

INDEX

Fishery Bulletin Vol. 81, Nos. 1-4

<p>"Abundance and vertical distribution of fishes in a cobble-bottom kelp forest off San Onofre, California," by Ralph J. Larson and Edward E. DeMartini..... 37</p> <p>"Age, growth, and mortality of gray triggerfish, <i>Balistes capricus</i>, from the northeastern Gulf of Mexico," by Allyn G. Larson and Carl H. Saloman..... 485</p> <p>Age-size estimation</p> <ul style="list-style-type: none"> crab, Dungeness..... 471-478 croaker, white..... 183 dolphin, Hawaiian spinner..... 207 drum, banded..... 233, 353, 355 eel, American..... 519 herring, Pacific..... 115 kingfish, southern..... 427 lobster, American..... 244 midshipman, plainfin..... 165 quahog, ocean..... 1, 249 rockfish..... 249 salmon, chinook..... 158 shrimp, mantis..... 420 tetracycline use..... 237 triggerfish, gray..... 488 <p>AINLEY, DAVID G.—see ALLEN et al.</p> <p>ALARCON, VICTOR HUGO—see GOLDBERG et al.</p> <p>Alaska, Little Togiak River fishery..... 402</p> <p>ALHEIT, JUERGEN—see GOLDBERG et al.</p> <p>ALLEN, SARAH G., DAVID G. AINLEY, GARY W. PAGE, and CHRISTINE A. RIBIC, "The effect of disturbance on harbor seal haul out patterns at Bolinas Lagoon, California"... 493</p> <p><i>Alosa sapidissima</i>—see Shad, American</p> <p>Amphipods..... 55</p> <p><i>Anchoa mitchelli</i>—see Anchovy, bay</p> <p>Anchovy, bay</p> <ul style="list-style-type: none"> marsh habitat..... 457 <p>Anchovy, northern..... 68, 113</p> <p><i>Anguilla rostrata</i>—see Eel, American</p> <p><i>Anoplopoma fimbria</i>—see Sablefish</p> <p>ANTONELIS, GEORGE A., JR., CLIFFORD H. FISCUS, and ROBERT L. DeLONG, "Spring and summer prey of California sea lions, <i>Zalophus californianus</i>, at San Miguel Island, California, 1978-79"..... 67</p> <p>APPY, RALPH G.—see MACDONALD et al.</p> <p>"Arctic char predation on sockeye salmon smolts at Little Togiak River, Alaska," by Gregory T. Ruggerone and Donald E. Rogers..... 401</p> <p><i>Arctica islandica</i> Linne—see Quahog, ocean</p> <p>"Arithmetic versus exponential calculation of mean biomass," by Sheryan P. Epperly and Walter R. Nelson.... 446</p> <p>ARMSTRONG, DAVID A.—see STEVENS and ARMSTRONG</p> <p>"Aspects of the life history and fishery of the white croaker, <i>Genyonemus lineatus</i> (Sciaenidae), off California," by Milton S. Love, Gerald E. McGowen, William Westphal, Robert J. Lavenberg, and Linda Martin..... 179</p> <p>Atlantic, middle</p> <ul style="list-style-type: none"> groundfish..... 295 	<p>Bacteria</p> <ul style="list-style-type: none"> <i>Achromobacter</i>..... 377 <i>Bacillus</i>..... 377 <i>Corynebacterium</i>..... 377 Cytophaga..... 377 <i>Flavobacterium</i>..... 377 <i>Micrococcus</i>..... 377 <i>Moraxella</i>..... 377 <i>Pseudomonas</i>..... 377 <i>Vibrio</i>..... 377 <p>Bacteriology, elasmobranch fish..... 375</p> <ul style="list-style-type: none"> analysis..... 376-377 occurrence - muscle..... 379-380 occurrence - teeth..... 378 <p>BAGLIVO, JENNY A.—see BROUSSEAU and BAGLIVO</p> <p><i>Balistes capricus</i>—see Triggerfish, gray</p> <p>BARNETT, ARTHUR M., ANDREW E. JAHN, PETER D. SERTIC, and WILLIAM WATSON, "Distribution of ichthyoplankton off San Onofre, California, and methods for sampling very shallow coastal waters"..... 97</p> <p>Bass, kelp..... 37</p> <p><i>Bathylagus stilbius</i>—see Smoothtongue, California</p> <p>"Bathymetric distribution, spawning periodicity, sex ratios, and size compositions of the mantis shrimp, <i>Squilla empusa</i>, in the northwestern Gulf of Mexico," by Mark D. Rockette, Gary W. Standard, and Mark E. Chittenden, Jr..... 418</p> <p>Bay of Fundy, fish diversity..... 121</p> <p>BERGEY, ANNE—see SHIMEK et al.</p> <p>Biological studies—see also Reproductive biology</p> <p>Biological studies</p> <ul style="list-style-type: none"> mackerel, Spanish..... 545 <p>Biomass calculation..... 446</p> <ul style="list-style-type: none"> arithmetic vs. exponential calculation..... 446 fish, kelp forest..... 44 <p>Blacksmith</p> <ul style="list-style-type: none"> abundance..... 199, 201 behavior/response to thermal effluents..... 201 diel migration..... 202 feeding habits..... 200-204 prey..... 201 <p>Bocaccio..... 70</p> <p>Bolinas Lagoon, California..... 493</p> <p>BOTTON, MARK L., and HAROLD H. HASKIN, "Distribution and feeding of the horseshoe crab, <i>Limulus polyphemus</i>, on the continental shelf off New Jersey"..... 383</p> <p>BOWMAN, RAY E., "Food of silver hake, <i>Merluccius bilinearis</i>"..... 21</p> <p>BOZEMAN, EARL L.—see HELFMAN et al.</p> <p><i>Brevoortia gunteri</i>—see Menhaden, finescale</p> <p><i>Brevoortia patronis</i>—see Menhaden, gulf</p> <p><i>Brevoortia smithi</i>—see Menhaden, yellowfin</p> <p><i>Brevoortia tyrannus</i>—see Menhaden, Atlantic</p> <p>BRODEUR, RICHARD D., and WILLIAM G. PEARCY, "Food habits</p>
--	---

and dietary overlap of some shelf rockfishes (genus <i>Sebastes</i>) from the northeastern Pacific Ocean".....	269	shallow marsh habitats, York River, Virginia," by Stephen M. Smith, James G. Hoff, Steven P. O'Neil, and Michael P. Weinstein.....	455
BROTHERS, EDWARD B.--see HELPFMAN et al.		"Comparison of American eel growth rates from tag returns and length-age analyses," by Gene S. Helfman, Earl L. Bozeman, and Edward B. Brothers.....	519
BROUSSEAU, DIANE J., and JENNY A. BAGLIVO, "Sensitivity of the population growth rate to changes in single life history parameters: its application to <i>Mya arenaria</i> (Mollusca: Pelecypoda)".....	537	"Comparison of physiological and functional size-maturity relationships in two Newfoundland populations of lobsters <i>Homarus americanus</i> ," by G. P. Ennis.....	244
BUCK, JOHN D., "Quantitative and qualitative bacteriology of elasmobranch fish from the Gulf of Mexico".....	375	CONCANNON, GREG--see EWING et al.	
