

Part IV

## INDEX TO CALCOFI REPORTS 1989-1993

This index contains two parts: author and subject. The index was generated from the publications listed on the right. The year following the volume number is the publication date. Two previous indexes have been published: in volume 24 for the years 1950-1982 and in volume 30 for 1983-1988.

### AUTHOR INDEX

- Ainley, D. G., W. J. Sydeman, R. H. Parrish, and W. H. Lenarz. Oceanic factors influencing distribution of young rockfish (*Sebastes*) in central California: a predator's perspective. 34:133-139
- Allen, M. J., and K. T. Herbinson. Beam-trawl survey of bay and nearshore fishes of the soft-bottom habitat of southern California in 1989. 32:112-127
- . Settlement of juvenile California halibut, *Paralichthys californicus*, along the coasts of Los Angeles, Orange, and San Diego counties in 1989. 31:84-96
- Barnes, J. T., L. D. Jacobson, A. D. MacCall, and P. Wolf. Recent population trends and abundance estimates for the Pacific sardine (*Sardinops sagax*). 33:60-75
- Bartley, D. M., and D. B. Kent. Genetic structure of white seabass populations from the Southern California Bight region: applications to hatchery enhancement. 31:97-105
- Baumgartner, T. R., A. Soutar, and V. Ferreira-Bartrina. Reconstruction of the history of Pacific sardine and northern anchovy populations over the past two millennia from sediments of the Santa Barbara Basin, California. 33:24-40
- Buckley, R. M. Habitat alterations as a basis for enhancing marine fisheries. 30:40-45
- Butler, J. L., P. E. Smith, and N. C. H. Lo. The effect of natural variability of life-history parameters on anchovy and sardine population growth. 34:104-111
- Cailliet, G. M., and A. W. Ebeling. The vertical distribution and feeding habits of two common midwater fishes (*Leuroglossus stilbius* and *Stenobrachius leucopsarus*) off Santa Barbara. 31:106-123
- Davis, G. E. Designated harvest refugia: the next stage of marine fishery management in California. 30:53-58
- Dickerson, T. L., B. J. Macewicz, and J. R. Hunter. Spawning frequency and batch fecundity of chub mackerel, *Scomber japonicus*, during 1985. 33:130-140
- Doyle, M. J. Neustonic ichthyoplankton in the northern region of the California Current ecosystem. 33:141-161
- Fargion, G. S., J. A. McGowan, and R. H. Stewart. Seasonality of chlorophyll concentrations in the California Current: a comparison of two methods. 34:35-50
- Fernández-Alamo, M. A. Holoplanktonic polychaetes from the Gulf of California: August-September 1977. 32:97-104
- Frieman, E. A. Fortieth anniversary symposium of the CalCOFI Conference. Welcome. 31:25-26
- Gaxiola-Castro, G., and S. Alvarez-Borrego. Relative assimilation numbers of phytoplankton across a seasonally recurring front in the California Current off Ensenada. 32:91-96
- Grant, J. Symposium of the 1988 CalCOFI Conference: introduction. 30:35-36
- Hanan, D. A., L. M. Jones, and R. B. Read. California sea lion interaction and depredation rates with the commercial passenger fishing vessel fleet near San Diego. 30:122-126
- Haurly, L. R., E. L. Venrick, C. L. Fey, J. A. McGowan, and P. P. Niiler. The Ensenada Front: July 1985. 34:69-88
- Hayward, T. L. Preliminary observations of the 1991-1992 El Niño in the California Current. 34:21-29
