NOAA Technical Memorandum NMFS-F/NEC-96

An Indexed Bibliography of Northeast Fisheries Science Center Publications and Reports for 1989

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65. **Stock Assessment Information for Pollock, *Pollachius virens* (L.), in the Scotian Shelf, Georges Bank, and Gulf of Maine Regions.** By Ralph K. Mayo, Stephen H. Clark, and M. Christina Annand. April 1989. vi + 14 p., 6 figs., 14 tables. NTIS Access. No. PB90-120676/AS.

66. **Guidelines for Estimating Lengths at Age for 18 Northwest Atlantic Finfish and Shellfish Species.** By Judith A. Pentilla, Gary A. Nelson, and John M. Burnett, III. May 1989. iii + 39 p., 18 figs., 19 tables. NTIS Access. No. PB90-120675/AS.

67. **Response of the Habitat and Biota of the Inner New York Bight to Abatement of Sewage Sludge Dumping. Second Annual Progress Report -- 1988.** By Environmental Processes Division, Northeast Fisheries Center. July 1989. vii + 47 p., 39 figs., 11 tables, 3 app. NTIS Access. No. PB90-125444/AS.

68. **MARMAP Surveys of the Continental Shelf from Cape Hatteras, North Carolina, to Cape Sable, Nova Scotia (1984-87). Atlas No. 3. Summary of Operations.** By John D. Sibunka and Myron J. Silverman. July 1989. iv + 197 p., 36 figs., 2 tables. NTIS Access. No. PB90-160656/AS.

69. **The 1988 Experimental Whiting Fishery: A NMFS/Industry Cooperative Program.** By Frank P. Almeida, Thurston S. Burns, and Sukwoo Chang. August 1989. v + 16 p., 9 figs., 11 tables, 1 app. NTIS Access. No. PB90-160664/AS.

70. **Summer Distribution of Regulated Species on Georges Bank with Reference to the 1988 Experimental Whiting Fishery.** By Frank P. Almeida, Sukwoo Chang, and Thurston S. Burns. September 1989. v+ 25 p., 74 figs., 1 table. NTIS Access. No. PB90-206525/AS.

71. **Allocation of Statewide-Reported MRFSS Catch and Landings Statistics between Areas: Application to Winter Flounder.** By Frank P. Almeida. September 1989. v + 18 p., 5 figs., 6 tables, 2 app. NTIS Access. No. PB90-246745.

72. **Status of the Fishery Resources off the Northeastern United States for 1989.** By Conservation and Utilization Division, Northeast Fisheries Center. December 1989. iv + 110 p., 50 figs., 93 tables. NTIS Access. No. PB90-170622/AS.

73. **Surface and Bottom Temperature Distribution for the Northeast Continental Shelf.** By David G. Mountain and Tamara J. Holzwarth. December 1989. iii + 32 p., 31 figs. NTIS Access. No. PB90-252172/AS.

74. **Shell Disease of Crustaceans in the New York Bight.** By C.J. Sindermann (chair.), F. Csulak (EPA coord.), T.K. Sawyer (rapp.), R.A. Bullis, D.W. Engel, B.T. Estrella, E.J. Noga, J.B. Pearce, J.C. Rugg, R. Runyon, J.A. Tiedemann, and R.R. Young. December 1989. vii + 47 p., 7 figs., 4 tables, 4 app. NTIS Access. No. PB90-195058/AS.

75. **An Indexed Bibliography of Northeast Fisheries Center Publications and Reports for 1988.** By Jon A. Gibson. December 1989. iii + 32 p. NTIS Access. No. PB91-112912.

76. **Finfish Maturity Sampling and Classification Schemes Used during Northeast Fisheries Center Bottom Trawl Surveys, 1963-89.** By Jay Burnett, Loretta O'Brien, Ralph K. Mayo, Jeffrey A. Darde, and Margot L. Bohan. December 1989. iii+14 p., 11 tables, 1 app. NTIS Access. No. PB91-128389/AS.

77. **Shell Disease among Red Crabs Inhabiting Submarine Canyons of the New York Bight.** By Randall R. Young. December 1989. iii+9 p., 18 figs., 5 tables. NTIS Access. No. PB90-194762/AS.

78. **Seasonal Distribution Patterns of Commercial Landings of 45 Species off the Northeastern United States during 1977-88.** By Sukwoo Chang. October 1990. v+130 p., 246 figs. NTIS Access. No. PB91-160846.

(continued on inside back cover)

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Single copies of most (but not all) listed publications, reports, and abstracts are available free of charge -- subject to supply. Address all requests to: Information Services Unit, Northeast Fisheries Science Center, 166 Water St., Woods Hole, MA 02543-1097, USA.

TABLE OF CONTENTS

Introduction 1
Bibliography 1
Publications in Peer-Reviewed Media 1
Publications in Non-Peer-Reviewed Media 3
Published Abstracts 7
Indices 10
Organisms 10
Geographic Areas 13
Topical Subjects 14
Center Authors 18

INTRODUCTION

The following list of peer-reviewed publications, non-peer-reviewed publications, and published abstracts by Northeast Fisheries Science Center employees is the 13th issue in an annual series of such lists. The lists for 1977-83 were issued as the "Collected Reprints of the Northeast Fisheries Center" ("Collected Reprints"). Each issue of the Collected Reprints included a copy of each peer-reviewed publication by Center employees. The lists for 1984-86 were issued as the "Northeast Fisheries Center Publications and Reports" ("Publications List"). The 1984 issue of the Publications List included a list of the peer-reviewed publications by Center employees. The 1985 and 1986 issues of the Publications List included a list of both peer-reviewed publications and some of the non-peer-reviewed publications and reports by Center employees. Primary purpose of the Collected Reprints and Publications List was documentation of Center publications and reports.

The list for 1987 was issued as "An Indexed Bibliography of Northeast Fisheries Center Publications and Reports" ("Indexed Bibliography"). The Indexed Bibliography expanded the purpose of the series to include not only documentation, but also reference. The reference role was accomplished through subject and author indices. The subject index was further divided into three subindices -- "Organisms," "Areas," and "Topics" -- to facilitate its use by those in the fisheries research and management fields. The 1988 issue of the Indexed Bibliography differed from the 1987 issue in that published abstracts were included, and that indices were cross-referenced. This 1989 issue is similar to the 1988 issue.

Some of the publications and reports by Center employees deal more with administrative than scientific matters. Consequently, not all publications and reports are appropriate for this document. Only those publications and reports are included that have been specifically identified and provided by the Center's Executive Staff. Several publications and reports which have 1988 publication dates, but which were inadvertently omitted by the Executive Staff from the 1988 issue, have been included in this 1989 issue. They are noted by a "*." Authors who were Center employees at the time they prepared their publications and reports, and/or who were Center employees during 1989, are denoted in the list by all capital letters.

Editorial treatment of bibliographic entries is based on the *CBE Style Manual*, third edition (1972). Although more recent editions (*i.e.*, fourth and fifth) are available, the third edition has been used to maintain consistency of editorial treatment among the issues of this series of publications lists. Also, there are many foreign recipients of the issues of this series, most of whom do not use English as a primary language. Because English-language-based acronyms are particularly difficult to comprehend by non-English-using readers, I have employed the editorial convention of including the standardized abbreviations of acronyms within squared brackets immediately following the acronyms.

BIBLIOGRAPHY

PUBLICATIONS IN PEER-REVIEWED MEDIA

1. Anderson, D.P., O.R. Dixon, J.E. BODAMMER, and E.F. Lizzio. 1989. Suppression of antibody producing cells in rainbow trout spleen sections exposed to copper *in vitro*. *J. Aquat. Anim. Health* 1: 57-61.

2. Bartlett, D.S., K.B. Bartlett, J.M. Hartman, R.C. Harriss, D.I. Sebacher, R. Pelletier-Travis, D.D. DOW, and D.P. Brannon. 1989. Methane emissions from the Florida Everglades: patterns of variability in a regional wetland ecosystem. *Global Biogeochem. Cycles* 3(4): 363-374.

3. BERMAN, M.S., A.L. McVEY, and G. Ettershank. 1989. Age determination of Antarctic krill using fluorescence and image analysis of size. *Polar Biol.* 9: 267-271.

4. BLOGOSLAWSKI, W.J. 1989. Depuration and clam culture. Chapter 17 (pages 415-426) *in* J.J. Manzi and M. Castagna, eds. Clam mariculture in North America. Elsever Science Publishers B.V., Amsterdam, The Netherlands.

5. *DESPRES-PATANJO, L.I., T.R. AZAROVITZ, and C.J. BYRNE. 1988. Twenty-five years of fish surveys in the Northwest Atlantic: the NMFS Northeast Fisheries Center's bottom trawl survey program. *Mar. Fish. Rev.* 50(4): 69-71.

6. FAHAY, M.P. 1989. The ontogeny of *Steindachneria argentea* Goode and Bean with comments on its relationships. Pages 143-158 *in* D.M. Cohen, ed. Papers on the systematics of gadiform fishes. *Natur. Hist. Mus. Los Ang. Cty. Sci. Ser.* 32.

7. FARLEY, C.A. 1989. Selected aspects of neoplastic progression in mollusks. Chapter 4 (pages 24-31) *in* H.E. Kaiser, ed. Comparative aspects of tumor development. Kluwer Academic Publishers, Dordrecht, The Netherlands.

8. Felley, J.D., M. VECCHIONE, G.R. Gaston, and S.M. Felley. 1989. Habitat selection by demersal nekton: analysis of videotape data. *Northeast Gulf. Sci.* 10(2): 69-84.

9. FOGARTY, M.J. 1989. Forecasting yield and abundance of exploited invertebrates. Chapter 31 (pages 701-724) *in* J.F. Caddy, ed. Marine invertebrate fisheries: their assessment and management. John Wiley & Sons, Inc., New York.

10. Gibbons, M.C., and W.J. BLOGOSLAWSKI. 1989. Predators, pests, parasites, and diseases. Chapter 7 (pages 167-200) *in* J.J. Manzi and M. Castagna, eds. Clam mariculture in North America. Elsever Science Publishers B.V., Amsterdam, The Netherlands.

11. GOLDBERG, R. 1989. Biology and culture of the surf clam. Chapter 10 (pages 263-276) *in* J.J. Manzi and M. Castagna, eds. Clam mariculture in North America. Elsever Science Publishers B.V., Amsterdam, The Netherlands.

12. KRZYNOWEK, J., D.D. D'ENTREMONT, and J. MURPHY. 1989. Proximate composition and fatty acid and cholesterol content of squid, *Loligo pealei* and *Illex illecebrosus*. *J. Food Sci.* 54(1): 45-48.

13. KRZYNOWEK, J., J. MURPHY, R.S. MANEY, and L.J. PANUNZIO. 1989. Proximate composition and fatty acid and cholesterol content of 22 species of Northwest Atlantic fish. *NOAA* [Nat. Ocean. Atmos. Admin.] *Tech. Rep. NMFS* [Nat. Mar. Fish. Serv.] 74. 35 pp.

14. KRZYNOWEK, J., and L.J. PANUNZIO. 1989. Cholesterol and fatty acids in several species of shrimp. *J. Food Sci.* 54(2): 237-239.

15. Lazzari, M.A., K.W. Able, and M.P. FAHAY. 1989. Life history and food habits of the grubby, *Myoxocephalus aeneus* (Cottidae), in a Cape Cod estuary. *Copeia* 1989(1): 7-12.