"Calibration of dental layers in seven captive Hawaiian spinner dolphins, <i>Stenella longirostris</i> , based on tetra-cycline labeling," by Albert C. Myrick, Jr., Edward W. Shallenberger, Ingrid Kang, and David B. MacKay.....	207	CONDREY, RICHARD E., "Density-dependent searching time: implications in surplus-production models".....	449
California Cooperative Oceanic Fish Investigation (CALCOFI).....	97	Continental shelf demersal fishes bottom trawl surveys.....	295
California fishery.....	37, 196, 530	faunal affinities.....	297-298
rockfish.....	249	species associations.....	304-306
California sea lions--see Sea lions, California		"Conversions between total, fork, and standard lengths in 35 species of <i>Sebastes</i> from California," by Tina Echeverria and William H. Lenarz.....	249
<i>Callinectes sapidus</i> --see Crab, blue		Copepods.....	55
CAMPANA, STEVEN E., "Interactive effects of age and environmental modifiers on the production of daily growth increments in otoliths of plainfin midshipman, <i>Porichthys notatus</i> ".....	165	<i>Cottus asper</i> --see Sculpin, prickly	
Canadian fishery.....	121	COYER, JAMES A., "The invertebrate assemblage associated with the giant kelp, <i>Macrocystis pyrifera</i> , at Santa Catalina Island, California: A general description with emphasis on amphipods, copepods, mysids, and shrimps"...	55
<i>Cancer irroratus</i> --see Crab, rock		Crab, blue marsh habitat.....	455
<i>Cancer magister</i> --see Crab, Dungeness		Crab, Dungeness Grays Harbor.....	469-471, 472-473
Catch estimation quahog, ocean.....	269	abundance.....	471-472, 479-480
Cero biology.....	659	age.....	474-476
species type.....	657-658	distribution.....	473, 478-479
Char, Arctic feeding on salmon smolts.....	401-409	growth.....	477-478, 481
predator - prey interaction.....	401	Crab, horseshoe feeding.....	383, 387
Chesapeake Bay fishery.....	455	mortality.....	388
CHITTENDEN, MARK E., Jr.--see ROCKETTE et al., STANDARD and CHITTENDEN		population.....	383-387
<i>Chromis punctipinnis</i> --see Blacksmith		prey.....	387-388
Clam growth rates.....	537	Crab, lithodid collection methods.....	315
Clam, surf.....	387	larvae, morphology.....	321
<i>Clupea harengus harengus</i> --see Herring, Atlantic		<i>Cryptolithodes typicus</i>	323
<i>Clupea harengus pallasi</i> --see Herring, Pacific		<i>Hapalogaster grebnitzkii</i> , <i>Dematurus mandtii</i> , and <i>P. beivipes</i>	323
Cobble-bottom habitats.....	37	<i>Hapalogaster mertensii</i>	323
Cod, Arcto-Norwegian distribution.....	143, 148-149	<i>Lithodes aequispina</i>	323
feeding area.....	141, 143, 149, 152-155	<i>Paralithodes brevipes</i>	322
larvae.....	141-150	<i>Paralithodes brevipes</i> , <i>P. camtschatica</i> , and <i>P. platypus</i>	323-324
COLLETTE, BRUCE B., and JOSEPH L. RUSSO, "Morphology, systematics, and biology of the Spanish mackerels (<i>Scomberomorus</i> , <i>Scombridae</i>)".....	545	<i>Placetron wosnessenskii</i> and <i>Rhinolithodes wosnessenskii</i>	324
Columbia River, salmon migration.....	157	zoae, descriptions.....	316
Columbia River fishery.....	411	<i>Lithodes</i> vs. <i>Pagerinae</i>	321
COLVOCOESSES, J. A., and J. A. MUSICK, "Species associations and community composition of Middle Atlantic Bight continental shelf demersal fishes".....	295	<i>Placetron wosnessenskii</i>	317-318
"Community and trophic organization of nekton utilizing		<i>Rhinolithodes wosnessenskii</i>	318, 320
		Crab, rock.....	387
		Croaker, Atlantic marsh habitat.....	457
		Croaker, white age determination.....	180, 185
		fishery.....	182, 192-193, 196
		ichthyoplankton.....	181-182, 188-192
		larvae.....	188-192, 195
		life history.....	179-198
		seasonal differences.....	184
		CROWE, BARBARA J., "Distribution, length-weight relationship, and length-frequency data of southern kingfish, <i>Menticirrhus americanus</i> , in Mississippi".....	427
		<i>Cynoscion regalis</i> --see Weakfish	

DADSWELL, MICHAEL J.--see MACDONALD et al.	
DeLONG, ROBERT L.--see ANTONELIS et al.	
DeMARTINI, EDWARD E.--see LARSON and DeMARTINI	
"Density-dependent searching time: implications in surplus-production models," by Richard E. Condney.....	449
Deschutes River, Oreg., salmon migration.....	157
"Description of early stage zoeae of <i>Spirontocaris murdochi</i> (Decapoda: Hippolytidae) reared in the laboratory," by Evan B. Haynes.....	523
"Description of eggs, larvae, and early juveniles of gulf menhaden, <i>Brevoortia patronus</i> , and comparisons with Atlantic menhaden, <i>B. tyrannus</i> , and yellowfin menhaden, <i>B. smithi</i> ," by William F. Hettler.....	85
"The detection and distribution of larval Arcto-Norwegian cod, <i>Gadus morhua</i> , food organisms by an in situ particle counter," by S. Tilseth and B. Ellertsen.....	141
"Diel variations in the feeding habits of Pacific salmon caught in gill nets during a 24-hour period in the Gulf of Alaska," by W. Percy, T. Nishiyama, T. Fujii, and K. Masuda.....	391
"Distribution, abundance, and growth of juvenile Dungeness crabs, <i>Cancer magister</i> , in Grays Harbor estuary, Washington," by Bradley G. Stevens and David A. Armstrong.....	469
"Distribution and abundance of <i>Sicyonia pencillata</i> Lockington, 1879 in the Gulf of California, with some notes on its biology," by M. E. Hendrickx.....	715
"Distribution and feeding of the horseshoe crab, <i>Limulus polyphemus</i> , on the continental shelf off New Jersey," by Mark L. Botton and Harold H. Haskin.....	383
"Distribution, length-weight relationship, and length-frequency data of southern kingfish, <i>Menticirrhus americanus</i> , in Mississippi," by Barbara J. Crowe.....	427
"Distribution of ichthyoplankton off San Onofre, California, and methods for sampling very shallow coastal waters," by Arthur M. Barnett, Andrew E. Jahn, Peter D. Sertic, and William Watson.....	97
"Documentation of annual growth lines in ocean quahogs, <i>Arctica islandica</i> Linne," by John W. Ropes, Douglas S. Jones, Steven A. Murawski, Fredric M. Serchuk, and Ambrose Jerald, Jr.....	1
Dogfish, spiny Bay of Fundy-Gulf of Maine.....	131
Dolphin, Hawaiian spinner age through teeth..... birth season..... dental layers..... lunar monthly cycles..... sexual maturity.....	207 221, 224 207-224 223 224
Drum, banded age determination..... age-growth relationship..... growth..... life history..... maturity..... reproduction..... sex ratio..... spawning..... spawning periodicity.....	353-354 233 365 337 229-231, 233 227 232 228-230, 233 339, 344-345, 350, 357-359
Drum, black.....	378
"Early zoeal stages of <i>Placetron wosnessenskii</i> and <i>Rhinolithodes wosnessenskii</i> (Decapoda, Anomura, Lithodidae) and review of lithodid larvae of the northern North Pacific Ocean," by Evan B. Haynes.....	315
Echeverria, Tina, and William H. Lenarz, "Conversions between total, fork, and standard lengths in 35 species of <i>Sebastes</i> from California".....	249
Economic studies shrimp fishery..... shrimp vessels, Gulf of Mexico.....	365 365
Ecosystems kelp, cobble bottom, California..... kelp forests, California.....	37 55
Eel, American growth rates.....	519-521
"The effect of disturbance on harbor seal haul out patterns at Bolinas Lagoon, California," by Sarah G. Allen, David G. Ainley, Gary W. Page, and Christine A. Ribic.....	493
"Effects of size and time of release on seaward migrations of spring chinook salmon, <i>Oncorhynchus tshawytscha</i> ," by R. D. Ewing, C. E. Hart, C. A. Fustish, and Greg Concannon.....	157
Eggs--see Embryos	
Electron microscope, scanning (SEM) etching..... increment counts..... otoliths.....	435 435, 437-439 434-435
ELLERTSEN, B.--see TILSETH and ELLERTSEN	
ELLIOTT, JOEL--see SHIMEK et al.	