- Hendrickx, M. E., and F. D. Estrada-Navarrete. A checklist of the species of pelagic shrimps (*Penaeoidea* and *Caridea*) from the eastern Pacific, with notes on their geographic and depth distribution. 30:104-121
- Hollowed, A. B. Spatial and temporal distributions of Pacific hake, *Merluccius productus*, larvae and estimates of survival during early life stages. 33:100-123
- Holmgren-Urba, D., and T. R. Baumgartner. A 250-year history of pelagic fish abundances from the anaerobic sediments of the central Gulf of California. 34:60-68
- Hunter, J. R., J. L. Butler, C. Kimbrell, and E. A. Lynn. Bathymetric patterns in size, age, sexual maturity, water content, and caloric density of Dover sole, *Microstomus pacificus*. 31:132-144
- Hunter, J. R., B. J. Macewicz, and C. A. Kimbrell. Fecundity and other aspects of the reproduction of sablefish, *Anoplopoma fimbria*, in central California waters. 30:61-72
- Knauss, J. Fortieth anniversary symposium of the CalCOFI Conference. Remarks. 31:33-36
- Kramer, S. H. The shallow-water flatfishes of San Diego County. 32:128-142
- Lavaniegos-E., B. E. Growth and larval development of *Nyctiphanes simplex* in laboratory conditions. 33:162-171
- Lavaniegos-Espejo, B. E., J. R. Lara-Lara, and E. Brinton. Effects of the 1982-83 El Niño event on the euphausiid populations of the Gulf of California. 30:73-87
- Lenarz, W. H., R. J. Larson, and S. Ralston. Depth distributions of late larvae and pelagic juveniles of some fishes of the California Current. 32:41-46
- Leong, R. J. H. Sperm concentrations and egg fertilization rates during spawning of captive anchovy, *Engraulis mordax*. 30:136-139
- Lluch-Belda, D., S. Hernández-Vázquez, D. B. Lluch-Cota, C. A. Salinas-Zavala, and R. A. Schwartzlose. The recovery of the California sardine as related to global change. 33:50-59
- Lluch-Belda, D., D. B. Lluch-Cota, S. Hernández-Vázquez, C. Salinas-Zavala, and R. A. Schwartzlose. Sardine and anchovy spawning as related to temperature and upwelling in the California Current system. 32:105-111
- Lo, N. C. H., and R. D. Methot. Spawning biomass of the northern anchovy in 1988. 30:18-31
- California Cooperative Oceanic Fisheries Investigations Reports:  
Volume 30; 1989  
Volume 31; 1990  
Volume 32; 1991  
Volume 33; 1992  
Volume 34; 1993

- MacCall, A. D. Against marine fish hatcheries: ironies of fishery politics in the technological era. 30:46-48
- Macewicz, B. J., and J. R. Hunter. Spawning frequency and batch fecundity of jack mackerel, *Trachurus symmetricus*, off California during 1991. 34:112-121
- Mason, J. E. Variations in the catch of jack mackerel in the southern California purse seine fishery. 32:143-151
- McCarthy, L. Fortieth anniversary symposium of the CalCOFI Conference. Remarks. 31:30-32
- Mullin, M. M. Production of eggs by the copepod *Calanus pacificus* in the southern California sector of the California Current system. 32:65-90
- . Reproduction by the oceanic copepod *Rhincalanus nasutus* off southern California, compared to that of *Calanus pacificus*. 34:89-103
- Oda, D. L., R. J. Lavenberg, and J. M. Rounds. Reproductive biology of three California species of *Paralabrax* (Pisces: Serranidae). 34:122-132
- Ohman, M. D. Corrigendum. 30:140