16. LOUGH, R.G., and G.R. BOLZ. 1989. The movement of cod and haddock larvae onto the shoals of Georges Bank. *J. Fish Biol.* 35(Suppl. A): 71-79.

17. LOUGH, R.G., and R.W. Trites. 1989. Chaetognaths and oceanography on Georges Bank. *J. Mar. Res.* 47(2): 343-369.

18. LOUGH, R.G., P.C. Valentine, D.C. POTTER, P.J. AUDITORE, G.R. BOLZ, J.D. Neilson, and R.I. Perry. 1989. Ecology and distribution of juvenile cod and haddock in relation to sediment type and bottom currents on eastern Georges Bank. *Mar. Ecol. Prog. Ser.* 56: 1-12.

19. MacKENZIE, C.L., Jr. 1989. A guide for enhancing estuarine molluscan shellfisheries. *Mar. Fish. Rev.* 51(3): 1-47.

20. MAHONEY, J.B. 1989. Algae assay of relative abundance of phytoplankton nutrients in Northeast United States coastal and shelf waters. *Water Res.* 23(5): 603-615.

21. MAHONEY, J.B. 1989. Detrimental biological effects of phytoplankton blooms deserve increased attention. Pages 575-597 *in* E.M. Cosper, V.M. Bricelj, and E.J. Carpenter, eds. Coastal and estuarine studies 35: novel phytoplankton blooms--causes and impacts of recurrent brown tides and other unusual blooms. Springer-Verlag, New York.

22. MORSE, W.W. 1989. Catchability, growth, and mortality of larval fishes. *Fish. Bull., U.S.* 87(3): 417-446.

23. MOUNTAIN, D.G., M. Pastuszak, and D.A. BUSCH. 1989. Slope water intrusion to the Great South Channel during autumn, 1977-85. *J. Northwest Atl. Fish. Sci.* 9: 97-102.

24. MUNROE, T.A., and M.N. Mahadeva. 1989. *Symphurus callopterus* (Cynoglossidae, Pleuronectiformes), a new deepwater tonguefish from the eastern Pacific. *Proc. Biol. Soc. Wash.* 102(2): 458-467.

25. NIZINSKI, M.S. 1989. Ecological distribution, demography and behavioral observations on *Periclimenes anthophilus*, an atypical symbiotic cleaner shrimp. *Bull. Mar. Sci.* 45(1): 174-188.

26. PETERSON, A.E., Jr. 1989. Joint Polish-U.S. research in fisheries. *Bull. Sea Fish. Inst.* 3-4(113-114): 5-7.

27. POLACHECK, T. 1989. Harbor porpoises and the gillnet fishery. *Oceanus* 32: 63-70.

28. POLACHECK, T. 1989. Yellowfin tuna, *Thunnus albacares*, catch rates in the western Pacific. *Fish. Bull., U.S.* 87(1): 123-144.

29. POLACHECK, T., and T.D. SMITH. 1989. A proposed methodology for field testing line transect theory for shipboard surveys of cetaceans. *Rep. Int. Whal. Comm.* 39: 341-345.

30. POTTER, D.C., R.G. LOUGH, R.I. Perry, and J.D. Neilson. 1989. Comparison of the MOCNESS and IYGPT pelagic samplers for the capture of O-group cod *(Gadus morhua)* on Georges Bank. *J. Cons. Int. Explor. Mer* 46: 121-128.

31. SAWYER, T.K., E.J. LEWIS, J. Musselman, W.N. Adams, J. Gaines, L. Chandler, and S. Rippey. Sew-

age-associated protozoans (Amoebida) and bacteria as indicators of the sanitary quality of commercial shellfish beds. Chapter 7 (pages 73-81) *in* D.W. Hood, A. Shoener, and P.K. Park, eds. Oceanic processes in marine pollution. Volume 4. Scientific monitoring strategies for ocean waste disposal. Robert E. Krieger Publishing Co., Malabar, Fla.

32. SHERMAN, K. 1989. Biomass yields of large marine ecosystems. Pages 117-137 *in* E.M. Borgese, N. Ginsburg, and J.R. Morgan, eds. Ocean Yearbook 8. University of Chicago Press, Chicago, Ill.

33. SHERMAN, K. 1989. Introduction to part one: case studies of perturbations in large marine ecosystems. Chapter 1 (pages 3-6) *in* K. Sherman and L.M. Alexander, eds. Biomass yields and geography of large marine ecosystems. *AAAS* [Amer. Assoc. Adv. Sci.] *Sel. Symp.* 111.

34. SHERMAN, K. 1989. Large marine ecosystems: a case study. Pages 97-114 *in* L.M. Alexander, S. Allen, and L.C. Hanson, eds. New developments in marine science and technology: economic, legal and political aspects of change--proceedings of the 22nd Annual Conference of the Law of the Sea Institute, June 12-16, 1988, Narragansett, RI. The Law of the Sea Institute, Honolulu, Hawaii.

35. SHERMAN, K. 1989. Large marine ecosystems: a concept for assessing and monitoring global marine biomass change. *Bull. Sea Fish. Inst.* 3-4(113-114): 25-36.

36. SHERMAN, K., and L.M. Alexander, eds. 1989. Biomass yields and geography of large marine ecosystems. *AAAS* [Amer. Assoc. Adv. Sci.] *Sel. Symp.* 111. 493 pp.

37. *SMITH, T.D. 1988. Stock assessment methods: the first fifty years. Chapter 1 (pages 1-33) *in* J.A. Gulland, ed. Fish population dynamics, 2nd ed. John Wiley & Sons, Ltd., Chichester, England.

38. Springer, V.G., and B.B. COLLETTE. 1989. [Obituary:] Robert H. Gibbs, Jr. 1929-1988. *Copeia* 1989(1): 245-251.

39. Sunila, I., and C.A. FARLEY. 1989. Environmental limits for survival of sarcoma cells from the soft-shell clam *Mya arenaria*. *Dis. Aquat. Org.* 7: 111-115.

40. *THEROUX, R.B., ed. 1988. The Woods Hole Laboratory, 1885-1985: a century of service. *Mar. Fish. Rev.* 50(4): 1-68.

41. Tyler, J.C., G.D. Johnson, I. Nakamura, and B.B. COLLETTE. 1989. Morphology of *Luvarus imperialis* (Luvaridae), with a phylogenetic analysis of the Acanthuroidei (Pisces). *Smithson. Contrib. Zool.* No. 485. 78 pp.

42. VECCHIONE, M. 1989. Zooplankton distribution in three estuarine bayous with different types of anthropogenic influence. *Estuaries* 12(3): 169-179.

43. VECCHIONE, M., C.F.E. Roper, and M.J. Sweeney. 1989. Marine flora and fauna of the eastern United States: Mollusca: Cephalopoda. *NOAA* [Nat. Ocean. Atmos. Admin.] *Tech. Rep. NMFS* [Nat. Mar. Fish. Serv.] 73. 23 pp.

44. WILK, S.J., and B.M. Baker. 1989. Results of a fish-megainvertebrate survey of the New York Bight apex, late summer 1983. *Bull. N.J. Acad. Sci.* 34(2): 1-13.

45. WILLIAMS, A.B. (chair), L.G. Abele, D.L. Felder, H.H. Hobbs, Jr., R.B. Manning, P.A. McLaughlin, and I. PEREZ FARFANTE. 1989. Common and scientific names of aquatic invertebrates from the United States and Canada: decapod crustaceans. *Amer. Fish. Soc. Spec. Publ.* 17. 77 pp.

46. WILLIAMS, A.B., and C.A. Child. 1989. Comparison of some genera and species of box crabs (Brachyura: Calappidae), southwestern North Atlantic, with description of a new genus and species. *Fish. Bull., U.S.* 87: 105-121.

47. WILLIAMS, A.B., and P.J.B. Scott. 1989. *Upogebia corallifora*, a new species of coral-boring shrimp from the West Indies (Decapoda: Upogebiidae). *Proc. Biol. Soc. Wash.* 102(2): 405-410.

48. Youngbluth, M.J., T.G. Bailey, P.J. Davoll, C.A. Jacoby, P.I. Blades-Eckelbarger, and C.A. GRISWOLD. 1989. Fecal pellet production and diel migratory behavior by the euphausiid *Meganyctiphanes norvegica* affect benthic-pelagic coupling. *Deep-Sea Res.* 36(10A): 1491-1502.

PUBLICATIONS IN NON-PEER-REVIEWED MEDIA

49. ALMEIDA, F.P. 1989. Allocation of statewide-reported MRFSS catch and landings statistics between areas: application to winter flounder. *NOAA* [Nat. Ocean. Atmos. Admin.] *Tech. Mem. NMFS* [Nat. Mar. Fish. Serv.]-*F/NEC*-71. 18 pp.

50. ALMEIDA, F.P., T.S. BURNS, and S. CHANG. 1989. The 1988 experimental whiting fishery: a NMFS/industry cooperative program. *NOAA* [Nat. Ocean. Atmos. Admin.] *Tech. Mem. NMFS* [Nat. Mar. Fish. Serv.]-*F/NEC*-69. 16 pp.

51. ALMEIDA, F.P., S. CHANG, and T.S. BURNS. 1989. Summer distribution of regulated species on Georges Bank with reference to the 1988 experimental whiting fishery. *NOAA* [Nat. Ocean. Atmos. Admin.] *Tech. Mem. NMFS* [Nat. Mar. Fish. Serv.]-*F/NEC*-70. 25 pp.

52. BENWAY, R.L. 1989. Water column thermal structure across the shelf and slope southeast of Sandy Hook, New Jersey in 1988. *NAFO* [Northwest Atl. Fish. Organ.] *SCR* [Sci. Counc. Res.] *Doc.* 89/65. Ser. No. N1645. 11 pp.

53. BENWAY, R.L., and J.W. JOSSI. 1989. Expendable bathythermograph observations and continuous plankton records from the NMFS/Ship of Opportunity Program for 1988. [Nat. Mar. Fish. Serv.,] *Northeast Fish. Cent. Ref. Doc.* 89-05. 10 pp.

54. BURNETT, J., L. O'BRIEN, R.K. MAYO, J.A. DARDE, and M. BOHAN. 1989. Finfish maturity sampling and classification schemes used during Northeast Fisheries Center bottom trawl surveys, 1963-89. *NOAA* [Nat. Ocean. Atmos. Admin.] *Tech. Mem. NMFS* [Nat. Mar. Fish. Serv.]-*F/NEC*-76. 14 pp.

55. CARVER, J.H. 1989. Smoking fish. Chapter 6 (pages 58-68) *in* I. Dore. Making the most of your catch: an angler's guide. Van Nostrand Reinhold, New York.

56. CASEY, J.G. 1989. *Isurus oxyrinchus*: the shortfin mako shark. Pages 91-94 *in* Canyon: the yearbook of the Northeast big game fisherman. Offshore Informational Publications, Inc., Bricktown, N.J.

57. CONSERVATION AND UTILIZATION DIVISION, NORTHEAST FISHERIES CENTER. 1989. Status of the fishery resources off the northeastern United States for 1989. *NOAA* [Nat. Ocean. Atmos. Admin.] *Tech. Mem. NMFS* [Nat. Mar. Fish. Serv.]-*F/NEC*-72. 110 pp.

