

catch during the 1965-66 period was approximately 719 tons with most of the fish going to the fresh fish markets, where the fishermen received from \$200 to \$400 per ton. The primary areas of catch were Santa Catalina Island and the Horseshoe Kelp area.

Landings in Baja California dropped to approximately 22,000 tons for the period June, 1965 through May, 1966. Landings from September 1, 1965 to March 1, 1966 amounted to nearly 7,400 tons. The demand for sardines was good; 32 purse seiners were kept busy supplying 10 canneries with fish. The price to the fishermen remained fairly stable at \$40 per ton.

ANCHOVY

In 1963 and 1964 anchovy catches were used in canning, as fresh fish and as live-bait. In November, 1965, the California Fish and Game Commission authorized the use of 75,000 tons of anchovies for reduction into fish meal. In late-November, 1965, the experimental anchovy fishery for reduction opened. Landings were negligible through the end of 1965, but began picking up in February of 1966, and by the end of the season (April 30, 1966) over 16,000 tons of anchovies had been landed. The Horseshoe Kelp area produced about 75 percent of the fish taken.

TABLE 3
COMMERCIAL LANDINGS AND LIVE-BAIT CATCH
OF ANCHOVIES IN TONS, 1962-1966

Year	Commercial Landings	Live-Bait	Total
1962	1,382	6,167	7,549
1963	2,285	4,442	6,727
1964	2,488	5,191	7,679
1965	2,866	6,148	9,014
1966*	31,089	6,636	37,725

* Preliminary.

Los Angeles-Long Beach Harbor provided most of the fish for the live-bait fishery during the period from 1963 to 1965.

The age composition of the 1963-64 live-bait catch at Port Hueneme, San Pedro and Newport were similar. Zero's, one's, and two's constituted between 80 and 90 percent of the fish sampled. The most

prominent group was the 1962 year-class (one-year-old fish). At Port Hueneme, 46 percent of the fish sampled were from the 1962 year-class; at San Pedro, 54 percent and at Newport, 45 percent.

In 1964-65, the one's (1963 year-class) were again dominant in the live-bait samples. At Port Hueneme the 1963 year-class made up 45 percent of the fish sampled; 37 percent at San Pedro and 67 percent at Newport.

MACKEREL (May-April)

Pacific mackerel landings have dropped steadily since 1962-63 when about 23,000 tons were taken. During the 1965-66 season the catch fell to 3,788 tons (Table 4), and the outlook for the next 2 seasons is not encouraging. The primary areas of catch during the past 3 seasons were Cortes and Tanner Banks, San Nicolas, Santa Catalina, and San Clemente Islands.

Jack mackerel landings have been on the decline since the 1961-62 season, when 54,706 tons were landed. The catch dropped to 33,837 tons for the 1965-66 season (Table 4). Major areas of catch for the 3 seasons 1963-64 through 1965-66 were Santa Cruz, Santa Barbara, Anacapa, Santa Catalina, San

TABLE 4
JACK AND PACIFIC MACKEREL CATCH IN TONS,
1962-63 THROUGH 1965-66
(Period May through April)

Year	Jack Mackerel	Pacific Mackerel
1962-63	48,422	22,627
1963-64	42,038	17,105
1964-65	39,548	12,437
1965-66*	33,837	3,788

* Preliminary.

Clemente, San Nicolas Islands and Cortes and Tanner Banks. In 1963-64 these areas produced approximately 50 percent of the statewide catch; in 1964-65 they accounted for 65 percent of the catch and in 1965-66, 75 percent of the catch came from these areas. Kenneth D. Aasen, California Department of Fish and Game.

PUBLICATIONS

1 July 1963-30 June 1966

- Ahlstrom, E. H. 1965. A review of the effects of the environment of the Pacific sardine. *Int. Comm. Northwest Atlantic Fish. Spec. Publ.*, (6):53-74.
- 1966. Distribution and abundance of sardine and anchovy larvae in the California Current region off California and Baja California 1951-64: A summary. *U.S. Fish. Wild. Serv., Spec. Sci. Rept.: Fish.*, (534):1-71.
- Alvariño, Angeles. 1963a. Preliminary report on the Chaetognatha, Siphonophorae and Medusae in the Gulf of Siam and the South China Sea. *Univ. Calif., Southeast Asia Research Program, SIO Ref.*, 63-6:105-108.
- 1963b. Quetognatos epiplanctonicos del Mar de Cortes. *Soc. Mexicana Hist. Rev.* 24:97-203.
- 1964a. Bathymetric distribution of chaetognaths. *Pac. Sci.*, 18(1):64-82.
- 1964b. The Chaetognatha of the Monsoon Expedition in the Indian Ocean. *Pac. Sci.*, 18(3):336-348.
- 1964c. Report on the Chaetognatha, Siphonophorae and Medusae of the Monsoon Expedition. Preliminary results of SIO investigations in the Indian Ocean during Expeditions Monsoon and Lusiad 1960-1963. *Univ. Calif. SIO Ref.*, 64-19:103-108, 209-212.
- 1964d. Zoogeografia de los Quetognatos, especialmente de la región de California. *Ciencia*, 23:51-74.
- 1965. Chaetognaths. In Harold Barnes, (ed.), *Oceanography and marine biology, Annual review*, 3:115-194. George Allen and Unwin Ltd., London.