- Polovina, J. J. Artificial reefs: nothing more than benthic fish aggregators. 30:37-39
- Reid, J. L. Fortieth anniversary symposium of the CalCOFI Conference. Presentation to Roger Revelle. 31:28-29
- Ruiz-L., A., and L. P. Lyle-F. Fluctuaciones periódicas de la captura de sardina crinuda (*Opisthonema* spp.) en el Golfo de California, 1972-1990. 33:124-129
- Rutledge, W. P. The Texas marine hatchery program—it works! 30:49-52
- Sanz, A., and A. Uriarte. Reproductive cycle and batch fecundity of the Bay of Biscay anchovy (*Engraulis encrasicolus*) in 1987. 30:127-135
- Scheiber, H. N. California marine research and the founding of modern fisheries oceanography: CalCOFI's early years, 1947-1964. 31:63-83
- Schumacher, J. D., and A. W. Kendall, Jr. Some interactions between young walleye pollock and their environment in the western Gulf of Alaska. 32:22-40
- Schwing, F. B., D. M. Husby, N. Garfield, and D. E. Tracy. Mesoscale oceanic response to wind events off central California in spring 1989: CTD surveys and AVHRR imagery. 32:47-62
- Simpson, J. J. A conceptual framework for the operational fisheries oceanography community. 34:51-57
- Smith, P. E. Monitoring interannual changes in spawning area of Pacific sardine (*Sardinops sagax*). 31:145-151
- Smith, P. E., N. C. H. Lo, and J. L. Butler. Life-stage duration and survival parameters as related to interdecadal population variability in Pacific sardine. 33:41-49
- Smith, P. E., M. D. Ohman, and L. E. Eber. Analysis of the patterns of distribution of zooplankton aggregations from an acoustic Doppler current profiler. 30:88-103
- Thomson, C. J. The market for fish meal and oil in the United States: 1960-1988 and future prospects. 31:124-131
- Watson, W. Distribution of larval Pacific sardine, *Sardinops sagax*, in shallow coastal waters between Oceanside and San Onofre, California: 1978-1986. 33:89-99
- Wolf, P. Recovery of the Pacific sardine and the California sardine fishery. 33:76-86

## SUBJECT INDEX

- Abalone fishery, 30:55; 34:16-17  
Acoustic Doppler current profiler  
  and zooplankton measurement, 30:88-103  
Ahlstrom, Elbert H., and sardine research, 31:73, 75, 77-78  
Alaska Coastal Current, 32:24-25, 27, 29-30, 38  
Alaska Factory Trawlers Assn., 31:40-41  
Albacore, fishery review  
  1988, 30:15  
  1989, 31:18-19  
  1990, 32:16  
  1991, 33:18-19  
  1992, 34:15  
  See also Recreational fishery  
Anchovy, Bay of Biscay, *Engraulis encrasicolus*  
  reproduction, 30:127-135  
Anchovy, northern, *Engraulis mordax*  
  depth distribution of young, 32:41-46  
  fishery review  
    1988, 30:8-10  
    1989, 31:13-14  
    1991, 33:11-12  
    1992, 34:10  
  and fish meal industry, 31:124-127  
  population growth, 34:104-111  
  population history, 33:24-40  
    in Gulf of California, 34:60-68  
  spawning, 30:136-139; 32:105-111  
  spawning biomass, 1988, 30:18-31  
Anchovy, Peruvian, *Engraulis ringens*  
  and fish meal industry, 31:125-126  
Artificial reefs, 30:37-45  
Barracuda. See Recreational fishery  
Basses  
  reproduction, 34:122-132  
  white seabass genetics, 31:97-105  
  See also Recreational fishery  
Bay and nearshore fish survey, 32:112-127  
Bottomfish. See Groundfish  