58. DAWSON, M., and J.L. Renfro. 1989. Mechanism of organic anion secretion in flounder renal proximal tubule primary monolayer cultures. Pages 35-37 *in* Second annual report (September 1, 1988 - August 31, 1989) *by* the University of Connecticut, Marine/Freshwater Biomedical Sciences Center for the Study of Molecular, Cellular, and Organismal Responses to Environmental Stress *for* the National Institute of Environmental Health Sciences (Grant ES03848). Available *from* National Marine Fisheries Service, 212 Rogers Ave., Milford, CT 06460.

59. DAWSON, M., and J.L. Renfro. 1989. Xenobiotic interaction with, and modification of, proximal tubule organic anion secretion. Pages 32-35 *in* Second annual report (September 1, 1988 - August 31, 1989) *by* the University of Connecticut, Marine/Freshwater Biomedical Sciences Center for the Study of Molecular, Cellular, and Organismal Responses to Environmental Stress *for* the National Institute of Environmental Health Sciences (Grant ES03848). Available *from* National Marine Fisheries Service, 212 Rogers Ave., Milford, CT 06460.

60. DRAXLER, A. 1989. Water and sediment chemistry. Pages 16-20 *in* Response of the habitat and biota of the inner New York Bight to abatement of sewage sludge dumping: second annual progress report--1988. *NOAA* [Nat. Ocean. Atmos. Admin.] *Tech. Mem. NMFS* [Nat. Mar. Fish. Serv.]-*F/NEC*-67.

61. DRAXLER, A., L. ARLEN, P. FOURNIER, T. FINNERAN, R. BRUNO, and M. JAMES. 1989. Sediment biogeochemistry. Pages 18-19 *in* Response of the habitat and biota of the inner New York Bight to abatement of sewage sludge dumping: second annual progress report--1988. *NOAA* [Nat. Ocean. Atmos. Admin.] *Tech. Mem. NMFS* [Nat. Mar. Fish. Serv.]-*F/NEC*-67.

62. ENVIRONMENTAL PROCESSES DIVISION, NORTHEAST FISHERIES CENTER. 1989. Response of the habitat and biota of the inner New York Bight to abatement of sewage sludge dumping: second annual progress report--1988. *NOAA* [Nat. Ocean. Atmos. Admin.] *Tech. Mem. NMFS* [Nat. Mar. Fish. Serv.]-*F/NEC*-67. 47 pp.

63. FOGARTY, M.J. 1989. Lobster recruitment processes. *The Lobster Newsl.* 2(2): 1,4-5.

64. FOGARTY, M.J., J.G. CASEY, N.E. KOHLER, J.S. IDOINE, and H.L. PRATT. 1989. Reproductive dynamics of elasmobranch populations in response to harvesting. Paper No. 9 *at* the ICES Mini-Symposium on Reproductive Variability: Implications for the Dynamics and Well-being of Stocks, October 10, 1989, The Hague, The Netherlands. International Council for the Exploration of the Sea, Copenhagen, Denmark. 15 pp.

65. GIBSON, J.A. 1989. An indexed bibliography of Northeast Fisheries Center publications and reports for 1988. *NOAA* [Nat. Ocean. Atmos. Admin.] *Tech. Mem. NMFS* [Nat. Mar. Fish. Serv.]-*F/NEC*-75.

66. HOLZWARTH, T., and J. MANNING. 1989. Description of 1986 oceanographic conditions on the Northeast Continental Shelf. [Nat. Mar. Fish. Serv.,] *Northeast Fish. Cent. Ref. Doc.* 89-03. 34 pp.

67. INGHAM, M. 1989. Physical oceanography of the New York Bight--a review. Pages 4-11 *in* Response of the habitat and biota of the inner New York Bight to abatement of sewage sludge dumping: second annual progress report--1988. *NOAA* [Nat. Ocean. Atmos. Admin.] *Tech. Mem. NMFS* [Nat. Mar. Fish. Serv.]-*F/NEC*-67.

68. JOSSI, J.W., and D.E. SMITH. 1989. Continuous plankton records: Massachusetts to Cape Sable, Nova Scotia, and New York to the Gulf Stream, 1988. *NAFO* [Northwest Atl. Fish. Organ.] *SCR* [Sci. Counc. Res.] *Doc.* 89/59. Ser. No. N1639. 19 pp.

69. KAYLOR, J.D. 1989. Pickling and marinating fish. Chapter 4 (pages 49-57) *in* I. Dore. Making the most of your catch: an angler's guide. Van Nostrand Reinhold, New York.

70. KAYLOR, J.D. 1989. Salting fish. Chapter 3 (pages 35-48) *in* I. Dore. Making the most of your catch: an angler's guide. Van Nostrand Reinhold, New York.

71. KRZYNOWEK, J. 1989. Fish and nutrition. Chapter 8 (pages 116-124) *in* I. Dore. Making the most of your catch: an angler's guide. Van Nostrand Reinhold, New York.

72. LEARSON, R.J. 1989. Handling and processing fresh fish. Chapter 1 (pages 1-21) *in* I. Dore. Making the most of your catch: an angler's guide. Van Nostrand Reinhold, New York.

73. LEARSON, R.J. 1989. One man's trash is another's treasure. Chapter 6 (pages 69-95) *in* I. Dore. Making the most of your catch: an angler's guide. Van Nostrand Reinhold, New York.

74. LICCIARDELLO, J.J. (deceased). 1989. Freezing the catch. Chapter 2 (pages 22-34) *in* I. Dore. Making the most of your catch: an angler's guide. Van Nostrand Reinhold, New York.

75. LICCIARDELLO, J.J. (deceased). 1989. Yes, Virginia, seafood is safe to eat. Chapter 7 (pages 96-115) *in* I. Dore. Making the most of your catch: an angler's guide. Van Nostrand Reinhold, New York.

76. MacLEAN, S.A. 1989. Registry of marine pathology: catalog and description of slide accessions, vol. 3. Available *from* National Marine Fisheries Service, 904 S. Morris St., Oxford, MD 21654. 129 pp.

77. MAYO, R.K., S.H. CLARK, and M.C. Annand. 1989. Stock assessment information for pollock, *Pollachius virens* (L.), in the Scotian Shelf, Georges Bank, and Gulf of Maine regions. *NOAA* [Nat. Ocean. Atmos. Admin.] *Tech. Mem. NMFS* [Nat. Mar. Fish. Serv.]-*F/NEC*-65. 30 pp.

78. MOUNTAIN, D.G. 1989. TEMPEST: a computer program for estimating temperature on the Northeast Continental Shelf. [Nat. Mar. Fish. Serv.,] *Northeast Fish. Cent. Ref. Doc.* 89-02. 8 pp. + 5¼-inch disk.

79. MOUNTAIN, D.G., and T.J. HOLZWARTH. 1989. Surface and bottom temperature distribution for the Northeast Continental Shelf. *NOAA* [Nat. Ocean. Atmos. Admin.] *Tech. Mem. NMFS* [Nat. Mar. Fish. Serv.]-*F/NEC*-73. 32 pp.

80. Nelson, W.R., B.E. Brown, R.J. CONSER, J.J. Hoey, S. Nichols, J.E. Powers, M.P. SISSENWINE, S.C. Turner, and D.S. Vaughn. 1989. Report of the NMFS Swordfish Stock Assessment Workshop, March 20-24, 1989. *ICCAT* [Int. Comm. Conserv. Atl. Tunas] *Collect. Vol. Sci. Pap.* 32(2): 287-352.

81. PACHECO, A., R. PIKANOWSKI, D. McMILLAN, B. VALDES, and L. STEHLIK. 1989. Species composition, distribution, and abundance. Pages 27-32 *in* Response of the habitat and biota of the inner New York Bight to abatement of sewage sludge dumping: second annual progress report--1988. *NOAA* [Nat. Ocean. Atmos. Admin.] *Tech. Mem. NMFS* [Nat. Mar. Fish. Serv.]-*F/NEC*-67.

82. PACHECO, A., and J. RUGG. 1989. Fish and lobster pathology. Pages 35-36 *in* Response of the habitat and biota of the inner New York Bight to abatement of sewage sludge dumping: second annual progress report--1988. *NOAA* [Nat. Ocean. Atmos. Admin.] *Tech. Mem. NMFS* [Nat. Mar. Fish. Serv.]-*F/NEC*-67.

83. Pelletier, R.E., and D.D. DOW. 1989. Monitoring the inundation extent of the Florida Everglades with AVHRR data in a geographic information system. Pages 266-275 *in* ASPRS [Amer. Soc. Photogram. Remote Sensing]/ACSM [Amer. Congr. Surv. Map.] Auto-Carto 9 Convention Symposium. American Society for Photogrammetry and Remote Sensing, Falls Church, Va.

84. PENTTILA, J.A., G.A. NELSON, and J.M. BURNETT, III. 1989. Guidelines for estimating lengths at age for 18 Northwest Atlantic finfish and shellfish species. *NOAA* [Nat. Ocean. Atmos. Admin.] *Tech. Mem. NMFS* [Nat. Mar. Fish. Serv.]-*F/NEC*-66. 39 pp.

85. PHOEL, W.C., J. Loret, and C. Brush. 1989. Diving and low cost remotely operated vehicles: complementary underwater research techniques. Unpublished report available *from* National Marine Fisheries Service, Bldg. 74, McGruder Rd., Highlands, NJ 07732.

86. PHOEL, W., S. FROMM, K. SHARACK, B. MAY, and E. JONES. 1989. Sediment metabolism. Pages 20-23 *in* Response of the habitat and biota of the inner New York Bight to abatement of sewage sludge dumping: second annual progress report--1988. *NOAA* [Nat. Ocean. Atmos. Admin.] *Tech. Mem. NMFS* [Nat. Mar. Fish. Serv.]-*F/NEC*-67.

87. Rago, P.J., R.A. RICHARDS, R.M. Dorazio, and D.G. Deuel. 1989. Emergency striped bass research study report for 1987. Available *from* National Marine Fisheries Service, 1335 East-West Hwy., Silver Spring, MD 20910. 61 pp.

88. REID, R., A. FRAME, D. RADOSH, S. FROMM, D. JEFFRESS, and J. VITALIANO. 1989. Benthic macrofauna. Pages 23-26 *in* Response of the habitat and biota of the inner New York Bight to abatement of sewage sludge dumping: second annual progress report--1988. *NOAA* [Nat. Ocean. Atmos. Admin.] *Tech. Mem. NMFS* [Nat. Mar. Fish. Serv.]-*F/NEC*-67.

89. ROBOHM, R.A. 1989. An examination of bacterial disease susceptibility in larval offspring of winter flounder inhabiting stressed environments. Unpublished report available *from* National Marine Fisheries Service, 212 Rogers Ave., Milford, CT 06460. 20 pp.

90. ROBOHM, R.A. 1989. A report on the link between stress and bacterial disease in winter flounder. Unpublished report available *from* National Marine Fisheries Service, 212 Rogers Ave., Milford, CT 06460. 19 pp.

91. SANO, M.A. 1989. Report of water masses receiving wastes from ocean dumping at the 106-Mile Dumpsite, 1 October 1987 through 30 September 1988 with additional summary for calendar year 1988. [Nat. Mar. Fish. Serv.,] *Northeast Fish. Cent. Ref. Doc.* 89-06. 11 pp.

92. SANO, M.H., and R.S. ARMSTRONG. 1989. Cooling of coastal and shelf waters by wind-driven upwelling off the U.S. Northeast--summer 1988. *Oceanogr. Mon. Sum.* 9(3): 3,12-13.

