

CURRICULUM VITAE

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I. Personal Data

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II. Education

- 1963 B.A., University of Massachusetts, Zoology.
1965 M.S., Cornell University, Fishery Science. Thesis title:
Food of pelagic young of the walleye *Stizostedion vitreum vitreum* (Mitchill), in
Oneida Lake, NY.
1968 Ph.D., Cornell University, Fishery Science. Dissertation title:
The relation of water currents and zooplankton abundance to distribution of larval
walleyes, *Stizostedion vitreum vitreum* in Oneida Lake, NY.

III. Professional Background

- 2016- Professor Emeritus, University of Maryland Center for
Environmental Science.
2012-2016 Vice President for Education, University of Maryland Center for
Environmental Science.
1980-2016 Professor, University of Maryland, Center for Environmental
Science
1983-1985 Director, Biological Oceanography
Program, National Science Foundation, Washington, D. C. 20550.
1977-1980 Professor, Division of Biology and Living Resources, Rosenstiel
School of Marine and Atmospheric Science (RSMAS), University
of Miami, Miami, FL.
1974-1977 Associate Professor, Division of Biology and Living Resources,
RSMAS, Miami, FL.
1971-1974 Assistant Professor, Division of Biology and Living Resources,
RSMAS, Miami, FL.

- 1970-1971 Research Scientist, Division of Fishery Sciences, RSMAS,
Miami, FL.
- 1968-1970 Fishery Research Biologist, Tropical Atlantic Biological
Laboratory, U.S. Bureau of Commercial Fisheries, Miami, FL.

Awards and Special Recognition

- 1996 Warren Wooster Lecturer in Recruitment Oceanography. University of
Washington, Seattle. Three lectures. “Subtleties and episodes in the early
lives of fishes.”
- 1996 Sea Grant Lecturer, Florida State University, Tallahassee.
- 1997 Beverton Medal for Excellence in Fisheries Research. Presented by
Fisheries Society of the British Isles. Galway, Ireland.
- 1998 Oscar Elton Sette Award for Sustained Excellence in Marine Fishery
Biology. American Fisheries Society.
- 2000 Elected Fellow, American Association for the Advancement of Science
(AAAS).
- 2001 Regents Faculty Award for Public Service. University of Maryland
System.
- 2001 Elected National Associate of the National Academy of Sciences.
- 2003 Chancellor’s Distinguished Lecturer, Louisiana State University.
- 2004 President’s Award for Excellence in the Application of Science,
University of Maryland Center for Environmental Science.
- 2006 Conservationist-of-the-Year Award, Tidewater Chapter, American
Fisheries Society
- 2009 Honorary Lifetime Membership. Fisheries Society of the British Isles.
- 2010 Distinguished Lecturer, Hatfield Marine Science Center, Newport, OR
- 2010 Excellence in Fisheries Education Award. Tidewater Chapter, American
Fisheries Society
- 2011 E. H. Ahlstrom Award for Lifetime Achievement, Early Life History
Section, American Fisheries Society.

IV. Research

A. Areas of Professional Expertise:

Fisheries ecology and oceanography, particularly the early-life stages of fishes;
recruitment processes; trophodynamics, fisheries and marine resources management.
Graduate education in marine and environmental sciences.

B. Publications:

1. Papers in Refereed Journals

Houde, E. D. 1964. The strigeid trematode, *Crassiphiala bulboglossa*, from the blacknose
dace, *Rhinichthys atratulus*. Trans. Am. Fish. Soc. 93:304-306.

Houde, E. D. 1967. Food of pelagic young of the walleye, *Stizostedion vitreum vitreum*, in
Oneida Lake, New York. Trans. Am. Fish. Soc. 96:17-34.