- Aron, W., E. H. Ahlstrom, B. McK. Bary, A. W. H. Bé and W. D. Clarke. 1965. Towing characteristics of plankton sampling gear. *Limnol. Oceanogr.*, **10**(3):333-340.
- Barrett, Izadore, James Joseph and Geoffrey Moser. 1966. Electrophoretic analysis of hemoglobins of California rock-fish, (genus *Sebastodes*). *Copeia*, (3):489-494.
- Benson, A. A. 1963a. Chlorophyll's lipid environment. In B. Kok and A. Jagendorf (ed.), Photosynthetic mechanisms of green plants. *Nat. Acad. Sci. Publ.*, (1145):571-574.
- 1963b. The plant sulfolipid. In Advances in lipid research, 1:387-394. Academic Press, New York.
- 1964a. Complex lipids of plants, their structure and function. *Plant Physiol.*, 4:54-58.
- 1964b. Metabolism of chloroplast lipids and its relation to photosynthetic carbohydrate synthesis. *Tenth Int. Bot. Congr., Edinburgh*:160-161. (Abstr.)
- 1964c. Plant membrane lipids. *Ann. Rev. Plant Physiol.*, 15:1-16.
- 1966. On the orientation of lipids in chloroplast and cell membranes. *Amer. Oil Chem. Soc., J.*, **43**:1-265.
- Benson, A. A., W. W. Miller and Joseph M. Stein. 1963. Biochemical applications of neutron activation chromatographic analysis. *Fifth Japan Conf. on Radioisotopes, Proc.*, **2**:119-126. Japan Atomic Industrial Forum, Inc.
- Berry, Frederick H. 1964a. A hypomaxillary bone in Haren-gula (Pisces: Clupeidae). *Pac. Sci.*, **18**(4):373-377.
- 1964b. Aspects of the development of the upper jaw bones in teleosts. *Copeia*, (2):375-384.
- 1965. The spotted jack crevalle, *Caranx melampygus* Cuvier, in the Eastern Pacific. *Calif. Fish and Game*, **51**(1):28-36.
- Berry, Frederick H., and Herbert C. Perkins. 1966. Survey of pelagic fishes of the California area. *U.S. Fish. Wild. Serv. Fish. Bull.*, **65**(3):625-682.
- Blunt, C. E. Jr., and Makoto Kimura. 1966. Age, length composition, and catch localities of sardine landings on the Pacific coast of the United States and Mexico in 1963-64. *Calif. Fish and Game*, **52**(3):133-150.
- Boolootian, Richard A., and Reuben Lasker. 1964. Digestion of brown algae and the distribution of nutrients in the purple sea urchin *Strongylocentrotus purpuratus*. *Comp. Biochem. Physiol.*, **11**:273-289.
- Boyd, Carl M., and Martin W. Johnson. 1963. Variations in the larval stages of a decapod crustacean, *Pleuroncodes planipes* Stimpson (Galatheidae). *Biol. Bull.*, **124**(3):141-152.
- Brinton, Edward. 1963a. Barriers between tropical Pacific and Indian Ocean euphausiid species (zooplankton, Crustacea). *16th Int. Cong. Zool., Proc. Wash., D.C., Aug. 20-27, 1963*, 1:204. (Abstr.)
- 1963b. Zooplankton abundance in the Gulf of Thailand and South China Sea. *Univ. Calif. SIO Ref.* 63-6:53-58.
- Brinton, Edward, and C. Watanaprida. 1963. The distribution and abundance of the Naga euphausiid crustaceans. *Ecol. Gulf of Thailand and South China Sea. Univ. Calif. SIO Ref.* 63-6:70-75.
- Brown, Daniel M. 1963. Ocean current measurements with the parachute drogue. (1960-1961). *Univ. Calif. SIO Ref.* 63-
- 1965. Results of current measurements with drogues (1963-1964). *Univ. Calif. SIO Ref.* 65-3.
- 1966. Ocean current measurements with the parachute drogue. *Univ. Calif. SIO Ref.* 66-
- Bye, John A. T. 1965a. Obtaining solutions of the Navier-Stokes equation by relaxation processes. *Comput. J.*, **8**(1):53-56.
- 1965b. Wind-driven circulation in unstratified lakes. *Limnol. Oceanogr.*, **10**(3):451-458.
- Carlucci, A. F., and W. L. Belser. 1963. A method for the bioassay of metabolites in sea water with *Serratia marinorubra*. *Bacteriol. Proc.*:A10. (Abstr.).
- Carlucci, A. F., and P. R. Henneuse. 1965. The influence of substrate concentration in sea water on growth constants and N/C ratios of *Nitrosocystis oceanus*. *Bacteriol. Proc.*:G49.