Embryos menhaden, gulf..... scup.....	87 78
<i>Engraulis mordax</i> --see Anchovy, northern	
ENNIS, G. P., "Comparison of physiological and functional size-maturity relationships in two Newfoundland populations of lobsters <i>Homarus americanus</i> ".....	244
ENNIS, G. P., "Incidence of molting and spawning in the same season in female lobsters, <i>Homarus americanus</i> ".....	529
ENNIS, G. P., "Tag-recapture validation of molt and egg extrusion predictions based upon pleopod examination in the American lobster, <i>Homarus americanus</i> ".....	242
Environmental conditions--see Habitat effects	
EPPELRY, SHERYAN P., and WALTER R. NELSON, "Arithmetic versus exponential calculation of mean biomass".....	446
EWING, R. D., C. E. HART, C. A. FUSTISH, and GREG CONCANNON, "Effects of size and time of release on seaward migrations of spring chinook salmon, <i>Oncorhynchus tshawytscha</i> ".....	157
Feeding--see Food habits	
"Feeding ecology of walleye, <i>Stizostedion vitreum</i> vitreum, in the mid-Columbia River, with emphasis on the interactions between walleye and juvenile anadromous fishes," by Alec G. Maule and Howard F. Horton.....	411
"Feeding habits of blacksmith, <i>Chromis punctipinnis</i> , associated with a thermal outfall," by Pamela A. Morris.....	199
"Field and laboratory observations on diurnal swim bladder inflation-deflation in larvae of gulf menhaden, <i>Brevoortia patronus</i> ," by D. E. Hoss and G. Phonlor.....	513
FISCUS, CLIFFORD H.--see ANTONELIS et al.	
Fish, demersal--see Groundfish	
Fish, kelp forest abundance..... vertical distribution.....	44 47
Fish, pelagic Bay of Fundy-Gulf of Maine.....	131
Fish assemblages Bay of Fundy-Gulf of Maine..... Middle Atlantic Bight..... San Onofre, Calif.....	121-139 295 37-47

York River marshes.....	458	Grays Harbor fishery.....	469
Fish disease, PEN.....	542	GRIFFIN, WADE—see TETTEY et al.	
Fish interaction		GRIMES, CHURCHILL B.—see SHEPHERD and GRIMES	
Bay of Fundy/Passamaquoddy Bay.....	121	GRISWOLD, CAROLYN A., and THOMAS W. MCKENNEY, "Larval development of the scup, <i>Stenotomus chrysops</i> (Pisces: Sparidae)".....	77
char, Arctic.....	401	Groundfish	
Continental shelf.....	295	Atlantic continental shelf.....	295
groundfish.....	296	Growth rates	
kelp.....	50	arithmetic/exponential calculation.....	446
mackerel, Spanish.....	620	clam transplanting.....	540-541
Middle Atlantic Bight.....	295	crab, Dungeness.....	417
salmon, sockeye.....	401	croaker, white.....	183
sea lion predators.....	67	drum, banded.....	353
walleye.....	411	eel, American.....	520
"Fishes, fish assemblages, and their seasonal movements in the lower Bay of Fundy and Passamaquoddy Bay, Canada," by J. Stevenson Macdonald, Michael J. Dadswell, Ralph G. Appy, Gary D. Melvin, and David A. Methven.....	121	growth increment marking, tetracycline.....	208, 237
Fjord habitat.....	144-151	herring, Pacific.....	117
Flatfish		Leslie model.....	537
Bay of Fundy-Gulf of Maine.....	126-128	lobster, American.....	242, 243
Follicle histology.....	443	midshipman, plainfin.....	165
Food habits		population growth rate.....	537, 540
blacksmith.....	199, 200	quahog, ocean.....	1, 251
char, Arctic.....	401	salmon, chinook.....	158, 160
cod, Arcto-Norwegian.....	152	sensitivity formulae.....	538-539
cod, Arcto-Norwegian, larvae.....	141	triggerfish, gray.....	488-490
crab, horseshoe.....	383, 387	tuna, bluefin.....	434
hake, silver.....	21-34	Gulf of Alaska fishery.....	396
marsh habitat.....	455	Gulf of California fishery.....	715
nekton.....	455, 460	Gulf of Maine, fish diversity.....	121
quahog, ocean.....	272	Gulf of Mexico fishery.....	365, 375, 419
rockfish.....	269	GUY, STEWART—see SHIMEK et al.	
salmon, Pacific.....	391	Habitat effects	
sea lions.....	67	diel light and temperature.....	168
shrimp, brown.....	325	kingfish, southern.....	430
shrimp, penaeid.....	717	marshes.....	455
shrimp, rock.....	716	power plant effluents.....	199-202
walleye.....	411	seal, harbor.....	495
"Food habits and dietary overlap of some shelf rockfishes (genus <i>Sebastes</i>) from the northeastern Pacific Ocean," by Richard D. Brodeur and William G. Pearcy.....	269	shrimp, brown.....	325
"Food of silver hake, <i>Merluccius bilinearis</i> ," by Ray E. Bowman.....	21	Hake, silver	
FUJII, T.—see PEARCY et al.		composition of diet.....	24-34
FUSTISH, C. A.—see EWING et al.		geographic feeding distribution.....	24
FYFE, DAVID—see SHIMEK et al.		stomach contents.....	23
Gadoids		HART, C. E.—see EWING et al.	