*Calanus pacificus*, egg production, 32:65-90; 34:89-103  
CalCOFI history, 31:25-29, 33-36, 45-46, 63-83  
CalCOFI station plan, 1950, 31:70-71  
Chapman, Wilbert, and CalCOFI history, 31:64, 65, 67, 69, 77  
Chlorophyll  
  and copepod egg production, 32:66-67, 70-89  
  and El Niño, 34:21-29  
  and Ensenada Front, 32:91-96; 34:76-83, 86-87  
  seasonality of, 34:35-50  
Clark, Frances, and CalCOFI history, 31:64, 67, 69, 73, 74  
Climate. See El Niño; Global change  
Cod, Alaska fishery, 31:41  
Copepods  
  *Calanus pacificus* egg production, 32:65-90; 34:89-103  
Crab, Dungeness, fishery review  
  1988, 30:13  
  1989, 31:16  
  1990, 32:13-14  
  1991, 33:15-16  
  1992, 34:13-14  
Crab, king, Alaska fishery, 31:41  
Demersal fish. See Groundfish  
Depth distribution. See Vertical distribution  
Dolphinfish. See Recreational fishery  
Domoic acid, 33:11; 34:13  
Eckart, Carl, on the role of scientists, 31:72  
Egg production method  
  and northern anchovy spawning biomass, 30:25-27  
  and sardine spawning biomass, 33:67-68  
El Niño  
  1982-83, effects on euphausiids, 30:73-87  
  1991-92, 34:21-29  
Ensenada Front, 32:91-96; 34:69-88  
Euphausiids  
  and El Niño, 30:73-87  
  *Nyctiphanes simplex*, 33:162-171  
*E. W. Scripps* (ship), 31:70  
Fecundity, estimating, 30:71-72  
  See also reproduction under individual fishes  
Fisheries management, 30:35-58; 34:51-57  
  hatchery enhancement of white seabass, 31:97-105  
Fisheries review  
  1988, 30:7-17  
  1989, 31:9-21  
  1990, 32:7-18  
  1991, 33:7-20  
  1992, 34:7-20  
Fish hatcheries, 30:46-52  
  and white seabass genetics, 31:97-105  
Fish meal and oil, U.S. market, 31:124-131  
Flatfishes, shallow-water distribution, 32:128-142  
Genetics, white seabass, 31:97-105  
Global change  
  and sardine abundance, 33:50-59  
  symposium on, 31:25-59  
Groundfish  
  Alaska fishery, 31:40-41  
  bay and nearshore survey, 32:112-127  
  fishery review  
    1988, 30:12-13  
    1989, 31:15-16  
    1990, 32:12-13  
    1991, 33:13-15  
    1992, 34:11-13  
  recruitment, 32:60-61  
  shallow-water distribution, 32:128-142  
Gulf of Alaska  
  young pollock in, 32:22-40  
Gulf of California  
  euphausiids in, 30:73-87  
  holoplanktonic polychaetes in, 32:97-104  
  sedimentary history, 34:60-68  
  thread herring fishery, 33:124-129  
Hake, Pacific  
  abundance history, 34:60-68  
  distribution of larvae, 33:100-123  
Halibut, California, *Paralichthys californicus*  
  distribution, 32:128-142  
  fishery review  
    1988, 30:14-15  
    1989, 31:17-18  
    1990, 32:15  
    1991, 33:17-18  
    1992, 34:14-15  
  juvenile settlement, 31:84-96  
  See also Recreational fishery  
Harvest refugia, 30:53-58  
Hatcheries, fish, 30:46-52

- and white seabass genetics, 31:97–105
- Herring, Pacific, *Clupea pallasi*
  - fishery review
  - 1988, 30:12
  - 1989, 31:14–15
  - 1990, 32:11–12
  - 1991, 33:13
  - 1992, 34:10–11
- Herring, thread (*Opisthonema* spp.), fishery, 33:124–129
- ICES (International Council for the Exploration of the Sea), 31:33–35
- In memoriam, James R. Thraillkill, 31:5–6
- Isaacs, John, and CalCOFI history, 31:29, 77, 78
- Japan, artificial reefs in, 30:37
- Kelp bass, *Paralabrax clathratus*, reproduction, 34:122–132