- Carlucci, A. F., and S. B. Silbernagel. 1965. Effect of different sea waters on the development of biochemically-deficient mutants of *Serratia marinorubra*. *Appl. Microbiol.*, **13**(5):663-668.
- Carlucci, A. F., and S. B. Silbernagel. 1966. Bioassay of sea water. I. A ¹⁴C uptake method for the determination of concentration of vitamin B₁₂ in sea water. *Can. J. Microbiol.*, **12**:175-183.
- Carlucci, A. F., and P. M. Williams. 1965. Concentration of bacteria from sea water by bubble scavenging. *Cons. Perm. Int. Explor. Mer., J.* **30**(1):28-35.
- Chapman, David, and F. T. Haxo. 1963. Identity of E-carotene and E₁ carotene. *Plant and Cell Physiol.*, 4:57-63.
- Clemens, Harold B., and Phil M. Roedel. 1964. Tagging experiments on tuna and mackerel in the eastern Pacific. *Mar. Biol. Assoc. India, Symposium on Scombrid Fishes, Mandapam Camp, Jan. 12-15, 1962, Proc.*, pt. 2:769-784.
- Clutter, Robert I. 1965. Self-closing device for sampling plankton near the sea bottom. *Limnol. Oceanogr.*, **10**(2):293-296.
- Clutter, Robert I., and Glenn A. Flittner. (Ed.). 1965. The Fishery-Oceanography Center, La Jolla, California. *U.S. Fish Wild. Serv., Circ.* (232):1-34.
- Cox, C. S., B. P. Johnson, H. Sandstrom and J. H. Jones. 1965. A taut wire mooring for deep temperature recordings. *First Ocean Sci. Engineer. Conf., Trans., Wash., D.C.*:990-998.
- Daugherty, Anita E. 1964. The sand shark, *Carcharias ferox* (Risso) in California. *Calif. Fish and Game*, **50**(1):4-10.
- 1965. Marine mammals of California. Calif. Dept. of Fish and Game, Sacramento, 86 p.
- Daugherty, Anita E., and Robert S. Wolf. 1964. Age and length composition of the sardine catch off the Pacific coast of the United States and Mexico in 1961-62. *Calif. Fish and Game*, **50**(4):241-247.
- Fager, E. W. 1964. Marine sediments: Effects of a tube-building Polychaeta. *Science*, **143**(3604):356-359.
- Feder, Howard M., and Reuben Lasker. 1964. Partial purification of a substance from starfish tube feet which elicits escape responses in gastropod molluscs. *Life Sci.*, **3**(9):1047-1051.
- Fleminger, Abraham. 1963a. The Calanoida (copepod crustaceans) in the Gulf of Thailand. *Results Naga Expedition, 1959-1961. Univ. Calif. SIO Ref.* 63-6.
- 1963b. Morphological evidence of population interactions between closely related planktonic copepods. *16th Int. Cong. Zool., Proc., Wash., D.C., August 20-27, 1963*, 2:179. (Abstr.)
- 1964a. Distributional atlas of calanoid copepods in the California Current region, pt. 1. *Calif. Coop. Ocean. Fish. Invest., Atlas*, (2):1-313.
- 1964b. *Labidocera johnsoni*, species nova, Crustacea: Copepoda: Calanoida. *Pilot Reg. Zool. Card no. 3A*, B.
- 1965. On some Pacific species of *Labidocera* and *Stephos* reported by C. B. Wilson (1950). *Crustaceana*, **8**(2):121-130.
- 1966. Submergence of certain California Current copepods in a region of advection with Central Pacific water. *Second Int. Oceanogr. Cong., Proc., Moscow, 1966*, (127-S11b):118. (Abstr.)
- Fleminger, Abraham, and R. I. Clutter. 1965. Avoidance of towed nets by zooplankton. *Limnol. Oceanogr.*, **10**(1):96-104.
- Fleminger, Abraham, and H. George Snyder. 1965. A catalogue of zooplankton samples in the marine invertebrate collections of Scripps Institution of Oceanography. *Univ. Calif. SIO Ref.* 65-14A:1-140.
- Gunderson, K., A. F. Carlucci and K. Bostrom. 1965. Growth of some chemoautotrophic bacteria at different oxygen tensions. *Experientia*, **22**(4):201-272.
- Heimann, Richard F. G. (Comp.). 1965-1966. California Dept. of Fish and Game sea survey cruises 1955; *ibid.*, 1950; *ibid.*, 1951; *ibid.*, 1952; *ibid.*, 1953; *ibid.*, 1954; *ibid.*, 1956-1957; *ibid.*, 1958; *ibid.*, 1959; *ibid.*, 1960. *Calif. Coop. Ocean. Fish. Invest., Data Report*, nos. 1-10.
- Heimann, Richard F. G. 1963. Trawling in the Monterey Bay area, with special reference to catch composition. *Calif. Fish and Game*, **49**(3):152-173.