Bay of Fundy-Gulf of Maine.....	129-130	HASKIN, HAROLD H.—see BOTTON and HASKIN	
<i>Gadus morhua</i> —see Cod, Arcto-Norwegian		Hatchery release, salmon.....	157
Galveston Island, Texas.....	326	Hawaiian fishery.....	693
Genetic studies		snapper, pink.....	703
lobster, spiny.....	693	HAYNES, EVAN B., "Description of early stage zoeae of <i>Spirontocaris murchiei</i> (Decapoda: Hippolytidae) reared in the laboratory".....	523
snapper, deepwater.....	703	HAYNES, EVAN B., "Early zoeal stages of <i>Placetron wosnessenskii</i> and <i>Rhinolithodes wosnessenskii</i> (Decapoda, Anomura, Lithodidae) and review of Lithodid larvae of the northern North Pacific Ocean".....	315
"Genetic variation and population structure in a deepwater snapper, <i>Pristopomoides filamentosus</i> , in the Hawaiian archipelago," by James B. Shaklee and Paul B. Samollow.....	703	HELPMAN, GENE S., EARL L. BOZEMAN, and EDWARD B. BROTHERS, "Comparison of American eel growth rates from tag returns and length-age analyses".....	519
"Genetic variation and population structure in a spiny lobster, <i>Panulirus marginatus</i> , in the Hawaiian archipelago," by James B. Shaklee and Paul B. Samollow.....	693	HENDRICKX, M. E., "Distribution and abundance of <i>Sicyonia pectinata</i> Lockington, 1879 in the Gulf of California, with some notes on its biology".....	715
<i>Genyonemus lineatus</i> —see Croaker, white		Herring, Atlantic.....	113
<i>Ginglymostoma cirratum</i> —see Shark, nurse		Herring, Pacific	
GOLDBERG, STEPHEN R., VICTOR HUGO ALARCON, and JUERGEN ALHEIT, "Postovulatory follicle histology of the Pacific sardine, <i>Sardinops sagax</i> from Peru".....	443	growth rate.....	115
		larvae.....	113
		otoliths.....	113-119

ring deposition.....	115-118	transects.....	40
HETTLER, WILLIAM F., "Description of eggs, larvae, and early juveniles of gulf menhaden, <i>Brevoortia patronus</i> , and comparisons with Atlantic menhaden, <i>B. tyrannus</i> , and yellowfin menhaden, <i>B. smithi</i> ".....	85	vertical stratification.....	44
HOFF, JAMES G.--see SMITH et al.		Kelp forests, off Santa Catalina Island, Calif.	
Hogchoaker		algal community.....	55
marsh habitat.....	457	biomass.....	56
<i>Homarus americanus</i> --see Lobster, American		composition.....	55
HORTON, HOWARD F.--see MAULE and HORTON		habitat reef.....	55
HOSS, D. E., and G. PHONLOR, "Field and laboratory observations on diurnal swim bladder inflation-deflation in larvae of gulf menhaden, <i>Brevoortia patronus</i> ".....	513	invertebrate assemblages.....	55
Hotelling's T ² -test.....	101	seasonal dynamics.....	58, 60, 64
Human effects--see Habitat effects		vertical stratification.....	56, 58, 64
Ichthyoplankton, off San Onofre, Calif.		Kelpfish, giant.....	37
abundance.....	103-105, 108	Kelpfish, halfmoon.....	37
cross-shelf patterns.....	102	Kingfish, Kanadi--see Mackerel, Queensland school	
ontogenic pattern changes.....	105, 108	Kingfish, southern	
sampling, shallow waters.....	99-108	distribution.....	427, 429
vertical migration.....	103, 107	length-frequency.....	430
<i>Icichthys lockingtoni</i> --see Medusafish		length-weight.....	432
"Implications of investing under different economic conditions on the profitability of Gulf of Mexico shrimp vessels operating out of Texas," by Ernest Tetley, Christopher Pardy, Wade Griffin, and A. Nelson Swartz... ..	365	<i>Lagodon rhomboides</i> --see Pinfish	
"Incidence of molting and spawning in the same season in female lobsters, <i>Homarus americanus</i> ," by G. P. Ennis....	529	Lampfish, northern.....	68
Infection, PEN.....	542	Lamprey, sea	
Instrumentation		viral eurythrocytic necrosis (VEN).....	543
particle counter.....	142, 144	<i>Larimus fasciatus</i> --see Drum, banded	
"Interactive effects of age and environmental modifiers on the production of daily growth increments in otoliths of plainfin midshipman, <i>Porichthys notatus</i> ," by Steven E. Campana.....	165	LARSON, RALPH J., and EDWARD E. DeMARTINI, "Abundance and vertical distribution of fishes in a cobble-bottom kelp forest off San Onofre, California".....	37
"The invertebrate assemblage associated with the giant kelp, <i>Macrocystis pyrifera</i> , at Santa Catalina Island, California: A general description with emphasis on amphipods, copepods, mysids, and shrimps," by James A. Coyer.....	55	Larvae	
Invertebrates, kelp forest.....	57	cod, Arcto-Norwegian.....	141, 148
Investment--see Economic studies		crab.....	315
JAHN, ANDREW E.--see BARNETT et al.		crabs, lithodid.....	321
JERALD, AMBROSE, JR.--see ROPES et al.		croaker, white.....	188, 195
JOHNSON, ALLYN G., and CARL H. SALOMAN, "Age, growth, and mortality of gray triggerfish, <i>Balistes capricus</i> , from the northeastern Gulf of Mexico".....	485	herring, Pacific.....	113
JONES, DOUGLAS S.--see ROPES et al.		ichthyoplankton.....	97
Juveniles		lobster, spiny.....	694
menhaden, gulf.....	93	menhaden, gulf.....	88, 513
KANG, INGRID--see MYRICK et al.		scup.....	77
Kelp, giant.....	37, 55	shrimp.....	523
Kelp, rocky reef.....	37	"Larval development of the scup, <i>Stenotomus chrysops</i> (Pisces: Sparidae)," by Carolyn A. Griswold and Thomas W. McKenney.....	77
Kelp forests, off San Onofre, Calif.		LAVENBERG, ROBERT J.--see LOVE et al.	
characteristics.....	37	LENARZ, WILLIAM H.--see ECHEVERRIA and LENARZ	
cinetranssect calibration.....	43	<i>Limulus polyphemus</i> --see Crab, horseshoe	
sampling methods.....	38	Lobster	
Lobster, American		molting.....	529
egg extrusion, prediction.....	243	spawning.....	529
molt prediction.....	243	Lobster, spiny	
resorption.....	248	allele examination.....	695-698
size-maturity.....	244-245	electrophoresis.....	695
Lobster, spiny		enzyme variation.....	695-696
alle examination.....	695-698	genetic variation.....	693
electrophoresis.....	695	<i>Loligo opalescens</i> --see Squid, market; Squid, Pacific market	
enzyme variation.....	695-696	LOVE, MILTON S., GERALD E. MCGOWEN, WILLIAM WESTPHAL, ROBERT J. LAVENBERG, and LINDA MARTIN, "Aspects of the life history and fishery of the white croaker, <i>Genyonemus lineatus</i> (Sciaenidae), off California".....	179
genetic variation.....	693	LOVE, MILTON S., KIMBERLY SHRINER, and PAMELA MORRIS, "Parasites of olive rockfish, <i>Sebastes serranoides</i> , (Scorpaenidae) off central California".....	530
<i>Loligo opalescens</i> --see Squid, market; Squid, Pacific market		MACDONALD, J. STEVENSON, MICHAEL J. DADSWELL, RALPH G.	