- Lampfish, northern, vertical distribution and feeding, 31:106–123
- Law of the Sea, 31:44–46
- Live-fish fishery, 34:18–19
- Lobster, California spiny, *Panulirus interruptus*
  - fishery review
  - 1988, 30:15
  - 1989, 31:18
  - 1990, 32:15–16
  - 1992, 34:17–18
- Mackerel, chub. *See* Mackerel, Pacific
- Mackerel, jack, *Trachurus symmetricus*
  - fishery
  - 1947–1983, 32:143–151
  - 1988, 30:10
  - spawning, 34:112–121
- Mackerel, Pacific, *Scomber japonicus*
  - abundance history, 34:60–68
  - biomass, 1987–88, 30:28
  - fishery review
  - 1988, 30:10–11
  - 1989, 31:13
  - 1990, 32:9–10
  - 1991, 33:10–11
  - 1992, 34:9–10
  - spawning, 33:130–140
  - See also* Recreational fishery
- Magnuson Fishery Conservation and Management Act, 31:49–50
- Marine Research Committee, 31:64–65, 70–78
- Menhaden, and fish meal industry, 31:125–127
- Murphy, Garth, and CalCOFI history, 31:77–78
- Murre, common (*Uria aalge*), diet, 34:133–139
- Nearshore fish survey, 32:112–127
- Neuston, fish eggs and larvae in, 33:141–161
- New Zealand, fishery management in, 30:56
- Nyctiphanes simplex*
  - growth, 33:162–171
  - in Gulf of California, 30:73–87
  - See also* Plankton
- Paralabrax*
  - reproduction, 34:122–132
  - See also* Recreational fishery
- Philippines, fishery management in, 30:56
- Physical oceanography, 34:21–29
  - off central California, 32:47–62
  - Ensenada Front, 34:69–88
  - in Gulf of Alaska, 32:24–25, 27–31, 37–39
  - in Gulf of California, 30:75–76, 80–84
  - of northern California Current, 33:143–145
  - and phytoplankton, 32:91–96
  - and rockfish distribution, 34:133–139
  - and spawning of anchovy and sardine, 32:105–111
- Plankton
  - ichthyoplankton, neustonic, 33:141–161
  - phytoplankton
    - relative assimilation off Ensenada, 32:91–96
    - See also* Chlorophyll
  - zooplankton
    - carbon content and biomass, 30:140
    - distribution, 30:88–103
    - egg production rates, 32:65–90; 34:89–103
    - in Ensenada Front, 34:83–85, 86
    - in Gulf of California, 30:73–87; 32:97–104
    - Nyctiphanes simplex*, 33:162–171
- Politics
  - and CalCOFI history, 31:64–68
  - and global change, 31:30–32, 37–59
- Pollock, walleye, in Alaska, 31:40–41, 130–131; 32:22–40
- Polychaetes, in Gulf of California, 32:97–104
- Prawns, fishery review
  - 1988, 30:15–16
  - 1989, 31:19
  - 1990, 32:17
  - 1991, 33:19
- Recreational fishery
  - 1988, 30:16–17
  - 1989, 31:20–21
  - 1990, 32:18
  - 1991, 33:20
  - 1992, 34:19–20
  - and sea lions, 30:122–126
- Red drum, *Sciaenops ocellatus*, hatchery program, 30:49–52
- Reefs, artificial, 30:37–45
- Revelle, Roger, and CalCOFI history, 31:28–29, 64, 65, 68–69, 72, 73, 74
- Rhincalanus nasutus*, reproduction rate, 34:89–103
- Rockfish
  - distribution, 32:41–46; 34:133–139
  - juvenile, and physical oceanography, 32:60–61
  - See also* Groundfish; Live-fish fishery; Recreational fishery
- Roe. *See* Herring, Pacific
- Sablefish
  - fishery review
  - 1988, 30:13
  - 1989, 31:15–16
  - 1990, 32:12
  - 1991, 33:14
  - 1992, 34:13
  - reproduction, 30:61–72
- Sailfish, 32:19
- Salmon
  - bycatch
  - 1991, 33:14
  - 1992, 34:11
  - fishery review, 1992, 34:18
  - See also* Recreational fishery
- Sand bass, *Paralabrax nebulifer*, reproduction, 34:122–132