- Houde, E. D. 1969. Sustained swimming ability of larvae of walleye, *Stizostedion vitreum* and yellow perch, *Perca flavescens*. J. Fish. Res. Bd. Canada. 26:1647-1659.
- Houde, E. D. and W. J. Richards. 1969. Rearing larval tunas in the laboratory. Commer. Fish. Rev. 31(12):32-34.
- Houde, E. D. 1969. Distribution of larval walleyes and yellow perch in a bay of Oneida Lake and its relation to water currents and zooplankton. N.Y. Fish Game J. 16:184-205.
- Houde, E. D., C. R. Futch and R. Detwyler. 1970. Development of the lined sole, *Achirus lineatus*, described from laboratory-reared and Tampa Bay specimens. Fla. Dept. Natur. Resour. Tech. Ser. 62:1-43.
- Houde, E. D. and J. L. Forney. 1970. Effect of water currents on distribution of walleye larvae in Oneida Lake, New York. J. Fish. Res. Bd. Can. 27:445-456.
- Houde, E. D. and B. J. Palko. 1970. Laboratory rearing of the clupeid fish *Harengula pensacolae* from fertilized eggs. Mar. Biol. 5:354-358.
- Detwyler, R. and E. D. Houde. 1970. Food selection by laboratory-reared larvae of the scaled sardine *Harengula pensacolae* (Pisces, Clupeidae) and the bay anchovy, *Anchoa mitchilli* (Pisces, Engraulidae). Mar. Biol. 7:214-222.
- Houde, E. D. and A. J. Ramsay. 1971. A culture system for marine fish larvae. Prog. Fish-Cult. 33:156-157.
- Houde, E. D. 1971. Developmental abnormalities of the flatfish, *Achirus lineatus*, reared in the laboratory. Fish. Bull., U. S. 69:537-544.
- Houde, E. D. 1972. Development and early life history of the northern sennet, *Sphyraena borealis* DeKay (Pisces, Sphyraenidae) reared in the laboratory. Fish. Bull., U. S. 70:185-195.
- Saksena, V. P. and E. D. Houde. 1972. Effect of food level on the growth and survival of laboratory-reared larvae of bay anchovy (*Anchoa mitchilli* Val.) and scaled sardine (*Harengula pensacolae* Goode and Bean). J. Exp. Mar. Biol. Ecol. 8:249-258.
- Futch, C. R., R. W. Topp and E. D. Houde. 1972. Developmental osteology of the lined sole, *Achirus lineatus* (Pisces: Soleidae). Contrib. Mar. Sci. 16:33-58.
- Saksena, V. P., C. Steinmetz, Jr. and E. D. Houde. 1972. Effects of temperature on growth and survival of laboratory-reared larvae of the scaled sardine, *Harengula pensacolae* Goode and Bean. Trans. Am. Fish. Soc. 101:691-695.
- Houde, E. D. 1973. Estimating abundance of sardine-like fishes from egg and larvae surveys, Eastern Gulf of Mexico: Preliminary Rept. Proc. Gulf. Carib. Fish. Inst. 25:68-78.

- Houde, E. D. and P. L. Fore. 1973. Guide to identity of eggs and larvae of some Gulf of Mexico clupeid fishes. Fla. Dept. Natur. Resour., Leaflet Ser. 4, No. 23, 14 pp.
- Houde, E. D. 1973. Some recent advances and unsolved problems in the culture of marine fish larvae. Proc. World Maricult. Soc. 3:83-112.
- Richards, W. J., R. V. Miller and E. D. Houde. 1974. Egg and larval development of the thread herring, *Opisthonema oglinum* (Le Sueur). Fish. Bull., U. S. 72:1123-1136.
- Houde, E. D., W. J. Richards and V. P. Saksena. 1974. Description of eggs and larvae of scaled sardine, *Harengula jaguana* Poey. Fish. Bull., U. S. 72:1106-1122.
- Houde, E. D. 1974. Effects of temperature and delayed feeding on growth and survival of larvae of three species of subtropical marine fishes. Mar. Biol. 26:271-285.
- Houde, E. D. 1975. Effects of stocking density and food density on survival, growth and yield of laboratory-reared larvae of sea bream, *Archosargus rhomboidalis* (L.) (Sparidae). J. Fish Biol. 7:115-127.
- Martinez, S. and E. D. Houde. 1975. Fecundity, sexual maturation and spawning of scaled sardine. Bull. Mar. Sci. 25:35-45.
- Houde, E. D. and L. J. Swanson, Jr. 1975. Description of eggs and larvae of yellowfin menhaden *Brevoortia smithi*. Fish Bull., U. S. 73:660-673.
- Houde, E. D. 1976. Abundance and potential for fisheries development of some sardine-like fishes in the eastern Gulf of Mexico. Proc. Gulf Carib. Fish. Inst. 28:73-82.
- Houde, E. D., S. A. Berkeley, J. J. Klinovsky and R. C. Schekter. 1976. Culture of larvae of the white mullet, *Mugil curema* Valenciennes. Aquaculture 8:365-370.
- Houde, E. D. and N. Chitty. 1976. Seasonal abundance and distribution of zooplankton, fish eggs, and fish larvae in the eastern Gulf of Mexico, 1972-1974. NOAA Tech. Rept. NMFS, Spec. Sci. Rep.-Fish. 701, 18 pp.
- Houde, E. D. and T. Potthoff. 1976. Egg and larval development of the sea bream *Archosargus rhomboidalis* (Linnaeus): Pisces, Sparidae. Bull. Mar. Sci. 26:506-529.
- Houde, E. D. 1977. Abundance and potential yield of the round herring, *Etrumeus teres*, and aspects of its early life history in the eastern Gulf of Mexico. Fish. Bull., U. S. 75:61-89.
- Houde, E. D. 1977. Abundance and potential yield of the thread herring, *Opisthonema oglinum*, and aspects of its early life history in the eastern Gulf of Mexico. Fish. Bull., U. S. 75:493-512.