93. SANO, M.H., and C.P. FAIRFIELD. 1989. Anticyclonic warm-core Gulf Stream rings off the northeastern United States during 1988. *NAFO* [Northwest Atl. Fish. Organ.] *SCR* [Sci. Counc. Res.] *Doc.* 89/64. Ser. No. N1644. 19 pp.

94. SANO, M.H., and C.P. FAIRFIELD. 1989. Evaluations of differences in sea surface temperature between 1987 and 1988 for use in study of sea turtle strandings along the southeast U.S. coast. [Nat. Mar. Fish. Serv.,] *Northeast Fish. Cent. Ref. Doc.* 89-09. 28 pp.

95. SHERMAN, K. 1989. The Antarctic Marine Ecosystem: a model for science and management during global change. Paper presented *at* Tinker Foundation, May 11, 1989, New York, N.Y. Available *from* National Marine Fisheries Service, 28 Tarzwell Dr., Narragansett, RI 02882-1199. 18 pp.

96. SHERMAN, K., E.B. COHEN (deceased), and R.W. Langton. 1989. The Northeast Continental Shelf: an ecosystem at risk. Paper presented *at* Gulf of Maine Conference on Sustaining Our Common Heritage, December 10-12, 1989, Portland, Maine. Available *from* National Marine Fisheries Service, 28 Tarzwell Dr., Narragansett, RI 02882-1199. 57 pp.

97. SIBUNKA, J., and M.J. SILVERMAN. 1989. MARMAP surveys of the continental shelf from Cape Hatteras, North Carolina, to Cape Sable, Nova Scotia (1984-87). Atlas No. 3. Summary of operations. *NOAA* [Nat. Ocean. Atmos. Admin.] *Tech. Mem. NMFS* [Nat. Mar. Fish. Serv.]-*F/NEC*-68. 197 pp.

98. SINDERMANN, C.J. 1989. Genetic threats to wild Atlantic salmon stocks. *Int. Counc. Explor. Sea C.M.* [Comm. Mem.] 1989/F:15. 8 pp.

99. SINDERMANN, C.J. 1989. Report of the working group on introductions and transfers of marine organisms. *Int. Counc. Explor. Sea C.M.* [Comm. Mem.] 1989/F:16. 56 pp.

100. SINDERMANN, C.J. 1989. The shell disease syndrome in marine crustaceans. *NOAA* [Nat. Ocean. Atmos. Admin.] *Tech. Mem. NMFS* [Nat. Mar. Fish. Serv.]-*F/NEC*-64. 43 pp.

101. SINDERMANN, C.J. (chair), F. Csulak, T.K. Sawyer, R.A. Bullis, D.W. Engel, B.T. Estrella, E.J. Noga, J.B. PEARCE, J.C. RUGG, R. Runyon, J.A. Tiedemann, and R.R. Young. 1989. Shell disease of crustaceans in the New York Bight. *NOAA* [Nat. Ocean. Atmos. Admin.] *Tech. Mem. NMFS* [Nat. Mar. Fish. Serv.]-*F/NEC*-74. 47 pp.

102. SISSENWINE, M.P. 1989. Summing up. Paper presented *at* ICES [Int. Counc. Explor. Sea] Symposium on Multispecies Models Relevant to Living Resources, October 2-4, 1989, The Hague, The Netherlands. International Council for the Exploration of the Sea, Copenhagen, Denmark. 9 pp.

103. STEIMLE, F., and J. RUGG. 1989. Food habits of fish and lobster. Pages 32-35 *in* Response of the habitat and biota of the inner New York Bight to abatement of sewage sludge dumping: second annual progress report--1988. *NOAA* [Nat. Ocean. Atmos. Admin.] *Tech. Mem. NMFS* [Nat. Mar. Fish. Serv.]-*F/NEC*-67.

104. STROUT, G.A. 1989. Variation in the shelf water front position in 1988 from Georges Bank to Cape Hatteras. *NAFO* [Northwest Atl. Fish. Organ.] *SCR* [Sci. Counc. Res.] *Doc.* 89/63. Ser. No. N1643. 9 pp.

105. TUKHUNEN, B. 1989. Basic techniques for cooking fish. Chapter 9 (pages 125-136) *in* I. Dore. Making the most of your catch: an angler's guide. Van Nostrand Reinhold, New York.

106. VALDES, B. 1989. Migration of winter flounder. Pages 36-38 *in* Response of the habitat and biota of the inner New York Bight to abatement of sewage sludge dumping: second annual progress report--1988. *NOAA* [Nat. Ocean. Atmos. Admin.] *Tech. Mem. NMFS* [Nat. Mar. Fish. Serv.]-*F/NEC*-67.

107. VITALIANO, J.J., and C.L. MacKENZIE, Jr. 1989. Shrimp--voracious predators, important prey. *Underwater Nat.* 18(3): 17-18.

108. WALDHAUER, R.R., and T. FINNERAN. 1989. Water column nutrients. Pages 16-18 *in* Response of the habitat and biota of the inner New York Bight to abatement of sewage sludge dumping: second annual progress report--1988. *NOAA* [Nat. Ocean. Atmos. Admin.] *Tech. Mem. NMFS* [Nat. Mar. Fish. Serv.]-*F/NEC*-67.

109. WILK, S. 1989. Fish and megainvertebrates. Pages 27-39 *in* Response of the habitat and biota of the inner New York Bight to abatement of sewage sludge dumping: second annual progress report--1988. *NOAA* [Nat. Ocean. Atmos. Admin.] *Tech. Mem. NMFS* [Nat. Mar. Fish. Serv.]-*F/NEC*-67.

110. ZDANOWICZ, V., S. LEFTWICH, and E. LEIMBURG. 1989. Sediment metals. Pages 19-20 *in* Response of the habitat and biota of the inner New York Bight to abatement of sewage sludge dumping: second annual progress report--1988. *NOAA* [Nat. Ocean. Atmos. Admin.] *Tech. Mem. NMFS* [Nat. Mar. Fish. Serv.]-*F/NEC*-67.

PUBLISHED ABSTRACTS

111. BEJDA, A.J., B. VALDES, and A.L. STUDHOLME. 1989. The effect of hypoxia on the growth of young-of-the-year winter flounder. Page 42 *in* Program and abstracts of the Winter Flounder Biology Workshop, December 5-6, 1989, Mystic, Conn. Available *from* National Marine Fisheries Service, 212 Rogers Ave., Milford, CT 06460. (Abstr.)

112. BISAGNI, J.J. 1989. Remote detection of stratification on Georges Bank--"Picking on the pycnocline." Abstract prepared *for* 17th Annual Middle Atlantic Bight Physical Oceanography and Meteorology Workshop, October 26-27, 1989, Gloucester Point, Va. Available *from* National Marine Fisheries Service, 28 Tarzwell Dr., Narragansett, RI 02882-1199. (Abstr.)

113. Bishop, G.A., and A.B. WILLIAMS. 1989. Taphonomy and preservation of burrowing thalassinidean shrimps. Page I-156 *in* Abstracts: 28th International Geological Congress, Washington, D.C. USA, July 9-19, 1989. Available *from* National Marine Fisheries Service, National Museum of Natural History, 10th & Constitution Ave., N.W., Washington, DC 20560. (Abstr.)

114. BODAMMER, J.E. 1989. Fine structural observations on peritoneal phagocytes in winter flounder *(Pseudopleuronectes americanus)*. Abstract prepared *for* Joint Meeting of the American Fisheries Society, Fish Health Section, and Eastern Fish Health Workshop, July 17-20, 1989, Annapolis, Md. Available *from* National Marine Fisheries Service, 904 S. Morris St., Oxford, MD 21654. (Abstr.)

115. BODAMMER, J.E., and G. Klein-MacPhee. 1989. A gross and histological atlas of winter flounder larvae--progress to date. Page 43 *in* Program and abstracts of the Winter Flounder Biology Workshop, December 5-6, 1989, Mystic, Conn. Available *from* National Marine Fisheries Service, 212 Rogers Ave., Milford, CT 06460. (Abstr.)

116. BUCKLEY, L.J., A. SMIGIELSKI, T. HALAVIK, and G.C. LAURENCE. 1989. Factors contributing to variability in size and viability of the eggs and larvae of winter flounder, *Pseudopleuronectes americanus*, reared in the laboratory. Page 14 *in* Program and abstracts of the Winter Flounder Biology Workshop, December 5-6, 1989, Mystic, Conn. Available *from* National Marine Fisheries Service, 212 Rogers Ave., Milford, CT 06460. (Abstr.)

117. BUCKLEY, L.J., A. SMIGIELSKI, T. HALAVIK, and G.C. LAURENCE. 1989. Variability in size and viability of the eggs and larvae of winter flounder, *Pseudopleuronectes americanus*, reared in the laboratory. Abstract prepared *for* 13th Annual Reunion of the American Fisheries Society, Early Life History Section, May 21-27, 1989, Merida, Mexico. Avail-

able *from* National Marine Fisheries Service, 28 Tarzwell Dr., Narragansett, RI 02882-1199. (Abstr.)

118. DARDE, J.A. 1989. Delineation of inshore winter flounder stocks in Massachusetts--preliminary results using digital image analysis. Page 45 *in* Program and abstracts of the Winter Flounder Biology Workshop, December 5-6, 1989, Mystic, Conn. Available *from* National Marine Fisheries Service, 212 Rogers Ave., Milford, CT 06460. (Abstr.)

119. DAWSON, M.A., and J.L. Renfro. 1989. Characterization of organic anion transport by flounder renal proximal tubule in culture. *FASEB* [Fed. Amer. Soc. Exp. Biol.] *J.* 3: A378. Abstract No. 881. (Abstr.)

120. DAWSON, M., and J.L. Renfro. 1989. Organic anion transport by flounder renal proximal tubule in culture: inhibition by 2,4-D and DDA. Pages 18-19 *in* Program and abstracts of the Winter Flounder Biology Workshop, December 5-6, 1989, Mystic, Conn. Available *from* National Marine Fisheries Service, 212 Rogers Ave., Milford, CT 06460. (Abstr.)

121. DRAXLER, A.F.J. 1989. Phased cessation of sewage sludge dumping in the inner New York Bight: sediment biogeochemistry response. Abstract prepared *for* Benthic Ecology Meeting, March 17-19, 1989, Solomons, Md. Available *from* National Marine Fisheries Service, Bldg. 74, McGruder Rd., Highlands, NJ 07732. (Abstr.)

122. FARLEY, C.A. 1989. Mass mortalities and infectious lethal diseases in bivalve mollusks and associations with geographic transfers of populations. Page 30 *in* Abstracts: Aquaculture '89, February 12-16, 1989, Los Angeles, Calif. Available *from* National Marine Fisheries Service, 212 Rogers Ave., Milford, CT 06460. (Abstr.)

123. GOLDBERG, R. 1989. Cage culture of yearling surf clams, *Spisula solidissima*, in coastal Georgia, USA. Page 19 *in* Collected abstracts of the 9th Annual Shellfish Biology Seminar, February 21, 1989, Milford, Conn. Available *from* National Marine Fisheries Service, 212 Rogers Ave., Milford, CT 06460. (Abstr.)

124. GOLDBERG, R. 1989. Mariculture potential of juvenile Atlantic surf clams, *Spisula solidissima*. Abstracts: Aquaculture '89, February 12-16, 1989, Los Angeles, Calif. Available *from* National Marine Fisheries Service, 212 Rogers Ave., Milford, CT 06460. (Abstr.)