- Sanddab, speckled, *Citharichthys stigmaeus*, distribution, 32:128–142
- San Diego Trough, zooplankton in, 30:88–103
- Sardine
  - and fish meal industry, 31:125, 130
  - Pacific, *Sardinops sagax*
    - abundance, 33:24–86; 34:60–68
    - distribution of larvae, 33:89–99
    - fishery history, 31:63–65, 67–78
    - fishery review
    - 1988, 30:7–8

- 1989, 31:9-10  
1990, 32:7-9  
1991, 33:7-10  
1992, 34:7-9  
population variability, 33:41-59; 34:104-111  
spawning, 31:145-151; 32:105-111
- Satellite remote sensing, 34:33-57, 69-87
- Scale-deposition rates, 33:24-40; 34:60-68
- Scripps Institution of Oceanography, and CalCOFI history, 31:65, 67-68, 70-75
- Seabass, white, *Atractoscion nobilis*, genetics, 31:97-105  
*See also* Basses
- Seabirds, diet of common murre, 34:133-139
- Sea lions, California, 30:122-126
- Sea urchin,  
fishery review  
1988, 30:16  
1989, 31:19-20  
1990, 32:17-18  
1991, 33:19-20  
1992, 34:15-16
- Sedimentary studies, 33:24-40; 34:60-68
- Sette, O. E., and CalCOFI, 31:65, 69, 76
- Settlement  
of California halibut, 31:84-96  
of Dover Sole, 31:132-144  
of shallow-water flatfishes, 32:134, 137-141
- Sharks  
fishery review  
1988, 30:14  
1989, 31:17  
1990, 32:15  
1991, 33:17  
1992, 34:14  
*See also* Recreational fishery
- Shrimp, Pacific Ocean, *Pandalus jordani*  
fishery review  
1988, 30:13-14  
1989, 31:16-17  
1990, 32:14  
1991, 33:16-17
- Shrimps, pelagic, in Eastern Pacific, 30:104-121
- Smoothtongue, California, *Leuroglossus stilbius*  
vertical distribution and feeding, 31:106-123
- Sole  
Dover, *Microstomus pacificus*  
bathymetric patterns, 31:132-144; 32:41-46  
catch, 1992, 34:12  
fantail, *Xystreurus liolepis*  
distribution, 32:128-142  
rex  
depth distribution of young, 32:41-46  
*See also* Groundfish
- Sportfishing  
and sea lions, 30:122-126  
*See also* Recreational fishery
- Spotted sand bass, *Paralabrax maculatofasciatus*, reproduction, 34:122-132
- Squid, market, *Loligo opalescens*  
fishery review  
1988, 30:11-12  
1989, 31:10-13  
1990, 32:10-11  
1991, 33:12-13
- Station plan, 1950, 31:70-71
- Stock synthesis model  
and northern anchovy spawning biomass, 30:18-31
- Sverdrup, Harald, and CalCOFI, 31:64
- Swordfish  
fishery review  
1988, 30:14  
1989, 31:17  
1990, 32:14  
1991, 33:17  
1992, 34:14
- Taxonomy of pelagic shrimps, 30:104-121
- Temperature (air), and sardine abundance, 33:50-59
- Temperature (water)  
and anchovy spawning, 30:27-28; 32:105-111  
and El Niño, 30:75, 80-84; 34:21-29  
and rockfish distribution, 34:134-138  
and sardines, 32:105-111; 33:50-59  
*See also* Physical oceanography
- Texas fish hatcheries, 30:49-52
- Thompson, William F., and fishery research, 31:65-66
- Thornyhead  
catch  
1990, 32:12-13  
1991, 33:14-15  
1992, 34:12  
*See also* Groundfish
- Thraikill, James M., in memoriam, 31:5-6
- Tonguefish, California, distribution, 32:128-142
- Turbot, distribution, 32:128-142
- Vertical distribution of pelagic young fish, 32:41-46
- Whiting, Pacific  
depth distribution of young, 32:41-46  
fishery review  
1988, 30:12  
1989, 31:15  
1990, 32:13  
1991, 33:13-14, 15  
1992, 34:11-12  
*See also* Groundfish
- Withering syndrome, 34:17
- Yellowtail. *See* Recreational fishery
- Zooplankton. *See* Plankton