- Houde, E. D. 1977. Abundance and potential yield of the scaled sardine, *Harengula jaguana*, and aspects of its early life history in the eastern Gulf of Mexico. Fish. Bull., U. S. 75:613-628.
- Houde, E. D. 1977. Food concentration and stocking density effects on survival and growth of laboratory-reared larvae of bay anchovy, *Anchoa mitchilli* and lined sole, *Achirus lineatus*. Mar. Biol. 43:333-341.
- Houde, E. D. 1978. Critical food concentrations for larvae of three species of subtropical marine fishes. Bull. Mar. Sci. 28:395-411.
- Berkeley, S. A. and E. D. Houde. 1978. Biology of two exploited species of halfbeaks, *Hemiramphus brasiliensis* and *H. balao* from southeast Florida. Bull. Mar. Sci. 28:624-644.
- Houde, E. D. and R. C. Schekter. 1978. Simulated food patches and survival of larval bay anchovy, *Anchoa mitchilli* and sea bream, *Archosargus rhomboidalis*. Fish. Bull., U. S. 76:483-487.
- Houde, E. D. and A. K. Taniguchi. 1979. Laboratory culture of marine fish larvae and their role in marine environmental research. pp. 176-205, In: The state of marine environmental research proceedings of a symposium. U. S. Environmental Protection Agency. EPA-600/9-79-035.
- Houde, E. D. and R. C. Schekter. 1980. Feeding by marine fish larvae: developmental and functional responses. Env. Biol. Fish. 5(4):315-334.
- Dowd, C. E. and E. D. Houde. 1980. Combined effects of prey concentration and photoperiod on survival and growth of larval sea bream, *Archosargus rhomboidalis* (Sparidae). Mar. Ecol. Prog. Ser. 3:181-185.
- Richards, W. J., T. Potthoff and E. D. Houde. 1981. Abundance of bluefin tuna larvae and estimates of spawning stock sizes in the Gulf of Mexico in 1977 and 1978. International Commission for the Conservation of Atlantic Tunas. Coll. Vol. Sci. Paps. 15(2):273-277.
- Houde, E. D. and R. C. Schekter. 1981. Growth rates, rations and cohort consumption of marine fish larvae in relation to prey concentration. Rapp. P.-v. Cons. int. Explor. Mer 178:441-453.
- Houde, E. D. 1981. Distribution and abundance of four types of codlet (Pisces: Bregmacerotidae) larvae from the eastern Gulf of Mexico. Biol. Oceanogr. 1:81-104.
- Houde, E. D. 1982. Kinds, distribution and abundances of sea bass larvae (Pisces: Serranidae) from the eastern Gulf of Mexico. Bull. Mar. Sci. 35:511-522. UMCEES Contrib. No. 1136.

- Houde, E. D. 1983. The Larval Stages. Book critique of Marine Fish Larvae, Lasker, R. (ed.), Univ. of Washington Press, Seattle. Environ. Biol. Fish. 9:77-79. Ref. No. [UMCEES]CBL 83-68.
- Grall, C., D. P. de Sylva and E. D. Houde. 1983. Distribution, relative abundance and seasonality of broadbill swordfish (*Xiphias gladius*) larvae. Trans. Am. Fish. Soc. 112:234-246. UMCEES Contrib. No. 1427.
- Houde, E. D. and R. C. Schekter. 1983. Oxygen uptake and comparative energetics among eggs and larvae of three subtropical marine fishes. Mar. Biol. 72:283-293. UMCEES Contrib. No. 1376.
- Houde, E. D. and J. Alpern-Lovdal. 1984. Seasonality of occurrence, foods and food preferences of ichthyoplankton in Biscayne Bay, Florida. Estuarine, Coastal Shelf Sci. 18:403-419. UMCEES Contrib. No. 1534.
- Milliken, D. M. and E. D. Houde. 1984. A new species of Bregmacerotidae (Pisces), *Bregmaceros cantori*, from the western Atlantic Ocean. Bull. Mar. Sci. 35:11-19. UMCEES Contrib. No. 1562.
- Houde, E. D. and J. D. Alpern-Lovdal. 1985. Patterns of variability in ichthyoplankton occurrence and abundance in Biscayne Bay, Florida. Estuarine Coastal Shelf Sci. 20:79-103. UMCEES Contrib. No. 1584.
- Almatar, S. and E. D. Houde. 1986. Distribution and abundance of the sardine *Sardinella fimbriata* (Val.) eggs in Kuwait waters of the Arabian Gulf. Fish. Res. 4:331-342. UMCEES Contrib. No. 1789.
- Houde, E. D. and L. Lubbers III. 1986. Survival and growth of striped bass, *Morone saxatilis*, and *Morone* hybrid larvae: laboratory and pond enclosure experiments. Fish. Bull., U. S. 84:904-914. UMCEES Contrib. No. 1721.
- Houde, E. D., S. Almatar, J. C. Leak and C. E. Dowd. 1986. Ichthyoplankton abundance and diversity in the western Arabian Gulf. Kuwait Bull. Mar. Sci. 8:107-393. UMCEES Contrib. No. 1860.
- Leak, J. C. and E. D. Houde. 1987. Cohort growth and survival of bay anchovy *Anchoa mitchilli* larvae in Biscayne Bay, Florida. Mar. Ecol. Prog. Ser. 37:109-122. UMCEES Contrib. No. 1793.
- Houde, E. D. 1987. Fish early life dynamics and recruitment variability. Am. Fish. Soc. Symp. 2:17-29. UMCEES Contrib. No. 1744.
- Bailey, K. M. and E. D. Houde. 1989. Predation on eggs and larvae of marine fishes and the recruitment problem. Adv. Mar. Biol. 25:1-83. UMCEES Contrib. No. 1985.
- Houde, E. D. 1989. Subtleties and episodes in the early life of fishes. J. Fish Biol. 35(Suppl. A):29-38. UMCEES Contrib. No. 2108.