- Holliday, F. G. T., J. H. S. Blaxter and Reuben Lasker. 1964. Oxygen uptake of developing eggs and larvae of the herring (*Clupea harengus*). *Mar. Biol. Assoc. U.K.*, **J.**, **44**:711-723.
- Hubbs, Carl L. 1963. *Chaetodon aya* and related deep-living butterflyfishes: their variation, distribution and synonymy. *Bull. Mar. Sci. Gulf and Carib.*, **13**(1):133-192.
- 1964. History of ichthyology in the United States after 1850. *Copeia*, **(1)**:33-60.
- 1965. Data on speed and underwater exhalation of a humpback whale accompanying ship. *Hvalrad. Skr.*, **(48)**:42-44.
- Hubbs, Carl L., George S. Bien and Hans E. Suess. 1963. La Jolla natural radiocarbon measurements. 3. *Radiocarbon*, **5**:254-272.
- Hubbs, Carl L., George S. Bien and Hans E. Suess. 1963. La Jolla natural radiocarbon measurements. 4. *Radiocarbon*, **7**:66-117.
- Hubbs, Carl L., and Sam Hinton. 1963. The giant seahorse returns. *Pac. Discov.*, **16**(4):12-15; also, *Univ. Calif., SIO Contrib.* (1555):789-793.
- Hubbs, Carl L., and Karl F. Lagler. 1964. Fishes of the Great Lakes region. Rev. ed. *Univ. Mich. Press, Ann Arbor*. 100 p.
- Hubbs, Carl L., and Robert R. Miller. 1965. Studies of cyprinodont fishes. 22. Variations in *Lucania parva*, its establishment in western United States, and description of a new species from an interior basin in Coahuila, Mexico. *Univ. Mich. Mus. Zool., Misc. Pub.* (127).
- Hubbs, Carl L., and Gunnar I. Roden. 1965. Oceanography and marine life along the Pacific Coast of middle America. *Handbook of American Indians*, **1**:143-186.
- Hubbs, Carl L., and Norman J. Wilimovsky. 1964. Distribution and synonymy in the Pacific Ocean, and variation of the Greenland halibut, *Reinhardtius hippoglossoides* (Walbaum). *Fish. Res. Bd. Can.*, **J.**, **21**(5):1129-1154.
- Hubbs, Carl L., and Robert L. Wisner. 1964. *Parvilux*, a new genus of myctophid fishes from the northeastern Pacific, with two new species. *Zool. Meded.*, **39**:445-463.
- Hyatt, Harold. 1965. The southern California mackerel fishery and age composition of the Pacific mackerel catch for the 1959-60 and 1960-61 seasons. *Calif. Fish and Game*, **51**(1):37-47.
- Isaacs, John D. 1963a. Atmospheric jet streams. *Science*, **141** (3585):1045-1046.
- 1963b. Scripps experience with deep mooring. *Long-range Telemetering Buoy Guidance Comm., Min. Meet., Scripps Institution of Oceanography, 9-10 December, 1963*: 31-33.
- 1963c. The water dilemma. *Fourth Conf. on the Impact of Sci., Calif. and the Challenge of Growth, Proc., San Diego, June 13-14, 1963*:41-49.
- Isaacs, John D. 1964a. Explosively created harbors. *Third Plow-share Symp., Proc., Univ. Calif., Davis, Apr. 21-23, AEC, TID-7695*:335-354.
- 1964b. Night-caught and day-caught larvae of the California sardine. *Science*, **144**(3622):1132-1133.
- Isaacs, John D. (Chairman of Panel). 1964. *Proceedings of the Governor's Conference on California and the world ocean; Los Angeles, Jan. 31-Feb. 1, 1964*:97-106.
- Isaacs, John D. 1965a. An historical study of the eastern North Pacific. *Calif. Dept. Educ., Jr. Coll. Workshop Biol., Final Rept.*
- 1965b. Larval sardine and anchovy interrelationships. *Calif. Coop. Ocean. Fish. Invest., Rept.* **10**:102-140.
- 1965c. The planetary water problem. *First Int. Conf. of Women Eng. and Sci., Proc., New York, June 15-21, 1964*, **(2)**:1-18.
- 1965d. Possible oceanographic and related observations from satellites, oceanography in space. *Conf. on Feasibility of Conducting Oceanogr. Explor. from Aircraft, Manned Orbital and Lunar Lab., Proc., Woods Hole Oceanographic Institution, 24-28 August, 1964*, WHOI Ref. 65-10.
- 1966. Postpleistocene variations in the oceanography and zoogeography of the eastern North Pacific. *Second Int. Cong. Oceanogr. (Paper), Moscow, June, 1966*. (Abstr.)