APPY, GARY D. MELVIN, and DAVID A. METHVEN, "Fishes, fish assemblages, and their seasonal movements in the lower Bay of Fundy and Passamaquoddy Bay, Canada".....	121
MacKAY, DAVID B.--see MYRICK et al.	
Mackerel, Australian spotted	
biology.....	649
fisheries.....	649
species type.....	647-648
Mackerel, broad-barred Spanish	
biology.....	661
fisheries.....	661-662
geographic variation.....	662
species type.....	659-660
Mackerel, chub.....	68
Mackerel, Indo-Pacific king	
biology.....	634-635
fisheries.....	635
geographic variation.....	635-636
species type.....	630-632
Mackerel, Japanese Spanish	
biology.....	651-652
fisheries.....	652
geographic variation.....	652
species type.....	649-651
Mackerel, king	
biology.....	619-620
fisheries.....	620
species type.....	616-617
Mackerel, Monterey Spanish	
biology.....	629
fisheries.....	629-630
species type.....	628-629
Mackerel, narrow-barred king	
biology.....	626
fisheries.....	626-627
geographic variation.....	627
species type.....	622-624
Mackerel, queen	
biology.....	654
fisheries.....	654
species type.....	652-653
Mackerel, Queensland school	
biology.....	656
fisheries.....	656
geographic variation.....	656-657
species type.....	654-655
Mackerel, serra Spanish	
biology.....	614-615
fisheries.....	615
species type.....	613
Mackerel, Spanish	
biology.....	643-645
characters for analysis.....	690-691
fisheries.....	645
geographic variation.....	646
Grammorcygnus, Acanthocybin, and Scomberomorus.....	547
morphology.....	549-611
relationships of species.....	670-673
Scomberomorus brasiliensis.....	613-616
S. cavalla.....	616-622
S. commerson.....	622-627
S. concolor.....	628-630
S. guttatus.....	630-636
S. koreanus.....	636-638
S. lacepede.....	611-612
S. lineolatus.....	638-641
S. maculatus.....	641-646
S. miophonus.....	649-652
S. multiradiatus.....	646-647
S. munroi.....	647-649
S. plurineatus.....	652-654
S. queenslandicus.....	654-657
S. regalis.....	657-659
S. semifasciatus.....	659-662
S. sierra.....	662-665
S. sinensis.....	665-668
S. tritor.....	668-670
species biology.....	611-670
species type.....	641-643
Mackerel, West African Spanish	
biology.....	670
fisheries.....	670
species type.....	668-669
Macrocyctis pyriferu--see Kelp, giant	
Macrozoarces americanus--see Ocean pout	
Maine fishery.....	121
Marine mammal interactions	
harbor seals/disturbance.....	493
Marine mammals	
sea lions, California.....	67
seals, harbor.....	493
Marine Resources Monitoring Assessment and Prediction (MARMAP)	
survey cruises.....	21
"Marking growth increments in otoliths of larval and juvenile fish by immersion in tetracycline to examine the rate of increment formation," by P. D. Schmitt.....	237
Marshes.....	455
MARTIN, LINDA--see LOVE et al.	
MASUDA, K.--see PEARCY et al.	
Mathematical techniques	
A. posteriori t-tests.....	101
Analysis of Variance (ANOVA).....	101
biomass calculation.....	446
clam growth rates.....	537
searching fisheries.....	449
MAULE, ALEC G., and HOWARD F. HORTON, "Feeding ecology of walleye, Stizostedion vitreum vitreum, in the mid-Columbia River, with emphasis on the interactions between walleye and juvenile anadromous fishes".....	411
McGOWEN, GERALD E.--see LOVE et al.	
McGURK, MICHAEL D., "Ring deposition in the otoliths of larval Pacific herring, Clupea harengus pallasi".....	113
McKENNEY, THOMAS W.--see GRISWOLD and McKENNEY	
Medusafish.....	68
MELVIN, GARY D.--see MACDONALD et al.	
Menhaden, Atlantic.....	85
Menhaden, finescale.....	85
Menhaden, gulf	
comparison to other Brevoortia sp.....	93-94
distribution.....	85-86
diurnal vertical migration.....	517
embryos.....	87-88
larvae.....	88-93, 513
myomeres.....	89
swim bladder.....	513
Menhaden, yellowfin.....	85
Menticirrhus americanus--see Kingfish, southern	
Merluccius bilinearis--see Hake, silver	
Merluccius productus--see Whiting, Pacific	
METHVEN, DAVID A.--see MACDONALD et al.	
Micropogonias undulatus--see Croaker, Atlantic	
Midshipman, plainfin	
environmental variables.....	165

increment formation.....	165	"A note on spawning of the Pacific market squid, <i>Loligo opalescens</i> (Berry, 1911), in the Barkley Sound region, Vancouver Island, Canada," by Ronald L. Shimek, David Fyfe, Leah Ramsey, Anne Bergey, Joel Elliott, and Stewart Guy.....	445
microstructure examination.....	165	"The occurrence of piscine erythrocytic necrosis (PEN) in the sea lamprey, <i>Petromyzon marinus</i> , from several Maine localities," by Stuart W. Sherburne.....	541
rearing.....	165-166	Ocean habitat.....	149-154
Migration		Ocean pout	
crab, horseshoe.....	383	Bay of Fundy-Gulf of Maine.....	132
diel, blacksmith.....	202	<i>Octopus bimaculatus</i> —see Octopus, two-spotted	
diurnal/vertical, gulf menhaden.....	517	Octopus, two-spotted.....	68
salmon, chinook.....	157	<i>Odontaspis taurus</i> —see Shark, sand tiger	
salmon, sockeye.....	405	<i>Oncorhynchus nerka</i> —see Salmon, sockeye	
vertical, ichthyoplankton.....	103	<i>Oncorhynchus tshawytscha</i> —see Salmon, chinook	
MINELLO, THOMAS J.—see ZIMMERMAN et al.		O'NEIL, STEVEN P.—see SMITH et al.	