- Houde, E. D. 1989. Comparative growth, mortality and energetics of marine fish larvae: temperature and implied latitudinal effects. *Fish. Bull., U. S.* 87:471-495. UMCEES Contrib. No. 2136.
- Zastrow, C. E., E. D. Houde and E. H. Saunders. 1989. Quality of striped bass (*Morone saxatilis*) eggs in relation to river source and female weight. *Rapp. P.-v. Réun. Cons. int. Explor. Mer* 191:34-42. UMCEES Contrib. No. 2116.
- Houde, E. D., P. B. Ortner, L. Lubbers, III and S. R. Cummings. 1989. Test of a camera-net system to determine abundance and heterogeneity in anchovy egg distributions. *Rapp. P.-v. Réun. Cons. Int. Explor. Mer* 191:112-118. UMCEES Contrib. No. 2115.
- Houde, E. D. 1990. Reproductive variability: implications for the dynamics and well-being of fish stocks. Introduction to selected papers. *J. Cons. int. Explor. Mer* 47:248. UMCEES Contrib. No. 2209.
- Tuncer, H., R. M. Harrell and E. D. Houde. 1990. Comparative energetics of striped bass (*Morone saxatilis*) and hybrid (*M. saxatilis* X *M. chrysops*) juveniles. *Aquaculture* 86:387-400. UMCEES Contrib. No. 2076.
- Tuncer, H, R. M. Harrell and E. D. Houde. 1990. Comparative food acceptance and consumption of striped bass and hybrid larvae. *J. World Aquacult. Soc.* 21:225-234. UMCEES Contrib. No. 2123.
- Monteleone, D. M. and E. D. Houde. 1990. Influence of maternal size on survival and growth of striped bass, *Morone saxatilis*, eggs and larvae. *J. Exp. Mar. Biol. Ecol.* 140:1-11. UMCEES Contrib. No. 2161.
- Cowan, J. H., Jr. and E. D. Houde. 1990. Growth and survival of bay anchovy (*Anchoa mitchilli*) larvae in mesocosm enclosures. *Mar. Ecol. Prog. Ser.* 68:47-57. UMCEES Contrib. No. 2163.
- Zastrow, C. E., E. D. Houde and L. G. Morin. 1991. Spawning, fecundity, hatch-date frequency and young-of-the-year growth of bay anchovy *Anchoa mitchilli* in mid-Chesapeake Bay. *Mar. Ecol. Prog. Ser.* 73:161-171. UMCEES Contrib. No. 2218.
- Monteleone, D. M. and E. D. Houde. 1992. Vulnerability of striped bass (*Morone saxatilis* Walbaum) eggs and larvae to predation by juvenile white perch (*Morone americana* Gmelin). *J. Exp. Mar. Biol. Ecol.* 158:93-104. UMCEES Contrib. No. 2385.
- Cowan, J. H., Jr., R. S. Birdsong, E. D. Houde, J. S. Proest, W. C. Sharp and G. B. Mateja. 1992. Enclosure experiments on survival and growth of black drum eggs and larvae in lower Chesapeake Bay. *Estuaries* 15:392-402. UMCEES Contrib. No. 2287.