- Isaacs, John D., and Hugh Bradner. 1964. Neutrino and geo-thermal fluxes. *J. Geophys. Res.*, **69**(18):3883-3887.
- Isaacs, John D., and Benjamin Polk. 1965. New techniques, new esthetic. *Landscape*, **14**(3):3-5.
- Isaacs, John D., George B. Schick, Meredith H. Sessions and Richard A. Schwartzlose. 1965. Development and testing of taut-nylon moored instrument stations (with details of design and construction). *Univ. Calif. SIO Ref.* 65-5.
- Isaacs, J. D., and W. R. Schmitt. 1963. Resources from the sea. *Int. Sci. Technol.* :39-45.
- Isaacs, John D., and R. A. Schwartzlose. 1965. Migrant sound scatterers: interaction with the sea floor. *Science*, **150**(3705):1810-1813.
- Isaacs, John D., Allyn C. Vine, Hugh Bradner and George E. Backus. 1966. Satellite elongation into a true "sky-hook". *Science*, **151**(3711):682-683.
- Jerde, Charles W., and Reuben Lasker. 1966. Moultling of euphausiid shrimps: shipboard observations. *Limnol. Oceanogr.*, **11**(1):120-124.
- Johnson, Martin W. 1963. Arctic Ocean plankton. *Arctic Basin Symp., Proc. Oct. 1962*:173-184.
- 1964. On a new species of *Pseudopiaptomus* from the West Coast of Mexico, Costa Rica and Ecuador (Copepoda). *Crustaceana*, **7**(1):33-40.
- 1965. The nauplius larvae of *Pontellopsis occidentalis* Esterly (Copepoda, Calanoida). *Amer. Microscop. Soc., Trans.*, **84**(1):43-48.
- Johnson, Martin W., and Edward Brinton. 1963. Biological species, watermasses and currents. In M. N. Hill (ed.), *The Sea*, **2**:381-414. Interscience Pub., New York.
- Johnson, Martin W., and Margaret Knight. 1966. The phyllosome larvae of the spiny lobster *Panulirus inflatus* (Bouvier). *Crustaceana*, **10**(1):31-47.
- Jones, G. E., and A. A. Benson. 1965. Phosphatidyl glycerol in *Thiobacillus thiooxidans*. *J. Bacteriol.*, **89**(1):260-261.
- Knight, Margaret D. 1966. The larval development of *Polyonyx quadriungulatus* Glassell and *Pachycheles rufus* Stimpson (Decapoda, Porcellanidae) cultured in the laboratory. *Crustaceana*, **10**(1):75-97.
- Kobayashi, Bert N. 1963. First record of *Polyipnus laternatus* Garman from the Pacific Ocean. *Copeia*, **(1)**:179-180.
- Kramer, David. 1963. Records and observations from plankton grid studies off Baja California April 1952. *U.S. Fish Wild. Serv., Spec. Sci. Rept.: Fish.*, **(422)**:1-42.
- Lasker, Reuben. 1964a. Moultling frequency of a deep sea crustacean, *Euphausia pacifica*. *Nature*, **203**(4940):96.
- 1964b. An experimental study of the effect of temperature on the incubation time, development, and growth of Pacific sardine embryos and larvae. *Copeia*, **(2)**:399-405.
- 1966. Feeding, growth, respiration, and carbon utilization of a euphausiid crustacean. *Fish. Res. Bd., Can.*, **J.**, **23**(9):1291-1317.
- Lasker, Reuben, and G. H. Theilacker. 1965. Maintenance of euphausiid shrimp in the laboratory. *Limnol. Oceanogr.*, **10**(2):287-288.
- Lehmann, J., and A. A. Benson. 1964. The plant sulfolipid. 9. Sulfoxide syntheses from methyl hexoseenides. *Amer. Chem. Soc., J.*, **86**:4469-4472.
- Lehmann, Jochen, and A. A. Benson. 1964. The plant sulfolipid: reactions of methyl glucoside, a model precursor. *Sixth Int. Cong. Biochem.*, **6**:517. (Abstr.)
- McGowan, John A. 1966. The biological and physical structure of the Pacific sub-arctic, oceanic faunal boundary. *Second Int. Oceanogr. Cong., Proc., Moscow*, 1966, (285-S11):249. (Abstr.)
- McGowan, John A., and Vernie J. Fraundorf. 1964. A modified heavy fraction zooplankton sorter. *Limnol. Oceanogr.*, **9**(1):152-155.
- MacGregor, John S. 1964. Relation between spawning-stock size and year-class size for the Pacific sardine *Sardinops caerulea* (Girard). *U.S. Fish. Wild. Serv. Fish. Bull.*, **63**(2):477-491.
- 1966a. Fecundity of the Pacific hake, *Merluccius productus* (Ayres). *Calif. Fish and Game*, **52**(2):111-116.