125. GOULD, E. 1989. Metal-exposed sea scallops: a review and update of the effects of copper, cadmium, and zinc. Page 15 *in* Collected abstracts of the 9th Annual Shellfish Biology Seminar, February 21, 1989, Milford, Conn. Available *from* National Marine Fisheries Service, 212 Rogers Ave., Milford, CT 06460. (Abstr.)

126. GOULD, E., B.A. Fowler, and D.W. Engel. 1989. Metal-exposed sea scallops: a review and update of the effects of copper, cadmium, and zinc. *Mar. Environ. Res.* 28: 219-220. (Abstr.)

127. HUGHES, J.B., D.M. PERRY, and A.T. HEBERT. 1989. Cytogenetic and cytologic state and mortality of embryos of winter flounder, *Pseudopleuronectes americanus*, from Long Island Sound and Boston Harbor. Page 50 *in* Program and abstracts of the Winter Flounder Biology Workshop, December 5-6, 1989, Mystic, Conn. Available *from* National Marine Fisheries Service, 212 Rogers Ave., Milford, CT 06460. (Abstr.)

128. KERN, F.G. 1989. A sarcoma-like neoplasm in the hard clam, *Mercenaria mercenaria*. Abstract No. 18 (page 33) *in* Program and abstracts: SIP [Society for Invertebrate Pathology] XXII Annual Meeting, August 20-24, College Park, Md. Available *from* National Marine Fisheries Service, 904 S. Morris St., Oxford, MD 21654.(Abstr.)

129. KERN, F.G. 1989. Recent changes in the range of "MSX" *Haplosporidium nelsoni*. Page 19 *in* Abstracts: Aquaculture '89, February 12-16, 1989, Los Angeles, Calif. Available *from* National Marine Fisheries Service, 212 Rogers Ave., Milford, CT 06460. (Abstr.)

130. KERN, F.G., and A. ROSENFIELD. 1989. Shellfish health and protection. Pages 33-34 *in* Abstracts: Aquaculture '89, February 12-16, 1989, Los Angeles, Calif. Available *from* National Marine Fisheries Service, 212 Rogers Ave., Milford, CT 06460. (Abstr.)

131. LEWIS, E.J. 1989. An infection study of the oyster, *Crassostrea virginica*, by *Haplosporidium nelsoni* (MSX). Abstract prepared *for* Atlantic Estuarine Research Society Meeting--Spring 1991, May 2-4, 1991, Beaufort, N.C. Available *from* National Marine Fisheries Service, 904 S. Morris St., Oxford, MD 21654. (Abstr.)

132. MERCALDO-ALLEN, R. 1989. Changes in the blood chemistry of the American lobster, *Homarus americanus*, over the molt cycle. Pages 25-26 *in* Life history of the American lobster: proceedings of a workshop, November 29-30, 1989, Orono, Maine. Available *from* National Marine Fisheries Service, 212 Rogers Ave., Milford, CT 06460. (Abstr.)

133. NELSON, D.A., and J.B. HUGHES. 1989. A 3-year assessment of reproductive success in winter flounder, *Pseudopleuronectes americanus*. Page 28 *in* Program and abstracts of the Winter Flounder Biology Workshop, December 5-6, 1989, Mystic, Conn. Available *from* National Marine Fisheries Service, 212 Rogers Ave., Milford, CT 06460. (Abstr.)

134. PACHECO, A.L., and J. RUGG. 1989. Incidence of disease in winter flounder *(Pseudopleuronectes americanus)* collected during the 12-Mile Dumpsite recovery study. Page 31 *in* Program and abstracts of the Winter Flounder Biology Workshop, December 5-6, 1989, Mystic, Conn. Available *from* National Marine Fisheries Service, 212 Rogers Ave., Milford, CT 06460. (Abstr.)

135. PEARCE, J.B. 1989. The biological consequences of development. Pages 6-7 *in* Collected abstracts of the 9th Annual Shellfish Biology Seminar, February 21, 1989, Milford, Conn. Available *from* National Marine Fisheries Service, 212 Rogers Ave., Milford, CT 06460. (Abstr.)

136. PEARCE, J.B. 1989. The biology of pea crabs and their relationship to mussels. Page 13 *in* Collected abstracts of the 9th Annual Shellfish Biology Seminar, February 21, 1989, Milford, Conn. Available *from* National Marine Fisheries Service, 212 Rogers Ave., Milford, CT 06460. (Abstr.)

137. PEREIRA, J.J., J. ZISKOWSKI, R. MERCALDO-ALLEN, and C. KUROPAT. 1989. Serum vitellogenin in tumored and untumored winter flounder from the Boston Harbor area. Page 54 *in* Program and abstracts of the Winter Flounder Biology Workshop, December 5-6, 1989, Mystic, Conn. Available *from* National Marine Fisheries Service, 212 Rogers Ave., Milford, CT 06460. (Abstr.)

138. PIKANOWSKI, R.A. 1989. Experimental design of 12-Mile Dumpsite recovery study--an overview. Page 30 *in* Program and abstracts of the Winter Flounder Biology Workshop, December 5-6, 1989, Mystic, Conn. Available *from* National Marine Fisheries Service, 212 Rogers Ave., Milford, CT 06460. (Abstr.)

139. REID, R. 1989. Phased cessation of sewage sludge dumping in the inner New York Bight: benthic macrofauna responses. Abstract prepared *for* Benthic Ecology Meeting, March 17-19, 1989, Solomons, Md. Available *from* National Marine Fisheries Service, Bldg. 74, McGruder Rd., Highlands, NJ 07732. (Abstr.)

140. SINDERMANN, C.J. 1989. Pollution-associated disease conditions in estuarine/coastal fish and shellfish: a status report and perspective for the 1990s. Page 15 *in* Provisional volume of abstracts of scientific papers and posters to be presented at the [International Council for the Exploration of the Sea's] 77th Statutory Meeting, October 5-13, 1989, The Hague, The Netherlands. Available *from* National Marine Fisheries Service, 904 S. Morris St., Oxford, MD 21654. (Abstr.)

141. SINDERMANN, C.J. 1989. Role of the International Council for the Exploration of the Sea (ICES) in matters concerned with transfers and introductions of marine organisms. Page 36 *in* Abstracts: Aquaculture '89, February 12-16, 1989, Los Angeles, Calif. Available *from* National Marine Fisheries Service, 212 Rogers Ave., Milford, CT 06460. (Abstr.)

142. STILES, S., and J. CHOROMANSKI. 1989. Genetic strain performance of oysters, site suitability, and low dissolved oxygen in Long Island Sound. Page 14 *in* Collected abstracts of the 9th Annual Shellfish Biology Seminar, February 21, 1989, Milford, Conn. Available *from* National Marine Fisheries Service, 212 Rogers Ave., Milford, CT 06460. (Abstr.)

143. VALDES, B.A. 1989. A study of winter flounder *(Pseudopleuronectes americanus)* movements in the New York Bight. Page 31 *in* Program and abstracts of the Winter Flounder Biology Workshop, December 5-6, 1989, Mystic, Conn. Available *from* National Marine Fisheries Service, 212 Rogers Ave., Milford, CT 06460. (Abstr.)

144. WIKFORS, G.H., G.E. FERRIS, B.C. SMITH, and J.W. TWAROG, Jr. 1989. Detrimental effects of cadmium-contaminated microalgae upon laboratory-reared clams and oysters. Page 18 *in* Program & abstracts: Twenty-eighth Northeast Algae Symposium, April 29-30, 1989, Woods Hole, Mass. Available *from* National Marine Fisheries Service, 212 Rogers Ave., Milford, CT 06460. (Abstr.)

145. WIKFORS, G.H., G.E. FERRIS, B.C. SMITH, and J.W. TWAROG, Jr. 1989. Survival and growth of juvenile clams and oysters on diets of cadmium-contaminated microalgae. Page 16 *in* Collected abstracts of the 9th Annual Shellfish Biology Seminar, February 21, 1989, Milford, Conn. Available *from* National Marine Fisheries Service, 212 Rogers Ave., Milford, CT 06460. (Abstr.)

146. WIKFORS, G.H., R. UKELES, and G.E. FERRIS. 1989. Nutrient deficiency and storage products in cultured diatoms: do centric and pennate diatoms respond alike? *J. Phycol.* (suppl.) 25(2): 18. Abstr. No. 87. (Abstr.)

147. WILK, S.J., R.A. PIKANOWSKI, A.L. PACHECO, D.G. McMILLAN, and L. STEHLIK. 1989. Distribution, relative abundance, and size-age composition of winter flounder *(Pseudopleuronectes americanus)* collected during the 12-Mile Dumpsite recovery study. Page 30 *in* Program and abstracts of the Winter Flounder Biology Workshop, December 5-6, 1989, Mystic, Conn. Available *from* National Marine Fisheries Service, 212 Rogers Ave., Milford, CT 06460. (Abstr.)

148. ZDANOWICZ, V.S. 1989. Influence of cessation of sewage sludge disposal on metal levels in New York Bight sediments. Abstract prepared *for* Fifth Annual Symposium of the Society of Environmental Toxicology and Chemistry, May 31, 1989, New Brunswick, N.J. Available *from* National Marine Fisheries Service, Bldg. 74, McGruder Rd., Highlands, NJ 07732. (Abstr.)

149. ZISKOWSKI, J., J.J. PEREIRA, R. MERCALDO-ALLEN, and C. KUROPAT. 1989. New perspectives on fin erosion disease in New Haven Harbor fish from prevalence, physiological, and radiographic studies. Page 56 *in* Program and abstracts of the Winter Flounder Biology Workshop, December 5-6, 1989, Mystic, Conn. Available *from* National Marine Fisheries Service, 212 Rogers Ave., Milford, CT 06460. (Abstr.)

INDICES

ORGANISMS

For those fishes, mollusks, and crustaceans covered by the American Fisheries Society's (AFS's) respective lists of common and scientific names[1], only the common name -- if there is one --is mentioned in the following index. For organisms covered by the AFS lists for which no common name exists, the scientific name is mentioned, followed by the encompassing order and family names within parentheses.

For organisms not covered by the AFS lists, if they have common names, then the common name is mentioned, followed by the scientific name. If they don't have common names, then the scientific name is mentioned and typically followed by -- for higher/more advanced life forms -- encompassing higher-level names within parentheses, or -- for lower/more primitive life forms -- a generic descriptor within parentheses (*e.g.*, bacterium, alga, siphonophore).

A

Acadian redfish 13, 51, 57, 84
Acanthamoeba (amoeba) 31
alewife 57
American lobster 9, 57, 62, 63, 81, 82, 96, 101, 103, 109, 132
American plaice 13, 51, 57, 84
American shad 57
amoeba 31
anadromous fish 1, 57, 87, 98
anemone 25
Antarctic krill *(Euphausia superba)* 3, 95
Atlantic cod 13, 16, 18, 30, 51, 57, 84, 112
Atlantic herring 13, 54, 57, 84, 96
Atlantic mackerel 13, 57, 84
Atlantic rockcrab 62, 81, 101, 109
Atlantic salmon 98
Atlantic surfclam 10, 11, 57, 84, 123, 124
Atlantic wolffish 13, 57

B

bacteria 31, 89, 90
Baltic macoma 122
bass ..... see black sea bass, striped bass
bay scallop 19
bay shrimp ..... see sevenspine bay shrimp
benthic macrofauna 62, 88, 134
benthos 4, 7, 9-11, 13, 14, 19, 24, 31, 39, 43, 46, 47, 49, 51, 54, 57-59, 62, 63, 73, 81, 82, 84, 88-90, 96, 97, 100, 101, 103, 106, 107, 109, 111, 113-120, 122-139, 142-145, 147, 149
bivalve mollusk 4, 7, 10, 11, 19, 31, 39, 57, 84, 96, 122-126, 128-131, 135, 136, 142, 144, 145
black sea bass 57
blueback herring 57
blue crab 101
bluefin tuna 13
bluefish 57, 84

[1] Robins, C.R. (Chair.), R.M. Bailey, C.E. Bond, J.R. Brooker, E.A. Lachner, R.N. Lea, and W.B. Scott. 1980. A list of common and scientific names of fishes from the United States and Canada. *Amer. Fish. Soc. Spec. Pub.* No. 12. 174 pp.