- Cowan, J. H., Jr. and E. D. Houde. 1992. Size-dependent predation on marine fish larvae by ctenophores, scyphomedusae and planktivorous fish. *Fish. Oceanogr.* 1:113-126. UMCEES Contrib. No. 2386.
- Cowan, J. H., Jr., K. A. Rose, E. S. Rutherford and E. D. Houde. 1993. Individual-based model of young-of-the-year striped bass population dynamics. II. Factors affecting recruitment in the Potomac River, Maryland. *Trans. Am. Fish. Soc.* 122:439-458. UMCEES Contrib. No. 2454.
- Olney, J. E. and E. D. Houde. 1993. Evaluation of in situ silhouette photography in investigations of estuarine zooplankton and ichthyoplankton. *Bull. Mar. Sci.* 52:845-872. UMCEES Contrib. No. 2514.
- Houde, E. D. and C. E. Zastrow. 1993. Ecosystem- and taxon-specific dynamics and energetics properties of larval fish assemblages. *Bull. Mar. Sci.* 53:290-335.
- Houde, E. D. and E. S. Rutherford. 1993. Recent trends in estuarine fisheries: predictions of fish production and yield. *Estuaries* 16:161-176. UMCEES Contrib. No. 2467.
- Cowan, J. H., Jr. and E. D. Houde. 1993. Relative predation potentials of scyphomedusae, ctenophores and planktivorous fish on ichthyoplankton in Chesapeake Bay. *Mar. Ecol. Prog. Ser.* 95:55-65. UMCEES Contrib. No. 2425.
- Rose, K. A., J. H. Cowan, Jr., E. D. Houde and C. C. Coutant. 1993. Individual-based modelling of environmental quality effects on early life stages of fishes: a case study using striped bass. *Am. Fish. Soc. Symp.* 14:125-145. UMCEES Contrib. No. 2515.
- Houde, E. D. 1994. Differences between marine and freshwater fish larvae: implications for recruitment. *ICES J. Mar. Sci.* 51:91-97. UMCEES Contrib. No. 2512.
- Breitburg, D. L., N. Steinberg, S. Dubeau, C. Cooksey and E. D. Houde. 1994. Effects of low dissolved oxygen on predation on estuarine fish larvae. *Mar. Ecol. Prog. Ser.* 104:235-246. UMCEES Contrib. No. 2640.
- Ditty, J. G., E. D. Houde and R. F. Shaw. 1994. Egg and larval development of Spanish sardine, *Sardinella aurita* (family Clupeidae), with a synopsis of characters to identify clupeid larvae from the Northern Gulf of Mexico. *Bull. Mar. Sci.* 54(2):367-380. UMCEES Contrib. No. 2637.
- Houde, E. D., J. C. Gamble, S. E. Dorsey and J. H. Cowan, Jr. 1994. Drifting mesocosms: the influence of gelatinous zooplankton on mortality of bay anchovy, *Anchoa mitchilli*, eggs and yolk-sac larvae. *ICES J. Mar. Sci.* 51:383-394. UMCEES Contrib. No. 2638.
- Wang, S.-B. and E. D. Houde. 1994. Energy storage and dynamics in bay anchovy, *Anchoa mitchilli*. *Mar. Biol.* 121:219-227. UMCEES Contrib. No. 2668.
- Purcell, J. E., D. A. Nemazie, S. E. Dorsey, E. D. Houde and J. C. Gamble. 1994. Predation mortality of bay anchovy (*Anchoa mitchilli*) eggs and larvae due to scyphomedusae

- and ctenophores in Chesapeake Bay. Mar. Ecol. Prog. Ser. 114:47-58. UMCEES Contrib. No. 2639.
- Secor, D. H., E. D. Houde and D. M. Monteleone. 1995. A mark-release experiment on larval striped bass *Morone saxatilis* in a Chesapeake Bay tributary. ICES J. Mar. Sci. 52:87-101. UMCEES Contrib. No. 2593.
- Newberger, T. A. and E. D. Houde. 1995. Population biology of bay anchovy, *Anchoa mitchilli*, in mid-Chesapeake Bay. Mar. Ecol. Prog. Ser. 116:25-37. UMCEES Contrib. No. 2667.
- Rutherford, E. S. and E. D. Houde. 1995. The influence of temperature on cohort-specific growth, survival and recruitment of striped bass, *Morone saxatilis*, larvae in Chesapeake Bay. Fish. Bull., U. S. 93:315-332. UMCEES Contrib. No. 2669.
- Wang, S.-B. and E. D. Houde. 1995. Distribution, relative abundance, biomass and production of bay anchovy *Anchoa mitchilli* in the Chesapeake Bay. Mar. Ecol. Prog. Ser. 121:27-38. UMCEES Contrib. No. 2754.
- Secor, D. H. and E. D. Houde. 1995. Temperature effects on the timing of striped bass egg production, larval viability, and recruitment potential in the Patuxent River (Chesapeake Bay). Estuaries 18:527-544. UMCEES Contrib. No. 2620.
- Dorsey, S. E., E. D. Houde and J. C. Gamble. 1996. Cohort abundances and daily variability in mortality of eggs and yolk-sac larvae of bay anchovy, *Anchoa mitchilli*, in Chesapeake Bay. Fish. Bull., U.S. 94:257-267. UMCEES Contrib. No. 2757.
- MacGregor, J. M. and E. D. Houde. 1996. Onshore-offshore pattern and variability in distribution and abundance of bay anchovy *Anchoa mitchilli* eggs and larvae in Chesapeake Bay. Mar. Ecol. Prog. Ser. 138:5-25. UMCEES Contrib. No. 2761.
- Cowan, J. H., Jr., E. D. Houde and K. A. Rose. 1996. Size-dependent vulnerability of marine fish larvae to predation: an individual-based numerical experiment. ICES J. mar. Sci. 53:23-37. UMCEES Contrib. No. 2834.
- Rutherford, E. S., E. D. Houde and R. M. Nyman. 1997. Relationship of larval-stage growth and mortality to recruitment of striped bass, *Morone saxatilis*, in Chesapeake Bay. Estuaries 20:174-198. UMCES Contrib. No. 3074.
- Houde, E. D. 1997. Patterns and trends in larval-stage growth and mortality of teleost fish. J. Fish Biol. 51(Suppl. A):52-83. UMCES Contrib. No. 3073.
- Wang, S.-B., J. H. Cowan, Jr., K. A. Rose and E. D. Houde. 1997. Individual-based modelling of recruitment variability and biomass production of bay anchovy in mid-Chesapeake Bay. J. Fish Biol. 51(Suppl. A):101-120. UMCES Contrib. No. 3068.
- Secor, D. H. and E. D. Houde. 1998. Use of larval stocking in restoration of Chesapeake Bay striped bass. ICES J. Mar. Sci. 55:228-239. UMCES Contrib. No. 3045.