- MacGregor, John S. 1966b. Synopsis on the biology of the jack mackerel (*Trachurus symmetricus*) U.S. Fish Wild. Serv. Spec. Sci. Rept.: Fish., (526):1-16.
- Martelli, Hebe L., and A. A. Benson. 1964. Sulfocarbohydrate metabolism. I. Bacterial production and utilization of sulfo-acetate. *Biochem. Biophys. Acta*, **93**:169-171.
- Messersmith, J. D. 1965. Southern range extensions for chum and silver salmon. *Calif. Fish and Game*, **51**(3):220.
- Messersmith, J. D., and Harold Hyatt. 1965. Pacific mackerel, the commercial fishery, and age composition of the southern California catch for the 1961-62, 1962-63 and 1963-64 seasons. *Calif. Fish and Game*, **51**(3):168-182.
- Miller, Julian K. 1966. Biomass determinations of selected zooplankters found in the California Cooperative Oceanic Fisheries Investigations. *Univ. Calif. SIO Ref.* 66-15.
- Murphy, Garth I. 1965a. Living resources off our shores. *Calif. Mag. Comm. Agric. Ind.*, Dec., 3 p. (Reprint).
- 1965b. A solution of the catch equation. *Fish. Res. Bd. Can. J.*, **22**(1):191-202.
- 1966. Population biology of the Pacific sardine (*Sardinops caerulea*). *Calif. Acad. Sci. Proc.*, 4th ser., **34**(1):1-84.
- Nissen, Per, and A. A. Benson. 1964. Active transport of chlorine sulfate by barley roots. *Plant Physiol.*, **39**(4):586-589.
- Nissen, Per, and A. A. Benson. 1964. Liquid scintillation counting of plant roots. *Int. J. Appl. Radiat. Isotopes*, **15**:505-507.
- Nissen, Per, and A. A. Benson. 1964. Absence of selenate esters and "selenolipid" in plants. *Biochim. Biophys. Acta*, **82**:400-402.
- O'Brien, John S., and A. A. Benson. 1964. Isolation and fatty acid composition of the plant sulfolipid and galactolipids. *J. Lipid Res.*, **5**:432-436.
- O'Connell, Charles P. 1963. The structure of the eye of *Sardinops caerulea*, *Engraulis mordax*, and four other pelagic marine teleosts. *J. Morph.*, **113**(2):287-329.
- Okutani, T., and John A. McGowan. 1963. The distribution and abundance of the epipelagic decapod (Cephalopoda) larvae in the California Current. *16th Int. Cong. Zool., Proc.*, **1**:68. (Abstr.)
- Orton, Grace L. 1964a. The eggs of scomberesocid fishes. *Copeia*, (1):144-150.
- Orton, Grace L. 1964b. Identification of *Leptocephalus aculeatus* Regan as the larva of the eel genus *Avocettina*. *Pac. Sci.*, **18**(2):186-201.
- Orton, Grace L. 1964c. New information on a rare eel larva *Leptocephalus hyoprorooides* Strömann. *Copeia*, (2):434-444.
- Pramer, D., A. F. Carlucci and P. V. Scarpino. 1963. The bactericidal action of sea water. In C. H. Oppenheimer (ed.), *Symposium on Marine Microbiology*: 567. C. H. Thomas, Pub., Springfield, Ill.
- Radford, Keith W., Robert T. Orr and Carl L. Hubbs. 1965. Reestablishment of the northern elephant seal (*Mirounga angustirostris*) off central America. *Calif. Acad. Sci. Proc.*, 4th ser., **31**(22):601-612.
- Radovich, John. 1963. Effect of ocean temperature on the seaward movements of striped bass, *Roccus saxatilis*, on the Pacific coast. *Calif. Fish and Game*, **49**(3):191-206.
- Reid, Joseph L., Jr. 1963a. Measurements of the California Countercurrent off Baja California. *J. Geophys. Res.*, **68**(16):4819-4822.
- 1963b. Oceanography. In *The Americana annual 1963*:490-500. Americana Corp., New York.
- 1963c. Review of: R. B. Montgomery and E. D. Stroup, Equatorial waters and currents at 150°W in July-August, 1952. *Limnol. Oceanogr.*, **8**(3):366.
- 1964a. Evidence of a South Equatorial Countercurrent in the Atlantic Ocean in July 1963. *Nature*, **203**(4941):182.
- 1964b. Oceanography. In *The Americana annual 1964*: 496-497. Americana Corp., New York.
- 1964c. A transequatorial Atlantic oceanographic section in July 1963 compared with other Atlantic and Pacific sections. *J. Geophys. Res.*, **69**(24):5205-5215.