Turgeon, D.D. (Chair.), A.E. Bogan, E.V. Coan, W.K. Emerson, W.G. Lyons, W.L. Pratt, C.F.E. Roper, A. Scheltema, F.G. Thompson, and J.D. Williams. 1988. Common and scientific names of aquatic invertebrates from the United States and Canada: mollusks. *Amer. Fish. Soc. Spec. Pub.* No. 16. 278 pp.

Williams, A.B. (Chair.), L.G. Abele, D.L. Felder, H.H. Hobbs, Jr., R.B. Manning, P.A. McLaughlin, and I. Perez Farfante. 1989. Common and scientific names of aquatic invertebrates from the United States and Canada: decapod crustaceans. *Amer. Fish. Soc. Spec. Pub.* No. 17. 77 pp.

blue mussel 96, 122, 136
blue shark 64
Bonamia ostrea (microcell protozoan) 122
box crab (Brachyura: Calappidae) 46
brown shrimp 14
butterfish 13, 57, 84

C

Calappa tortugae (Brachyura: Calappidae) 46
Calappidae ..... see box crab
Capitella capitata (Capitellida: Capitellidae) 62, 88
cartilaginous fish 13, 56, 57, 62, 64, 73, 109
cephalopod 12, 43, 57, 73
cetacean 27, 29
Chaetoceros calcitrans (diatom) 146
chaetognath 17
cod ..... see Atlantic cod
common periwinkle 96
Condylactis gigantea (anemone) 25
copepod 53
coral 25, 47
crab ..... see Atlantic rockcrab, blue crab, box crab, Dungeness crab, Jonah crab, red deepsea crab, squatter pea crab
Crassostrea angulata (Ostreoida: Ostreidae) 122
crustacean 3, 9, 14, 15, 25, 45-47, 48, 53, 57, 62, 63, 81, 82, 95, 96, 100, 101, 103, 106, 107, 109, 113, 132, 136
cusk 13, 57
Cyclozodion angustrum (Brachyura: Calappidae) 46
Cyclozodion tuberatum (Brachyura: Calappidae) 46

D

daggerblade grass shrimp 107
decapod crustacean 9, 14, 15, 25, 45-47, 57, 62, 63, 81, 82, 96, 101, 103, 107, 109, 113, 132, 136
deepsea crab ..... see red deepsea crab
demersal fish 13, 16, 18, 24, 30, 49-51, 54, 57-59, 62, 73, 77, 81, 82, 84, 89, 90, 96, 103, 106, 109, 111, 112, 114-120, 127, 133, 134, 137, 138, 143, 147, 149
demersal nekton 8
diatom 146
dogfish 57, 73
Dunaliella tertiolecta (microalga) 144, 145
Dungeness crab 9

E

eastern oyster 10, 19, 122, 129, 131, 142, 144, 145
edible oyster 122
eel grass *(Zostera marina)* 15
elasmobranch 64
epipelagic fish 41
Euphausia superba ..... see Antarctic krill
euphausiid 3, 48, 95

F

fish ..... see anadromous fish, cartilaginous fish, demersal fish, epipelagic fish, pelagic fish
flounder ..... see fourspot flounder, summer flounder, *Symphurus callopterus*, windowpane, winter flounder, witch flounder, yellowtail flounder
fourspot flounder 62, 81, 109

G

goosefish 13, 73, 96
grass ..... see eel grass
grubby 15

H

haddock 13, 16, 18, 51, 57, 84, 111
hake ..... see luminous hake, red hake, silver hake, white hake
Haplosporidium costale (ascetosporan) 122
Haplosporidium nelsoni (ascetosporan) 122, 129, 131
harbor porpoise *(Phocoena phocoena)* 27, 29
herring ..... see alewife, Atlantic herring, blueback herring, river herring

I

ichthyoplankton 97
invertebrate 3, 4, 7, 9-12, 14, 15, 17, 19-21, 25, 31, 39, 42, 43, 45-48, 53, 57, 62, 63, 68, 81, 82, 84, 88-90, 95-97, 100, 101, 103, 106, 107, 109, 113, 122-126, 128-132, 135, 136, 142, 144-146
Isochrysis galbana (microalga) 144, 145

J

Jonah crab 101

K

krill ..... see Antarctic krill, *Meganyctiphanes norvegica*

L

little skate 62, 109
lobster ..... see American lobster
longfin squid 12, 57
louvar 41
luminous hake 6

M

mackerel ..... see Atlantic mackerel
macrofauna ..... see benthic macrofauna
mako ..... see shortfin mako
mammal ..... see marine mammal
marine mammal 27, 29
megainvertebrate 62, 109
Meganyctiphanes norvegica 48
microalgae 144-146
mollusk 4, 7, 10-12, 19, 31, 39, 43, 57, 84, 96, 122-126, 128-131, 135, 136, 142, 144, 145
MSX 122, 129, 131
mussel ..... see blue mussel

N

nekton ..... see demersal nekton
Nitzschia sp. (diatom) 146
northern quahog 10, 19, 128, 144, 145
northern shortfin squid 12, 57
northern shrimp 9, 14, 57, 96

O

ocean pout 13, 57, 62, 81, 109
ocean quahog 57
octopus 43
Ostrea lurida (Ostreoida: Ostreidae) 122
oyster ..... see eastern oyster, edible oyster, Pacific oyster

P

Pacific oyster 122
Paracyclois atlantis (Brachyura: Calappidae) 46
Paracyclois milneedwardsii (Brachyura: Calappidae) .. 46
pea crab ..... see squatter pea crab
pelagic fish 13, 28, 54, 57, 64, 80, 84, 96
Penaeus esculentus ..... see tiger prawn
Penaeus vannanei (Penaeoidea: Penaeidae) 14
Periclimenes anthophilus (Palaemonoidea: Palaemonidae) 25
periwinkle ..... see common periwinkle
Perkinsus marinus (apicomplexan) 122
Phaeodactylum cornutum (microalga) 144, 145
Pherusa affinis (Flabelligerida: Flabelligeridae) 62, 88
Phocoena phocoena ..... see harbor porpoise
phytoplankton 20, 21, 68, 97, 144-146
pink shrimp 14
plaice ..... see American plaice
plankton 20, 21, 42, 53, 68, 97, 144-146
pollock 13, 51, 57, 77, 84
porpoise ..... see harbor porpoise
pout ..... see ocean pout
prawn ..... see tiger prawn

Q

quahog ..... see northern quahog, ocean quahog

R

rainbow trout 1
ray 73
red deepsea crab 101
redfish ..... see Acadian redfish
red hake 13, 57, 62, 73, 81, 84, 103, 109
rhyncocoel 62, 88
river herring 57
robin ..... see sea robin
rockcrab ..... see Atlantic rockcrab

S

Saccostrea commercialis (Ostreoidea: Ostreidae) 122
Sagitta elegans (chaetognath) 17
salmon ..... see Atlantic salmon
sandbar shark 64
scallop ..... see bay scallop, sea scallop
scup 57, 84
sea bass ..... see black sea bass
sea robin 73
sea scallop 57, 84, 125, 126
sea turtle 94
sevenspine bay shrimp 15, 107
shad ..... see American shad
shark ..... see blue shark, sandbar shark, shortfin mako
shortfin mako 56, 64
shortfin squid ..... see northern shortfin squid
shrimp ..... see brown shrimp, daggerblade grass shrimp, northern shrimp, *Periclimenes anthophilus*, pink shrimp, sevenspine bay shrimp, thalassinidean, tiger prawn, *Upogebia corallifora*, white shrimp
silver hake 13, 50, 51, 54, 57, 62, 73, 81, 84, 103, 109
skate 13, 57, 62, 73, 109
softshell 7, 10, 19, 39, 96, 122
spiny dogfish 57
squatter pea crab 136
squid 12, 43, 57, 73
striped bass 57, 87
Strongylocentrotus droebanchiensis (Echinoida: Strongylocentrotidae) 96
summer flounder 57, 84
surfclam ..... see Atlantic surclam
swordfish 80
Symphurus callopterus (Soleoidei: Cynoglossidae) 24

T

thalassinidean 113
thorny skate 13

tiger prawn *(Penaeus esculentus)* 9
trout ..... see rainbow trout
tuna ..... see bluefin tuna, yellowfin tuna
turtle ..... see sea turtle

U

Upogebia corallifora 47
(Decapoda: Upogebiidae)

W

white hake 13, 51, 57
white shrimp 14
windowpane 51, 62, 81, 109
winter flounder 13, 49, 51, 57-59, 62, 81, 84, 89, 90, 103, 106, 109, 111, 114-120, 127, 133, 134, 137, 138, 143, 147, 149
winter skate 13
witch flounder 13, 51, 57, 84
wolffish ..... see Atlantic wolffish

Y

yellowfin tuna 13, 28
yellowtail flounder 13, 51, 54, 57, 84

Z

zooplankton 42, 68, 97
Zostera marina ..... see eel grass

GEOGRAPHIC AREAS

To help the reader locate some of the smaller and/or lesser known geographic areas, the larger and/or better known geographic areas which encompass or adjoin them are listed within parentheses.