- Rilling, G. C. and E. D. Houde. 1999. Regional and temporal variability in growth and mortality of bay anchovy (*Anchoa mitchilli*) larvae in the Chesapeake Bay. Fish. Bull., U.S. 97:555-569. UMCES Contrib. No. 3291.
- Hood, R., H. V. Wang, J. E. Purcell, E. D. Houde and L. W. Harding, Jr. 1999. Modeling particles and pelagic organisms in Chesapeake Bay: convergent features control plankton distributions. J. Geophys. Res. 104(C1):1223-1243. UMCES Contrib. No. 2571.
- Leach, S. D. and E. D. Houde. 1999. Effects of environmental factors on survival, growth, and production of American shad larvae. J. Fish Biol. 54:767-786. [UMCES Contrib. No. 3144].
- Rose, K. A., J. H. Cowan, Jr., M. E. Clark, E. D. Houde and S.-B. Wang. 1999. An individual-based model of bay anchovy population dynamics in the mesohaline region of Chesapeake Bay. Mar. Ecol. Prog. Ser. 185:113-132. UMCES Contrib. No. 3289.
- Cowan, J. H., Jr., K. A. Rose, E. D. Houde, S.-B. Wang and J. Young. 1999. Modeling effects of increased larval mortality on bay anchovy population dynamics in the mesohaline Chesapeake Bay: evidence for compensatory reserve. Mar. Ecol. Prog. Ser. 185:133-146. UMCES Contrib. No. 3290.
- Rilling, G. C. and E. D. Houde. 1999. Regional and temporal variability in distribution and abundance of bay anchovy (*Anchoa mitchilli*) eggs, larvae and adult biomass in the Chesapeake Bay. Estuaries 22:1096-1109. UMCES Contrib. No. 3313.
- Keister, J. E., E. D. Houde and D. L. Breitburg. 2000. Effects of bottom-layer hypoxia on abundances and depth distributions of organisms in Patuxent River, Chesapeake Bay. Mar. Ecol. Prog. Ser. 205:43-59.
- Kimura, R., D. H. Secor, E. D. Houde and P. M. Piccoli. 2000. Up-estuary dispersal of young-of-the-year bay anchovy *Anchoa mitchilli* in the Chesapeake Bay: Inferences from microprobe analysis of Sr in otoliths. Mar. Ecol. Prog. Ser. 208:217-227. [UMCES Contribution No. 3419-CBL].
- North, E. W. and E. D. Houde. 2001. Retention of white perch and striped bass larvae: biological-physical interactions in Chesapeake Bay estuarine turbidity maximum. Estuaries. 24:756-769. [UMCES Contribution No. 3531-CBL].
- Purcell, J. E., T. A. Shiganova, M. B. Decker, and E. D. Houde. 2001. The ctenophore *Mnemiopsis* in native and exotic habitats: U.S. estuaries versus the Black Sea basin. Hydrobiologia. 451:145-176. [UMCES Contribution No. 3388-HPL].
- North, E. W. and E. D. Houde. 2003. Linking ETM physics, zooplankton prey, and fish early-life histories to striped bass *Morone saxatilis* and white perch *M. americana* recruitment. Mar. Ecol. Prog. Ser. 260:219-236. [UMCES Contribution No. 3682-CBL].

