say something over one of the computer's lines, it stops talking and listens with both ears. After the computer discovers that there was only a "hit" on the line, (a hit is the computer's response to noise and other on-line, random impulses), it just wouldn't be polite to pick up where the interruption occurred. "You see," says John C. Straiton, chief of the NWS Communications Division, "our computer wasn't brought up that way--it is much more polite to begin at the beginning of the interrupted bulletin."

The Communications Division has finally found a way to put cotton in the computer's ears. Now a hit on the line will cause a wrong character to be printed or a small amount of garbling, but no more lengthy repeats. If no serious bugs develop after a brief trial, then a least ten of the little black boxes will be bought for use with the computer's lines used to send messages.

Hammond and Elford, NWS Forecasters, Retire

William J. Hammond, National Weather Service agricultural forecaster at Pomona, Calif., is retiring on Jan. 5, after 33 years' federal service. Mr. Hammond entered the Weather Service in 1945 after serving during World War II as a medical technician in the U.S. Army. He has been assigned at Pomona since 1959.

Carroll A. Elford, National Weather Service forecaster at Salt Lake City, retired Dec. 26, after 33 years of federal service. All of Mr. Elford's service has been with NWS at offices in Alaska, Puerto Rico, Washington, D.C., Seattle, Chicago, Albuquerque, Pocatello, Bismarck, and Boise. He has been assigned at the Salt Lake City Forecast Office since 1968.

National Oceanic and Atmospheric Administration

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