Mississippi fishery.....	427	Opakaka—see Snapper, pink	
<i>Morone americana</i> —see Perch, white		Oregon fishery.....	270
Morphology		Otoliths	
crabs, lithodid, larvae.....	321	daily growth increments.....	165
croaker, white.....	179	growth increments.....	237-240
eel, American.....	519	herring, Pacific.....	113
mackerel, Spanish.....	545	increment counting, scanning electron microscope.....	434
shrimp, mantis.....	424	increment formation rate.....	237, 240
walleye.....	412	juvenile fish.....	240
"Morphology, systematics, and biology of the Spanish mackerels (<i>Scomberomorus</i> , <i>Scombridae</i>)," by Bruce B. Collette and Joseph L. Russo.....	545	larvae.....	240
MORRIS, PAMELA A., "Feeding habits of blacksmith, <i>Chromis punctipinnis</i> , associated with a thermal outfall".....	199	midshipman, plainfin.....	164, 165
MORRIS, PAMELA A.—see LOVE et al.		tetracycline marking.....	208, 237-240
Mortality rates		tuna, bluefin.....	434
anchovy, northern.....	71	PAGE, GARY W.—see ALLEN et al.	
calculation.....	449	<i>Panulirus marginatus</i> —see Lobster, spiny	
clam.....	541	Parasite studies	
crab, horseshoe.....	388	olive rockfish.....	530
density-dependent searching time.....	449	"Parasites of olive rockfish, <i>Sebastes serranoides</i> , (<i>Scorpaenidae</i>) off central California," by Milton S. Love, Kimberly Shriner, and Pamela Morris.....	530
drum, banded.....	342	Parasites, rockfish.....	530
rockfish.....	71	PARDY, CHRISTOPHER—see TETTEY et al.	
salmon.....	412, 413	<i>Parophrys vetulus</i> —see Sole, English	
salmon, sockeye.....	404	Particle counter, zooplankton.....	142
squid.....	71	Passamaquoddy Bay—see Gulf of Maine	
triggerfish, gray.....	486	PAYNE, P. MICHAEL, and DAVID C. SCHNEIDER, "Yearly changes in abundance of harbor seals, <i>Phoca vitulina</i> , at a winter haul-out site in Massachusetts".....	440
whiting, Pacific.....	71	PEARCY, W., T. NISHIYAMA, T. FUJII, and K. MASUDA, "Diel variations in the feeding habits of Pacific salmon caught in gill nets during a 24-hour period in the Gulf of Alaska".....	391
Movement patterns		PEARCY, WILLIAM G.—see BRODEUR and PEARCY	
analyses and production.....	450	<i>Penaeus aztecus</i> —see Shrimp, brown	
char, Arctic.....	405	Perch, kelp.....	37
drum, banded.....	351, 352	Perch, Pacific ocean.....	270
MURAWSKI, STEVEN A.—see ROPES et al.		Perch, white	
MUSICK, J. A.—see COLVOCORESSES and MUSICK		marsh habitat.....	457
Mussel, blue.....	387	<i>Petromyzon marinus</i> —see Lamprey, sea	
<i>Mya arenaria</i> —see Clam		<i>Phoca vitulina</i> —see Seal, harbor	
MYRICK, ALBERT C., JR., EDWARD W. SHALLENBERGER, INGRID KANG, and DAVID B. MACKAY, "Calibration of dental layers in seven captive Hawaiian spinner dolphins, <i>Stenella longirostris</i> , based on tetracycline labeling".....	207		
Mysids.....	55		
<i>Mytilus edulis</i> —see Mussel, blue			
Nekton			
collection.....	456-457		
community composition.....	459-460		
marsh habitats.....	455-466		
seasonality.....	458-459		
tidal creeks.....	456		
NELSON, WALTER R.—see EPPERLY and NELSON			
New Jersey fishery.....	384		
New York Bight fishery.....	502		
NISHIYAMA, T.—see PEARCY et al.			
Norwegian fishery.....	144		

PHONLOR, G.—see HOSS and PHONLOR	
Pinfish.....	378
Pinnipeds, sea lions, California—see Sea lions, California	
<u>Pogonias cromis</u> —see Drum, black	
Population studies	
Bay of Fundy-Gulf of Maine.....	121-139
clam.....	537
crab, Dungeness.....	469, 471
crab, horseshoe.....	383
drum, banded.....	353, 359
fish, kelp forest.....	37
growth rate sensitivities.....	537
kingfish, southern.....	430
lobster, spiny.....	693, 694
mathematical techniques.....	449
seal, harbor.....	440
shrimp, mantis.....	420
shrimp, rock.....	715
snapper, deepwater.....	703
snapper, pink.....	703
<u>Porichthys notatus</u> —see Midshipman, plainfin	
"Postovulatory follicle histology of the Pacific sardine, <u>Sardinops sagax</u> from Peru," by Stephen R. Goldberg, Victor Hugo Alarcon, and Juergen Alheit.....	443
Predation—see Mortality rates	
<u>Pristopomoides filamentosus</u> —see Snapper, pink	
Quahog, ocean	
acetate peel images.....	1
age.....	2, 18
age-size.....	254-256
gonad condition.....	259-262
growth.....	2, 3, 16
growth increments.....	251
sexual maturation.....	262-264
shell microstructure.....	1, 13, 16
"Quantitative and qualitative bacteriology of elasmobranch fish from the Gulf of Mexico," by John D. Buck.....	375
RADTKE, RICHARD, "Scanning electron microscope evidence for yearly growth zones in giant bluefin tuna, <u>Thunnus thynnus</u> , otoliths from daily increments".....	434
RAMSEY, LEAH—see SHIMEK et al.	
Ray, cownose.....	378
Recreational fishery	
croaker, white.....	196
Recruitment	
crab, Dungeness.....	478
drum, banded.....	229, 344, 351
lobster, American.....	244
"Reproduction, movements, and population dynamics of the banded drum, <u>Larimus fasciatus</u> , in the Gulf of Mexico," by Gary W. Standard and Mark E. Chittenden, Jr.....	337
"Reproduction of the banded drum, <u>Larimus fasciatus</u> , in North Carolina," by Steve W. Ross.....	227
"Reproduction of weakfish, <u>Cynoscion regalis</u> , in the New York Bight and evidence for geographically specific life history characteristics," by Gary R. Shepherd and Churchill B. Grimes.....	501
Reproductive biology	
cod, Arcto-Norwegian.....	141
croaker, white.....	180
dolphin, spinner.....	224
drum, banded.....	227, 337
lobster.....	529
lobster, American.....	242, 244
quahog, ocean.....	253, 259
sardine, Pacific.....	443
shrimp, mantis.....	418, 421
squid, Pacific market.....	445
weakfish.....	501
<u>Rhinoptera bonasus</u> —see Ray, cownose	
RIBIC, CHRISTINE A.—see ALLEN et al.	