- Jung, S. and E. D. Houde. 2003. Spatial and temporal variabilities of pelagic fish community structure and distribution in Chesapeake Bay, USA. *Estuarine, Coastal and Shelf Science* 58:335-351. [UMCES Contribution No. 3729-CBL].
- Petersen, J. E., W. M. Kemp, R. Bartleson, W. R. Boynton, C.-C. Chen, J. C. Cornwell, R. H. Gardner, D. C. Hinkle, E. D. Houde, T. C. Malone, W. P. Mowitt, L. Murray, L. P. Sanford, J. C. Stevenson, K. L. Sundberg and S. E. Suttles. 2003. Multiscale experiments in coastal ecology: improving realism and advancing theory. *Bioscience* 53:1181-1197. [UMCES Contribution No. 3727-HPL].
- Houde, E. D. and S. J. Roberts. 2004. Marine protected areas: an old tool for new circumstances. *American Fisheries Society Symposium* 42:23-35.
- Jung, S. and E. D. Houde. 2004. Recruitment and spawning-stock biomass distributions of bay anchovy in Chesapeake Bay. *Fishery Bulletin, U.S.* 102:63-77. [UMCES Contribution No. 3696-CBL].
- North, E. W. and E. D. Houde. 2004. Distribution and transport of bay anchovy (*Anchoa mitchilli*) eggs and larvae in Chesapeake Bay. *Estuarine, Coastal and Shelf Science* 60:409-429.
- Jung, S. and E. D. Houde. 2004. Production of bay anchovy *Anchoa mitchilli* in Chesapeake Bay: application of size-based theory. *Marine Ecology Progress Series* 281:217-232.
- Pikitch, E. K., C. Santora, E. A. Babcock, A. Bakun, R. Bonfil, D. O. Covover, P. Dayton, P. Doukakis, D. Fluharty, B. Heneman, E. D. Houde, J. Link, P. A. Livingston, M. Mangel, M. K. McAllister, J. Pope and K. J. Sainsbury. 2004. Ecosystem-based fishery management. *Science* 305:346-347.
- Pikitch, E. K., C. Santora, E. A. Babcock, A. Bakun, R. Bonfil, D. O. Covover, P. Dayton, P. Doukakis, D. Fluharty, B. Heneman, E. D. Houde, J. Link, P. A. Livingston, M. Mangel, M. K. McAllister, J. Pope and K. J. Sainsbury. 2004. Letters. *Fishery management and culling. Response. Science* 306:1892.
- Jung, S. and E. D. Houde. 2005. Fish biomass size spectra in Chesapeake Bay. *Estuaries* 28:226-240. [UMCES Contribution No. 3814-CBL].
- Shoji, S., E. W. North and E. D. Houde. 2005. The feeding ecology of white perch *Morone saxatilis* (Pisces) larvae in the Chesapeake Bay estuarine turbidity maximum: The influence of physical conditions and prey concentrations. *J. Fish. Biol.* 66:1328-1341. [UMCES Contribution No. 3817-CBL].
- Roman, M. R., J. E. Adolf, J. Bichy, W. C. Boicourt, L. W. Harding, Jr., E. D. Houde, S. Jung, D. G. Kimmel, W. D. Miller and X. Zhang. 2005. Chesapeake Bay plankton and fish abundance enhanced by Hurricane Isabel. *EOS* 86: 261-265.
- Kemp, W. M., W. R. Boynton, J. E. Adolf, D. F. Boesch, W. C. Boicourt, G. Brush, J. C.

- Cornwell, T. R. Fisher, P.M. Glibert, J.D. Hagy, L.W. Harding, E.D. Houde, D.G. Kimmel, W. D. Miller, R. I. E. Newell, M. R. Roman, E. M. Smith and J. C. Stevenson. 2005. Eutrophication of Chesapeake Bay: historical trends and ecological interactions. *Mar. Ecol. Prog. Ser.* 303:1-29. [UMCES Contribution No. 3899-CBL].
- Mowitt, W. P., E. D. Houde, D. C. Hinkle and A. Sanford. 2006. Growth of planktivorous bay anchovy (*Anchoa mitchilli*), top-down control, and scale-dependence in estuarine mesocosms. *Mar. Ecol. Prog. Ser.* 308:255-269. [UMCES Contribution No. 3870-CBL].
- North, E. W. and E. D. Houde. 2006. Retention mechanisms of white perch (*Morone americana*) and striped bass (*Morone saxatilis*) early-life stages in an estuarine turbidity maximum: an integrative fixed-station and mapping approach. *Fish. Oceanogr.* 15:429-450. [UMCES Contribution No. 3915-CBL].
- Houde, E. D. 2008. Emerging from Hjort's shadow. *J. Northwest Atlantic Fishery Science* 41:53-70.
- Breitburg, D. L., J. K. Craig, R. S. Fulford, K. A. Rose, W. R. Boynton, D. Brady, B. J. Ciotti, R. J. Diaz, K. D. Friedland, J. D. Hagy, III, D. R. Hart, A. H. Hines, E. D. Houde, S. E. Kolesar, S. W. Nixon, J. A. Rice, D. H. Secor and T. E. Targett. 2009. Nutrient enrichment and fisheries exploitation: Interactive effects on estuarine living resources and their management. *Hydrobiologia* 629:31-47.
- Kimmel, D. G., W. D. Miller, L. W. Harding, Jr., E. D. Houde and M. R. Roman. 2009. Estuarine ecosystem response captured using a synoptic climatology. *Estuaries and Coasts* 32:403-409.
- Martino, E. J. and E. D. Houde. 2010. Recruitment of striped bass in Chesapeake Bay: spatial and temporal environmental variability and availability of zooplankton prey. *Marine Ecology Progress Series* 409:213-228.
- Campfield, P. A. and E. D. Houde 2011. Ichthyoplankton community structure and trophodynamics in an estuarine transition zone. *Fishery Bulletin, U.S.* 109:1-19.
- Hilton, E. J., G. D. Johnson, E. D. Houde and R. J. Latour. 2011. John Edward Olney, Sr. (1947-2010). *Copeia* 2011, No. 2:332-341.
- Annis, E. R., E. D. Houde, L. W. Harding Jr., M. E. Mallonee, M. J. Wilberg. 2011. Calibration of a bioenergetics model linking primary production to Atlantic menhaden *Brevoortia tyrannus* growth in Chesapeake Bay. *Marine Ecology Progress Series* 437:253-267.
- Martino, E. J. and E. D. Houde. 2012. Density-dependent regulation of year-class strength in age-0 juvenile striped bass. *Canadian Journal of Fisheries and Aquatic Sciences* 69:430-446.
- Gallego, A., E. W. North and E. D. Houde. 2012. Understanding and quantifying mortality in pelagic, early life stages of marine organisms — Old challenges and