- 1965a. Intermediate waters of the Pacific Ocean. *Johns Hopkins Oceanogr. Stud.*, **2**:1-85.
- 1965b. Oceanography. In *The Americana annual 1965*: 531-533. Americana Corp., New York.
- 1965c. Physical oceanography of the region near Point Arguello. *Univ. Calif. IMR Ref.* 65-19, UCSD-34P111-11:1-39.
- 1966a. Oceanography. In *The Americana annual 1966*:516-517. Americana Corp., New York.
- 1966b. Weather conditions, characteristics of the mixed layer, and formation of water masses in the Northwestern Pacific in mid-winter. *Second Int. Oceanogr. Cong.*, Moscow, 1966: Abstr. Pap. (349):298.
- Reid, Joseph L., Jr., R. S. Arthur and E. B. Bennett. (Ed.). 1963a. Oceanic observations of the Pacific: 1951. *Univ. Calif. Press*, Berkeley. 598 p.
- Reid, Joseph L., Jr., R. S. Arthur and E. B. Bennett. (Ed.). 1963b. Oceanic observations of the Pacific: 1956. *Univ. Calif. Press*, Berkeley. 458 p.
- Reid, Joseph L., Jr., R. S. Arthur and E. B. Bennett. (Ed.). 1965a. Oceanic observations of the Pacific: 1952. *Univ. Calif. Press*, Berkeley. 617 p.
- Reid, Joseph L., Jr., R. S. Arthur and E. B. Bennett. (Ed.). 1965b. Oceanic observations of the Pacific: 1953. *Univ. Calif. Press*, Berkeley. 576 p.
- Reid, Joseph L., Jr., R. S. Arthur and E. B. Bennett. (Ed.). 1965c. Oceanic observations of the Pacific: 1954. *Univ. Calif. Press*, Berkeley. 426 p.
- Reid, Joseph L., Jr., R. S. Arthur and E. B. Bennett. (Ed.). 1965d. Oceanic observations of the Pacific: 1957. *Univ. Calif. Press*, Berkeley. 707 p.
- Reid, Joseph L., Jr., R. S. Arthur and E. B. Bennett. (Ed.). 1965e. Oceanic observations of the Pacific: 1958. *Univ. Calif. Press*, Berkeley. 804 p.
- Reid, Joseph L., Jr., R. S. Arthur and E. B. Bennett. (Ed.). 1965f. Oceanic observations of the Pacific: 1959. *Univ. Calif. Press*, Berkeley. 901 p.
- Reid, Joseph L., Jr., and R. J. Lynn. 1964. The distribution of water properties at deep and abyssal depths beneath the California Current. *Final Rept. to the U.S. Atomic Energy Comm.*, UCSD-34P97-1:1-19.
- Reid, Joseph L., Jr., R. A. Schwartzlose and D. M. Brown. 1963a. Direct measurements of a small eddy off northern Baja California. *J. Mar. Res.*, **21**(3):205-218.
- Reid, Joseph L., Jr., R. A. Schwartzlose and D. M. Brown. 1963b. Direct measurements of an eddy off northern Baja California. *13th General Assembly, Int. Union Geodesy Geophys.*, Berkeley, Aug. 1963, *Sixth Int. Assoc. Physic. Oceanogr. Abstr. Pap.* :112.
- Reid, Joseph L., Jr., C. G. Worrell and E. H. Coughran. 1964. Detailed measurements of a shallow salinity minimum in the thermocline. *J. Geophys. Res.*, **69**(22):4767-4771.
- Robinson, Margaret K. 1965. Climatic implications derived from the comparison of bathythermograph (BT) data with two types of historic and modern sea surface data. *Calif. Coop. Ocean. Fish. Invest., Rept.*, **10**:141-152.
- Robinson, Margaret K., and John Northrop. 1966. Temperature structure in the transition region of the North Pacific. *Second U.S. Navy Symp. on Military Oceanogr.*, Proc., Silver Spring, Maryland, 5-7 May, 1965, **1**:403-432.
- Roden, Gunnar I. 1963a. On statistical estimation of monthly extreme sea surface temperatures along the west coast of the United States. *J. Marine Res.*, **21**(3):172-190.
- 1963b. Sea level variations at Panama. *J. Geophys. Res.*, **68**(20):5701-5710.
- 1964a. Oceanographic aspects of the Gulf of California. In *Marine Geology of the Gulf of California*: 30-58. Amer. Assoc. Petrol. Geol., Tulsa, Oklahoma.
- 1964b. On the duration of nonseasonal temperature oscillations. *J. Atmos. Sci.* **21**(5):520-528.
- 1964c. Shallow temperature inversions in the Pacific Ocean. *J. Geophys. Res.*, **69**(14):2899-2914.
- 1964d. Spectral analysis of Japanese sea level records. In *Studies on Oceanography Dedicated to Professor Hidaka in Commemoration of his Sixtieth Birthday*: 166-180. Univ. Tokyo Press, Tokyo.