"Ring deposition in the otoliths of larval Pacific herring, <u>Clupea harengus pallasii</u> ," by Michael D. McGurk.....	113
ROCKETTE, MARK D., GARY W. STANDARD, and MARK E. CHITTENDEN, Jr., "Bathymetric distribution, spawning periodicity, sex ratios, and size compositions of the mantis shrimp, <u>Squilla empusa</u> , in the northwestern Gulf of Mexico".....	418
Rockfish.....	68
diet variations.....	273-275
distribution of prey.....	288-290
food habits.....	272-273, 275
fork length/total length.....	251
measurement.....	249
standard length/fork length.....	250-251
Rockfish, canary.....	270
Rockfish, darkblotched.....	270
Rockfish, olive	
parasites.....	531-536
seasonal patterns of infection.....	534-536
size.....	530-531
Rockfish, splitnose.....	270
Rockfish, yellowtail.....	270
ROGERS, DONALD E.—see RUGGERONE and ROGERS	
ROPES, JOHN W., DOUGLAS S. JONES, STEVEN A. MURAWSKI, FREDRIC M. SERCHUK, and AMBROSE JERALD, Jr., "Documentation of annual growth lines in ocean quahogs, <u>Arctica islandica</u> Linne".....	1
ROPES, JOHN W., STEVEN A. MURAWSKI, and FREDRIC SERCHUK, "Size, age, sexual maturity, and sex ratio in ocean quahogs, <u>Arctica islandica</u> Linne, off Long Island, New York".....	253
ROSS, STEVE W., "Reproduction of the banded drum, <u>Larimus fasciatus</u> , in North Carolina".....	227
RUGGERONE, GREGORY T., and DONALD E. ROGERS, "Arctic char predation on sockeye salmon smolts at Little Togiak River, Alaska".....	401
RUSSO, JOSEPH L.—see COLLETTE and RUSSO	
Sablefish.....	68
Salmon, chinook	
lunar phase.....	161
migration.....	157-162
release time.....	159, 160-163
size and growth.....	160-161
Salmon, chum.....	395
Salmon, coho.....	395
Salmon, Pacific	
diet change, diel.....	396
feeding habits.....	393
prey composition.....	392-394
vertical distribution.....	392
Salmon, sockeye.....	394
migration.....	401, 403
smolts.....	401
SALOMAN, CARL H.—see JOHNSON and SALOMAN	
Salt marsh habitat	
shrimp, brown.....	325
<u>Salvelinus alpinus</u> —see Char, Arctic	
SAMOLLOV, PAUL B.—see SHAKLEE and SAMOLLOV	

Sampling methods			
Ichthyoplankton.....	98		
kelp forest.....	38		
Sardine, Pacific			
follicle condition.....	443-444		
spawning.....	443		
<u>Sardinops sago</u> —see Sardine, Pacific			
"Scanning electron microscope evidence for yearly growth zones in giant bluefin tuna, <i>Thunnus thynnus</i> , otoliths from daily increments," by RICHARD MADTKE.....	434		
SCHMITT, P. D., "Marking growth increments in otoliths of larval and juvenile fish by immersion in tetracycline to examine the rate of increment formation".....	237		
SCHNEIDER, DAVID C.—see PAYNE and SCHNEIDER			
<u>Scomber japonicus</u> —see Mackerel, chub			
<u>Scomberomorus brasiliensis</u> —see Mackerel, serra Spanish			
<u>Scomberomorus cavalla</u> —see Mackerel, king			
<u>Scomberomorus commerson</u> —see Mackerel, narrow-barred king			
<u>Scomberomorus concolor</u> —see Mackerel, Monterey Spanish			
<u>Scomberomorus guttatus</u> —see Mackerel, Indo-Pacific king			
<u>Scomberomorus koreanus</u> —see Seerfish, Korean			
<u>Scomberomorus lineolatus</u> —see Seerfish, streaked			
<u>Scomberomorus maculatus</u> —see Mackerel, Spanish			
<u>Scomberomorus multiradiatus</u> —see Seerfish, Papuan			
<u>Scomberomorus munroi</u> —see Mackerel, Australian spotted			
<u>Scomberomorus niphonius</u> —see Mackerel, Japanese Spanish			
<u>Scomberomorus plurineatus</u> —see Mackerel, queen			
<u>Scomberomorus queenslandicus</u> —see Mackerel, Queensland school			
<u>Scomberomorus regalis</u> —see Cero			
<u>Scomberomorus semifasciatus</u> —see Mackerel, broad-barred Spanish			
<u>Scomberomorus sierra</u> —see Sierra			
<u>Scomberomorus sinensis</u> —see Seerfish, Chinese			
<u>Scomberomorus tritor</u> —see Mackerel, West African Spanish			
Sculpin, prickly			
prey of walleye.....	412		
Sculpins			
Bay of Fundy-Gulf of Maine.....	132		
Scup			
distribution.....	83		
eggs.....	78		
fin development.....	80-81		
larvae.....	79		
ossification.....	82-83		
pigment.....	81-82		
preopercular spines.....	83		
Sea lions, California			
feeding habits.....	74		
prey.....	67		
rookeries.....	67		
seasonal distribution.....	67		
species occurrence.....	69		
Seagrass.....	455		
fish inhabiting.....	37		
kelp forests, California.....	37		
Seal, harbor			
abundance in Massachusetts.....	440		
disturbances.....	495		
population.....	440, 498		
rate of increase.....	441		
seasonal disturbances.....	495, 498-499		
Seaperch, white.....	37		
Seasonal effects			
Bay of Fundy-Gulf of Maine.....	124, 136		
drum, banded.....	339		
groundfish.....	298		
kingfish, southern.....	429		
rockfish.....	280		
rockfish, olive.....	534		
salmon, chinook.....	157		
seal, harbor.....	495		
walleye.....	413		
weakfish.....	503		
<u>Sebastes alutus</u> —see Perch, Pacific ocean			
<u>Sebastes crameri</u> —see Rockfish, darkblotched			
<u>Sebastes diploproa</u> —see Rockfish, splitnose			
<u>Sebastes flavidus</u> —see Rockfish, yellowtail			
<u>Sebastes pinniger</u> —see Rockfish, canary			
<u>Sebastes serranoides</u> —see Rockfish, olive			
<u>Sebastes spp.</u> —see Rockfish			
Seerfish, Chinese			
biology.....	667		
fisheries.....	667-668		
geographic variation.....	668		
species type.....	665-667		
Seerfish, Korean			
biology.....	637-638		
fisheries.....	638		
geographic variation.....	638		
species type.....	636-637		
Seerfish, Papuan			
biology.....	647		
fisheries.....	647		
species type.....	646		
Seerfish, streaked			
fisheries.....	640		
geographic variation.....	641		
species type.....	638-639		
"Selection of vegetated habitat by brown shrimp, <i>Penaeus aztecus</i> , in a Galveston Bay salt marsh," by Roger J. Zimmerman, Thomas J. Minello, and Gilbert Zamora, Jr.....	325		
Senorita.....	37		
"Sensitivity of the population growth rate to changes in single life history parameters: its application to <i>Mya arenaria</i> (Mollusca: Pelecypoda)," by Diane J. Brousseau and Jenny A. Baglivo.....	537		
SERCHUK, FREDRIC M.—see ROPES et al.			