A

Antarctic Marine Ecosystem 95

B

Barents Sea Ecosystem 36
Bay of Fundy 29
Benguela Ecosystem 36
Bering Sea Ecosystem 32
Bermuda 25
Boston (Mass.) Harbor 90, 127, 133, 137

C

Calcasieu Estuary (La.) 42
California Current Ecosystem 32
Cape Cod (Mass.) 118
Cape Cod Bay (Mass.) 15, 90

E

eastern Pacific 24
Everglades (Fla.) 2, 83

G

Georges Bank 16-18, 23, 30, 50, 51, 54, 77, 112
Georgia 123
Great Barrier Reef Ecosystem 36
Great South Channel (Mass.) 23
Gulf of Alaska 32
Gulf of Alaska Ecosystem 32
Gulf of Maine 27, 53, 54, 68, 77, 96
Gulf of Mexico 8, 32
Gulf of Mexico Ecosystem 32
Gulf of Thailand Ecosystem 36
Gulf Stream 93

H

Hudson-Raritan Estuary (N.J./N.Y.) 31, 62, 67
Hudson Shelf Valley 62, 67

I

Iberian Ecosystem 36
Insular Pacific Ecosystem 32

K

Kuroshio Current Ecosystem 36

L

Long Island Sound 90, 124, 127, 133, 142

M

Massachusetts 15, 49, 90, 118, 127, 133, 137
Middle Atlantic Bight 107

N

Nantucket Shoals (Mass.) 23
Narragansett Bay (R.I.) 128
New Haven (Conn.) Harbor 149
New York Bight 31, 44, 52, 53, 59, 60-62, 67, 68, 81, 82, 86, 88, 101, 103, 106, 108-110, 121, 134, 138, 139, 143, 147, 148
New York Bight apex 31, 44, 60-62, 67, 81, 82, 86, 88, 103, 106, 108-110, 121, 134, 138, 139, 143, 147, 148
Northeast U.S. Shelf Ecosystem 32, 34, 96

O

Oyashio Current Ecosystem 36
106-Mile Dumpsite 52, 91, 101

P

Pacific ..... see eastern Pacific, Insular Pacific Ecosystem, western Pacific
Prydz Bay (Antarctica) 3

R

Raritan Bay (N.J./N.Y.) 31

S

Scotian Shelf 77
Southeast (U.S.) 94
Southeast U.S. Shelf Ecosystem 32

T

12-Mile Dumpsite 31, 60-62, 67, 81, 82, 86, 88, 103, 106, 108-110, 121, 134, 138, 139, 143, 147, 148

W

Wassaw Sound (Ga.) 124
western Pacific 28
West Indies 47

Y

Yellow Sea Ecosystem 36

TOPICAL SUBJECTS

A

abundance 9, 19, 25, 53, 56, 57, 62, 77, 80, 81, 109, 138, 147
acid ..... see fatty acid, omega-3 fatty acid
age 3, 77, 84, 96, 147
age composition 77
age determination 3
age-length relationship 84
age structure 96
algal assay 20
anatomy 6
annual report 87
anoxia 21
aquaculture 4, 10, 11, 96, 98-100, 123, 136, 141
assay ..... see algal assay
assessment ..... see risk assessment, stock assessment
auto-regressive integrated moving-average model 9
avoidance 22

B

bacteriology 114
bathymetric range 46
bathythermogaph ..... see expendable bathythermograph
behavior ..... see social behavior
bent finray condition 149
bibliography 65
biogeochemistry 2
biological effect 21, 100, 111, 116, 117, 127, 134, 139
biomass 34, 35, 62, 77, 80, 81, 96, 109
biomass yield 95
blood chemistry 132
bloom 21, 68
bottom current 62, 67
bottom trawl survey 51
bottom-water dissolved oxygen 62, 67
bottom-water stratification 62, 67
breeding 142
brown tide 21
bycatch 50, 51

C

cadmium 125, 126, 144, 145
cage culture 11, 123
catch 22, 28, 49-51, 57, 77, 80, 95, 96
catch per unit of effort 80
catch rate 28
catch variability 95
catchability 22
CCAMLR ..... see Commission for the Conservation of Antarctic Marine Living Resources
chemical oceanography 20, 21, 60-62, 67, 86, 97, 108, 111, 121
chemistry ..... see biogeochemistry, blood chemistry, sediment chemistry
chlorine 4
chlorophyll *a* 97
cholesterol 12-14
ciguatera poisoning 21
circulation ..... see water circulation
climate change ..... see global climate change
clinical progression 7
cold pool 62, 67
commercial fishery 19, 28, 50, 51, 57, 77, 80
Commission for the Conservation of Antarctic Marine Living Resources 32, 95
common name 45
community 96
community production 96
community structure 96
compensatory mechanism 64

computer program 78
continuous plankton recorder 53
cooking ..... see seafood preparation & cooking
copper 1, 125, 126
coral reef 25
CPR ..... see continuous plankton recorder
CPUE ..... see catch per unit of effort
culture ..... see aquaculture, cage culture
current 16-18, 62, 67
cytogenetics 127
cytology 114, 127

D

DDA 59, 120
degradation ..... see habitat degradation
density ..... see rearing density, water density
density dependence 11
density stratification 62, 67, 112
depletion ..... see stock depletion
depuration 4
development ..... see ontogenetic development
diarrhetic shellfish poisoning 21
diel 17, 18, 22, 48
diel effect 22
diel movement 17, 18, 48
die-off/epizootic 7, 122
diet 144-146
digital image analysis 118
discard 50, 51
disease 1, 7, 10, 31, 39, 62, 76, 82, 89, 90, 100, 101, 109, 114, 122, 128-131, 134, 135, 137, 140, 149
dissolved oxygen 62, 67, 111
distribution 16-19, 25, 43, 51, 56, 62, 81, 109, 136, 147
diving ..... see SCUBA diving
DO ..... see dissolved oxygen
dumping ..... see ocean dumping
dumpsite 31, 52, 60-62, 67, 81, 82, 86, 88, 91, 101, 103, 106, 108-110, 121, 134, 138, 139, 143, 147, 148
dynamics ..... see population dynamics

E

early life stage 6, 10, 11, 16, 18, 22, 30, 41, 51, 87, 89, 111, 112, 115-118, 127, 140, 144, 145
ecology 25
economics 57
ecosystem 32-35, 95, 96, 99
ecosystem effect 99
ecosystem management 33, 95
effluent plume ..... see estuarine effluent plume
effort 28, 57, 80
egg 116, 117
embryo 127
endangered species 94
enhacement ..... see fishery enhancement
environmental factor/influence 11, 17, 18, 35, 39, 87, 123, 131, 142, 147
environmental index 96
environmental influence ..... see environmental factor/influence
epizootic ..... see die-off/epizootic
equilibrium yield per recruit 80
erosion ..... see fin erosion
estuary 15, 19, 42, 62, 67, 135, 140
estuarine effluent plume 62, 67
etiology 122
expendable bathythermograph 53
experimental design .... see sampling/experimental design
experimental fishery 50, 51

F

fatty acid 12-14
fecal pellet production 48
fecundity 64
fin erosion 149
fin rot 134
fishery 4, 11, 19, 28, 49-51, 55, 57, 69-75, 77, 80, 96, 105
fishery enhancement 19, 99
fishery interaction 28
fishery management 19, 40, 50, 51, 77, 87, 95, 98,99
fishery - marine mammal interaction 27
fishery science 40
fishery technology 4, 12-14, 55, 69-75, 105
fishing gear 27, 28, 50
fishing mortality 64, 80
fitness index 149
fluorescent pigment aging method 3
flux 2
food habits 15, 56, 62, 103, 107, 109
fossil 41, 113
front 104
frozen storage 74

G

gear ..... see fishing gear, sampling gear
gear comparison ..... see sampling gear comparison
genetics 98, 99, 127, 142
genetic effect 99
genetic selection 142
geographic range 46
geography 36
gillnet 27
global change 2, 34, 35, 95
global climate change 2, 34, 35
growth 11, 15, 20, 22, 56, 84, 111, 116-118, 123, 142, 144, 145

H

habitat 2, 8, 11, 15, 16, 18, 25, 43, 44, 47, 83, 135
habitat degradation 135
habitat preference 16, 18
habitat selection 8
habitat type 8
habits ..... see food habits
handling & processing ..... see seafood handling & processing
heavy metal 1, 60, 62, 110, 125, 126, 144, 145, 148
hematology 137, 149
herbicide 59, 119, 120
heuristic model 9
histology 76, 115
histopathology 115
history ..... 5, 37, 40; see also life history
hypoxia 21, 111

I

ICES ..... see International Council for the Exploration of the Sea
identification .... see identification key, stock identification
identification key 43, 46
image analysis 3, 118
immunology 1, 89, 114
impoundment 100
index 15, 96, 149
indicator species 31
insecticide 59, 120
interaction ..... see fishery interaction, fishery - marine mammal interaction
intermixing ..... see population intermixing
international affairs 26, 99, 141
International Council for the Exploration of the Sea 37, 102, 141
intervention analysis 9
introduction/stocking/transfer 98, 99, 122, 130, 141
intrusions 23

J

juvenile 10,11,18,30,51,87,118,144,145

K

key ..... see identification key

L

landings 49-51, 57, 77
large marine ecosystem 32-35, 95, 96
larva 6, 10, 16, 22, 30, 41, 89, 112, 115-117
larval morphology 41
legal affairs 99
length frequency 3, 44
life history 15, 27, 56, 136
limiting factor 19
line-transect survey 27, 29
liver tumor 137
logbook 50
longline 28

M

management 19, 32-35, 40, 50, 51, 77, 87, 95, 98, 99, 130, 141
marination 69
Marine Biological Laboratory 40
marine mammal ..... see fishery - marine mammal interaction
Marine Monitoring, Assessment, & Prediction Program 97
Marine Recreational Fisheries Statistics Survey 49
MARMAP ..... see Marine Monitoring, Assessment, & Prediction Program
mass ..... see water mass
maturity 54, 64, 80
maturity stage 54
MBL ..... see Marine Biological Laboratory
mechanism ..... see compensatory mechanism
meristics 6
mesh selection 50
metabolism ..... see sediment metabolism
metal ..... see heavy metal
methane 2
method/methodology 3, 4, 8, 11, 19, 27, 29, 30, 37, 39, 54, 57, 78, 85, 90, 97, 118, 138
migration 56, 62, 106, 109
MIR ..... see Polish Sea Fisheries Institute
model 9, 37, 64, 80, 102, 121
molting 132
monitoring 5, 53, 68, 95, 97
morphology 41, 46, 47, 115
morphometrics 46
mortality 7, 11, 22, 64, 80, 89, 123, 127, 142, 144, 145, 149
movement 16-18, 48, 56, 62, 106, 109, 143
MRFSS ..... see Marine Recreational Fisheries Statistics Survey
MSVPA ..... see multispecies virtual population analysis
multispecies model 102
multispecies virtual population analysis 102

N

name ..... see commom name, scientific name
NASCO ..... see North Atlantic Salmon Conservation Organization
neoplasm 7, 128

neurotoxic shellfish poisoning 21
North Atlantic Salmon Conservation Organization 99
nutrient 20, 60, 62, 97, 108, 146
nutrition ..... see seafood nutrition

O

obituary 38
ocean dumping 31, 60-62, 67, 81, 82, 86, 88, 91, 103, 106, 108-110, 121, 134, 138, 139, 143, 147, 148
oceanography ..... see chemical oceanography, physical oceanography
omega-3 fatty acid 13
ontogenetic development 6
osteology 6, 41
otolith 118
oxygen ..... see bottom-water dissolved oxygen, dissolved oxygen, seabed oxygen demand, sediment oxygen demand
ozone 4

P

paleontology 113
paralytic shellfish poisoning 21
parasitism 10, 41, 129, 130, 136
pathogen 122
pathobiology 62, 76, 82, 100, 101, 109
pathology 62, 76, 82, 100, 109
pest 10
phaeopigment 97
phylogeny 41
physical oceanography 16-18, 22, 23, 52, 53, 62, 66-68, 78, 79, 91-94, 97, 104, 112
physiology 58, 59, 119, 120, 125, 126, 132, 137, 140, 146, 149
pickling 69
pigment ..... see phaeopigment, fluorescent pigment aging method
plume ..... see estuarine effluent plume
poisoning 21
Polish Sea Fisheries Institute 26
pollutant effect 1, 11, 42, 58, 59, 87, 101, 119, 120, 125, 126, 132, 133, 137, 138, 140, 144, 145
pollution 20, 31, 60-62, 67, 81, 82, 86, 88, 89, 91, 100, 103, 106, 108-110, 119, 121, 125, 134-136, 138-140, 143-145, 147, 148
population dynamics 9, 11, 19, 37, 56, 57, 63, 64, 77, 80, 87, 96, 142, 149
population intermixing 143
predation 10, 35, 96, 107
predator control 10
preservation ..... see seafood preservation & storage
primary production 97
processing ..... see seafood handling & processing
production ..... see community production, fecal pellet production, primary production
progression ..... see clinical progression
proximate composition 12, 13
purse seine 28
pycnocline 112