- 1965. On atmospheric pressure oscillations along the Pacific Coast of North America, 1873-1963. *J. Atmos. Sci.*, **22**(3) : 280-295.
- Roedel, Phil M. 1963. The names of tunas and mackerels. *Calif. Fish and Game*, **49**(2) :119.
- 1966. Recent developments in the fisheries of California. *Gulf Carib. Fish. Inst.*, Proc. 18th Ann. Sess.: 94-97.
- Schumann, George O., and Herbert C. Perkins. 1966. A jar for culturing small pelagic marine organisms in running water during shipboard or laboratory studies. *Cons. Perm. Int. Expl. Mer. J.*, **30**(2) :171-176.
- Schwartzlose, Richard A. 1963. Nearshore currents of the western United States and Baja California as measured by drift bottles. *Calif. Coop. Ocean. Fish. Invest., Rept.*, **9** :15-22.
- Steim, Joseph M., and A. A. Benson. 1964. Derivative activation chromatography. *Analyt. Biochem.*, **9** :2134.
- Stommel, Henry, and Warren S. Wooster. 1965. Reconnaissance of the Somali Current during the southwest monsoon. *Nat. Acad. Sci., Proc.*, **54**(1) :8-13.
- Strachan, Alec R. 1965. New southern record for the silver gray rockfish, *Sebastodes brevispinis* (Bean). *Calif. Fish and Game*, **51**(3) :220-221.
- Sweeney, Beatrice M. 1963. Bioluminescent dinoflagellates. *Biol. Bull.* **125**(1) :177-181.
- Thomas, William H., Donald W. Lear, Jr. and Francis T. Haxo. 1962. Uptake by the marine dinoflagellate *Gonyaulax polyedra* of radioactivity formed during an underwater nuclear test. *Limnol. Oceanogr.*, **7** (suppl.) :66-71.
- Vrooman, Andrew H. 1964. Serologically differentiated sub-populations of the Pacific sardine, *Sardinops caerulea*. *Fish. Res. Bd. Can., J.*, **21**(4) :691-701.
- Wolf, Robert S. 1964. Observations on spawning Pacific sardines. *Calif. Fish and Game*, **50**(1) :53-57.
- Wolf, Robert S., and Anita E. Daugherty. 1963. Age and length composition of the sardine catch off the Pacific coast of the United States and Mexico in 1960-61. *Calif. Fish and Game*, **49**(4) :290-301.
- Wolfson, Fay II. 1965. The optical comparater as a tool in plankton research. *Limnol. Oceanogr.*, **10**(1) :156-157.
- Wooster, W. S., Ts. J. Chow and Izadore Barrett. 1965. Nitrite distribution in Peru Current waters. *J. Mar. Res.*, **23**(3) : 210-221.
- Wooster, Warren S., and Joseph L. Reid, Jr. 1963. Eastern boundary currents. In M. N. Hill (ed.) *The Sea*, **2**:253-280. Interscience, New York.