SERTIC, PETER D.—see BARNETT et al.			
Shad, American			
interaction with walleye.....	411		
SHAKLEE, JAMES B., and PAUL B. SAMOLLOU, "Genetic variation and population structure in a deepwater snapper, <i>Pristipomoides filamentosus</i> , in the Hawaiian archipelago".....	703		
SHAKLEE, JAMES B., and PAUL B. SAMOLLOU, "Genetic variation and population structure in a spiny lobster, <i>Panulirus marginatus</i> , in the Hawaiian archipelago".....	693		
SHALLENBERGER, EDWARD W.—see MYRICK et al.			
Shark, nurse.....	376		
Shark, sand tiger.....	375		

Shark, shovelhead.....	378	<i>Spisula solidissima</i> —see Clam, surf
Sheephead, California.....	37	"Spring and summer prey of California sea lions, <i>Zalophus californianus</i> , at San Miguel Island, California, 1978-79," by George A. Antonelis Jr., Clifford H. Fiscus, and Robert L. DeLong.....
Shell growth quahog, ocean.....	13	67
SHEPHERD, GARY R., and CHURCHILL B. GRIMES, "Reproduction of weakfish, <i>Cynoscion regalis</i> , in the New York Bight and evidence for geographically specific life history characteristics".....	501	<i>Squalus acanthias</i> —see Dogfish, spiny
SHERBURNE, STUART W., "The occurrence of piscine erythrocytic necrosis (PEN) in the sea lamprey, <i>Petromyzon marinus</i> , from several Maine localities".....	541	Squid, market.....
SHIMEK, RONALD L., DAVID FYFE, LEAH RAMSEY, ANNE BERGEY, JOEL ELLIOTT, and STEWART GUY, "A note on spawning of the Pacific market squid, <i>Loligo opalescens</i> (Berry, 1911), in the Barkley Sound region, Vancouver Island, Canada".....	445	Squid, Pacific market embryological stage.....
Shrimp.....	55	spawning.....
zoa.....	523	<i>Squilla empusa</i> —see Shrimp, mantis
Shrimp, brown		STANDARD, GARY W.—see ROCKETTE et al.
abiotic relationships.....	331-332	STANDARD, GARY W., and MARK E. CHITTENDEN, Jr., "Reproduction, movements, and population dynamics of the banded drum, <i>Larimus fasciatus</i> , in the Gulf of Mexico".....
density-habitat.....	332-333	337
density-temperature.....	332	<i>Stenella longirostris</i> —see Dolphin, Hawaiian spinner
habitat selection.....	325	<i>Stenobrachius leucopsarus</i> —see Lampfish, northern
predation.....	331	<i>Stenotomus chrysops</i> —see Scup
Shrimp, mantis		STEVENS, BRADLEY G., and DAVID A. ARMSTRONG, "Distribution, abundance, and growth of juvenile Dungeness crabs, <i>Cancer magister</i> , in Grays Harbor estuary, Washington".....
distribution.....	418, 420, 424	469
life history.....	418	<i>Stizostedion vitreum vitreum</i> —see Walleye
sex ratio.....	420, 422	Stock assessment—see Population studies
size composition.....	420, 422	SWARTZ, A. NELSON—see TETTEY et al.
Shrimp, rock		Swim bladder, menhaden.....
abundance.....	717	513
biometric relationships.....	718	Systematics studies
diet.....	717-718	mackerel, Spanish.....
distribution.....	716-717	545
Shrimp vessels, Gulf of Mexico		"Tag-recapture validation of molt and egg extrusion predictions based upon pleopod examination in the American lobster, <i>Homarus americanus</i> ," by G. P. Ennis... 242
costs.....	365	Tagging
revenue.....	366-367, 369-370	eel, American.....
SHRINER, KIMBERLY—see LOVE et al.		lobster, American.....
<i>Sicyonia pencilata</i> —see Shrimp, rock		tetracycline.....
Sierra		208, 237
biology.....	665	Taxonomy
fisheries.....	665	mackerel, Spanish.....
geographic variation.....	665	shrimp.....
species type.....	662-664	545
"Size, age, sexual maturity, and sex ratio in ocean quahogs, <i>Arctica islandica</i> Linne, off Long Island, New York," by John W. Ropes, Steven A. Murawski, and Fredric M. Serchuk.....	253	523
SMITH, STEPHEN M., JAMES G. HOFF, STEVEN P. O'NEIL, and MICHAEL P. WEINSTEIN, "Community and trophic organization of nekton utilizing shallow marsh habitats, York River, Virginia".....	455	TETTEY, ERNEST, CHRISTOPHER PARDY, WADE GRIFFIN, and A. NELSON SWARTZ, "Implications of investing under different economic conditions on the profitability of Gulf of Mexico shrimp vessels operating out of Texas"... 365
Smoothtongue, California.....	68	Thermal effluent effects.....
Snapper, pink		199-202
allele examination.....	707-709	<i>Thunnus thynnus</i> —see Tuna, bluefin
electrophoresis.....	704	TILSETH, S., and B. ELLERTSEN, "The detection and distribution of larval Arcto-Norwegian cod, <i>Gadus morhua</i> , food organisms by an in situ particle counter".....
enzyme variation.....	704-705	141
genetic differentiation.....	710	Triggerfish, gray
Sole, English.....	113	age estimation.....
Spawning—see Reproductive biology		annual mortality.....
"Species associations and community composition of Middle Atlantic Bight continental shelf demersal fishes," by J. A. Colvocoresses and J. A. Musiak.....	295	growth.....
<i>Sphyrna tiburo</i> —see Shark, shovelhead		488-490
<i>Spirontocaris murchiei</i> —see Shrimp		<i>Trinectes maculatus</i> —see Hogchoaker
		Tuna, bluefin
		growth.....
		otoliths.....
		434, 435
		Vegetation—see Habitat effects

Vessel costs.....	365
Walleye	
diel periodicity.....	414-415
feeding ecology.....	411
prey.....	413, 415
WATSON, WILLIAM--see BARNETT et al.	
Weakfish	
history.....	500
marsh habitat.....	457
reproduction.....	501, 502, 510
WEINSTEIN, MICHAEL P.--see SMITH et al.	
WESTPHAL, WILLIAM--see LOVE et al.	
Whiting, Pacific.....	68
"Yearly changes in abundance of harbor seals, <i>Phoca vitulina</i> , at a winter haul-out site in Massachusetts," by P. Michael Payne and David C. Schneider.....	440
<u>Zalophus californianus</u> --see Sea lions, California	
ZAMORA, GILBERT, Jr.--see ZIMMERMAN et al.	
ZIMMERMAN, ROGER J., THOMAS J. MINELLO, and GILBERT ZAMORA, Jr., "Selection of vegetated habitat by brown shrimp, <i>Penaeus aztecus</i> , in a Galveston Bay salt marsh".....	325
Zoeae--see Larvae	
Zooplankton	
effluent effects.....	204
kelp forest.....	55
shallow coastal water.....	97, 188