R

range 43, 46, 47, 56, 129
rearing density 11
recreational fishery 49, 55, 69-75, 77, 80, 105
recruitment 63, 80
redox potential 60-62, 121
reef ..... see coral reef
Registry of Marine Pathology 76
remotely operated vehicle 85
remote sensing ..... 2, 83 ,85, 91, 94, 112
reproduction 11, 15, 54, 56, 64, 80, 116, 117, 125-127, 133, 137
resuspension ..... see sediment resuspension
risk assessment 130
ROMP ..... see Registry of Marine Pathology

S

safety ..... see seafood safety
salinity 53, 62, 66-68, 97, 131
salting 70
sampling 30, 50, 62
sampling/experimental design 62
sampling gear 8, 30, 85
sampling gear comparison 30, 85
sarcoma 7, 39, 122
satellite 2, 83, 91, 94, 112
scales 118
scientific name 45
SCUBA diving 85
seabed oxygen demand 86
seafood 12-14, 55, 69-75, 105
seafood handling & processing 72
seafood nutrition 12-14, 71
seafood preparation & cooking 69, 73, 105
seafood preservation & storage 55, 69, 70, 72, 74
seafood safety 75
sea sampling 50
seasonal effect ..... see seasonality
seasonality 20, 22, 50, 51, 79
sediment 18, 60-62, 67, 86, 110, 121, 123, 148
sediment biogeochemistry 60-62, 121
sediment chemistry 60-62, 86, 110, 121
sediment metabolism 62, 86
sediment oxygen demand 62, 121

sediment resuspension 62
sediment transport 62, 67
seine ..... see purse seine
serum vitellogenin 137
sewage sludge 30, 60-62, 67, 81, 82, 86, 88, 91, 103, 106, 108-110, 121, 134, 138, 139, 143, 147, 148
shelf water 91
shell disease 101
shellfish disease syndrome 100
Ship of Opportunity Program 52, 53
size-age composition 147
size composition 50
slope water 23, 91
sludge ..... see sewage sludge
smoking 55
social behavior 25
sociology 19
SOOP ..... see Ship of Opportunity Program
spatial distribution 17, 18, 25
spawning 54, 80
spawning stock biomass 80
spawning stock biomass per recruit 80
species composition 44, 62, 81, 109
species group 44
starvation 115
statistics 49, 138
stock assessment 37, 57, 77, 80, 87
stock depletion 95
stock identification 118
stock structure 80
stocking ..... see introduction/stocking/transfer
storage ..... see frozen storage, seafood preservation & storage
stranding 94
stratification ..... see bottom-water stratification, density stratification
stress 89, 90
submersible 8
survey 5, 27, 29, 44, 49, 51, 54, 57, 77, 97
survival 64, 116, 117
symbiosis 25
systematics 6, 24, 41

T

tagging 62, 106, 109, 143
taphonomy 113
taxonomy 24, 45-47
technology ..... see fishery technology
temperature ..... see water temperature
thermal stratification 112
tides 17
total biomass 62, 81, 109
transfer ..... see introduction/stocking/transfer
transfer function model 9
trawl survey ..... see bottom trawl survey
tumor 7, 128, 137
2,4-D 59, 119, 120

U

ultraviolet light 4
upwelling 62, 67, 92

V

videotape 8
virus 122
vitellogenin ..... see serum vitellogenin

W

warm-core ring 91, 93
water circulation 62, 67
water density 62, 67, 97
water mass 23, 91
water temperature 22, 52, 53, 62, 66-68, 78, 79, 92, 94, 97, 116, 117
weighout sampling 50
wetland 2, 83
WHL ..... see Woods Hole Laboratory
WHOI ..... see Woods Hole Oceanographic Institution
wind 92
Woods Hole Laboratory 40
Woods Hole Oceanographic Institution 40

X

XBT ..... see expendable bathythermograph

Y

yield 9, 19, 32, 34, 35, 64, 80, 87, 95, 96
young-of-the-year 111

Z

zinc 125, 126

CENTER AUTHORS

A

Almeida, F.P. 49-51
Arlen, L. 61
Armstrong, R.S. 92
Auditore, P.J. 18
Azarovitz, T.R. 5

B

Bejda, A.J. 111
Benway, R.L. 52, 53
Berman, M.S. 3

Bisagni, J.J. 112
Bodammer, J.E. 1, 114, 115
Blogoslawski, W.J. 4, 10
Bohan, M. 54
Bolz, G.R. 16, 18
Bruno, R. 61
Buckley, L.J. 116, 117
Burnett, J.M., III 54, 84
Burns, T.S. 50, 51
Busch, D.A. 23
Byrne, C.J. 5

C

Carver, J.H. 55, 56
Casey, J.G. 64
Chang, S. 50, 51
Choromanski, J. 142
Clark, S.H. 77
Cohen, E.B. (deceased) 96
Collette, B.B. 38, 41
Conser, R.J. 80

D

Darde, J.A. 54, 118
Dawson, M. 58, 59, 119, 120
D'Entremont, D.D. 12
Despres-Patanjo, L.I. 5
Dow, D.D. 2, 83
Draxler, A.F.J. 60, 61, 121

F

Fahay, M.P. 6, 15
Fairfield, C.P. 93, 94
Farley, C.A. 7, 39, 122
Ferris, G.E. 144-146
Finneran, T. 66, 108
Fogarty, M.J. 9, 63, 64
Fournier, P. 61
Frame, A. 88
Fromm, S. 86, 88

G

Gibson, J.A. 65
Goldberg, R. 11, 123, 124
Gould, E. 125, 126
Griswold, C.A. 48

H

Halavik, T. 116, 117
Hebert, A.T. 127
Holzwarth, T. 66, 79
Hughes, J.B. 127, 133

I

Idoine, J.S. 64
Ingham, M. 67

J

James, M. 61
Jeffress, D. 88
Jones, E. 86
Jossi, J.W. 53, 68

K

Kaylor, J.D. 69, 70
Kern, F.G. 128-130
Kohler, N.E. 64
Krzynowek, J. 12-14, 71
Kuropat, C. 137, 149

L

Laurence, G.C. 116, 117
Learson, R.J. 72, 73
Leftwich, S. 110
Leimburg, E. 110
Lewis, E.J. 31, 131
Licciardello, J.J. (deceased) 74, 75
Lough, R.G. 16-18, 30

M

MacKenzie, C.L., Jr. 19, 107
Mac Lean, S.A. 76
Mahoney, J.B. 20, 21
Maney, R.S. 13
Manning, J. 66
May, B. 86
Mayo, R.K. 54, 77
McMillan, D.G. 81, 147
McVey, A.L. 3
Mercaldo-Allen, R. 132, 137, 149
Morse, W.W. 22
Mountain, D.G. 23, 78, 79
Munroe, T.A. 24
Murphy, J. 12, 13

N

Nelson, D.A. 133
Nelson, G.A. 84
Nizinski, M.S. 25

O

O'Brien, L. 54

P

Pacheco, A.L. 81, 82, 134, 147
Panunzio, L.J. 13, 14
Pearce, J.B. 101, 135, 136
Penttila, J.A. 84
Pereira, J.J. 137, 149
Perez Farfante, I. 45
Perry, D.M. 127
Peterson, A.E., Jr. 26
Phoel, W.C. 85, 86
Pikanowski, R.A. 81, 138, 147
Polacheck, T. 27-29
Potter, D.C. 18, 30
Pratt, H.L. 64

R

Radosh, D. 88
Reid, R. 88, 139
Richards, R.A. 87
Robohm, R.A. 89, 90
Rosenfield, A. 130
Rugg, J. 82, 101, 103, 134

S

Sano, M.H. 91-94
Sawyer, T.K. 33, 101
Sharack, K. 86
Sherman, K. 32-36, 95, 96
Sibunka, J. 97
Silverman, M.J. 97
Sindermann, C.J. 98-101, 140, 141
Sissenwine, M.P. 80, 102
Smigielski, A. 116, 117
Smith, B.C. 144, 145
Smith, D.E. 68
Smith, T.D. 29, 37
Stehlik, L. 81, 147
Steimle, F. 103
Stiles, S. 142
Strout, G.A. 104
Studholme, A.L. 111

T

Theroux, R.B. 40
Tukhunen, B. 105
Twarog, J.W., Jr. 144, 145

U

Ukeles, R. 146

V

Valdes, B. 81, 106, 111, 143
Vecchione, M. 8, 42, 43
Vitaliano, J. 88, 107

W

Waldhauer, R. 108
Wikfors, G.H. 144-146
Wilk, S.J. 44, 109, 147
Williams, A.B. 45-47, 113

Z

Zdanowicz, V.S. 110, 148
Ziskowski, J. 137, 149

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(continued from inside front cover)

79. **Contaminants in Sediment and Fish Tissue from Estuarine and Coastal Sites of the Northeastern United States: Data Summary for the Baseline Phase of the National Status and Trends Program Benthic Surveillance Project, 1984-1986.** By Vincent S. Zdanowicz and Donald F. Gadbois. December 1990. x + 138p., 67 figs., 21 tables. NTIS Access. No. PB92-147453/AS.

80. **Distribution of Sexually Immature Components of 10 Northwest Atlantic Groundfish Species Based on Northeast Fisheries Center Bottom Trawl Surveys, 1968-86.** By Susan E. Wigley and Wendy L. Gabriel. January 1991. iv + 17 p., 23 figs., 3 tables. NTIS Access. No. PB92-101617.

81. **Status of the Fishery Resources Off the Northeastern United States for 1990.** By Conservation and Utilization Division, Northeast Fisheries Center. January 1991. iv + 130 p., 50 figs., 82 tables. NTIS Access. No. PB91-213785.

82. **Response of the Habitat and Biota of the Inner New York Bight to Abatement of Sewage Sludge Dumping: Third Annual Progress Report--1989.** By Anne L. Studholme, Merton C. Ingham, and Anthony Pacheco, eds. February 1991. vi + 57 p., 74 figs., 20 tables, 1 app. NTIS Access. No. PB91-208199.

83. **Organic Contaminants in Hepatic Tissues of Lobster and Flounder at the New York Bight "12-Mile" Sewage Sludge Dumpsite: 1987-88.** By A.F.J. Draxler, Paul Hauge, and Ashok D. Deshpande. July 1991. iii + 10 p., 3 figs., 8 tables. NTIS Acccss. No. PB93-114635/AS.

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89. **Proceedings of the NEFC/ASMFC Summer Flounder, *Paralichthys dentatus*, Aging Workshop, 11-13 June 1990, Northeast Fisheries Center, Woods Hole, Mass.** By Frank P. Almeida, Raoul E. Castaneda, Roman Jesien, Richard E. Greenfield, and John M. Burnett. January 1992. iii + 7 p., 8 figs., 2 tables. NTIS Access. No. PB93-114643/AS.

90. **Fish and Megainvertebrates Collected in the New York Bight Apex during the 12-Mile Dumpsite Recovery Study, July 1986-September 1989.** By Stuart J. Wilk, Robert A. Pikanowski, Anthony L. Pacheco, Donald G. McMillan, Beth A. Phelan, and Linda L. Stehlik. October 1992. iv + 78p., 9 figs., 2 tables, 2 app. NTIS Access. No. PB93-158772.

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