- new perspective. *Journal of Marine Systems* 93:1-3.
- Lozano, C., E. D. Houde, R. L. Wingate and D. H. Secor. 2012. Age, growth, and hatch dates of ingressing larvae and surviving juveniles of Atlantic menhaden, *Brevoortia tyrannus*. *Journal of Fish Biology* 81:1665-1685.
- Bi, H., S. Cook; H. Yu; M. C. Benfield and E. D. Houde. 2012. Deployment of an imaging system to investigate fine-scale spatial distribution of early life stages of the ctenophore *Mnemiopsis leidyi* in Chesapeake Bay. *Journal of Plankton Research* 35:270-280.
- Lozano, C. and E. D. Houde. 2013. Factors contributing to variability in larval ingress of Atlantic menhaden, *Brevoortia tyrannus*. *Estuarine, Coastal and Shelf Science* 118:1-10.
- Shideler, A. C. and E. D. Houde. 2014. Spatio-temporal variability in larval-stage feeding and nutritional sources as factors influencing striped bass (*Morone saxatilis*) recruitment success. *Estuaries and Coasts* 37:561-575.
- Pikitch, E. K., K. J. Rountos, plus 18 co-authors (including E. D. Houde). 2014. The global contribution of forage fish to marine fisheries and ecosystems. *Fish and Fisheries* 15:43-64.
- Jung, S. and E. D. Houde. 2014. Comparison of anchovy biomass estimates measured by trawls, egg production methods and hydro-acoustics in the Chesapeake Bay and the Korea Strait. *Ocean Science Journal* 49:115-126.
- Humphrey, M. J. Wilberg, E. D. Houde and M.C. Fabrizio. 2014. Effects of temperature on young-of-the-year Atlantic menhaden growth in Chesapeake Bay. *Transactions of the American Fisheries Society* 143:1255-1265.
- Buchheister, A., T. J. Miller, E. D. Houde, D. H. Secor and R. J. Latour. 2016. Spatial and temporal dynamics of Atlantic menhaden (*Brevoortia tyrannus*) recruitment in the Northwest Atlantic Ocean. *ICES Journal of Marine Science*. doi:10.1093/icesjms/fsv260.
- Houde, E. D., E. R. Annis, L. W. Harding, Jr., M. E. Mallonee and M. J. Wilberg. 2016. Factors affecting the abundance of age-0 Atlantic menhaden (*Brevoortia tyrannus*) in Chesapeake Bay. *ICES Journal of Marine Science* 73: 2238–2251.
- Secor, D. H., E. D. Houde and L. L Kellogg. 2017. Estuarine retention and production of striped bass larvae: a mark-recapture experiment. *ICES Journal of Marine Science* 74:1735-1748.
- Marshall, K. N., P. S. Levin, T. E. Essington, L. E. Koehn, L. G. Anderson, A. Bundy, C. Carothers, F. Coleman, L. R. Gerber, J. H. Grabowski, E. Houde, O. P. Jensen, C. Mollmann, K. Rose, J. N. Sanchirico, and A. D.M. Smith. 2017. Ecosystem-based fisheries management for social–ecological systems: Renewing the focus in the United States with next generation fishery ecosystem plans. *Conservation Letters* 10. doi: 10.1111/conl.12367

- Buchheister, A., Miller, T. J., Houde, E. D. 2017. Evaluating ecosystem-based reference points for Atlantic menhaden (*Brevoortia tyrannus*). *Marine and Coastal Fisheries* 9:457-478.
- Wainger, L. A., D. H. Secor, C. Gurbisz, W. M. Kemp, P. M. Glibert, E. D. Houde, J. Richkus, and M. C. Barber. 2017. Resilience indicators support valuation of estuarine ecosystem restoration under climate change. *Ecosystem Health and Sustainability* 3:e01268, doi 10.1002/ehs2.1268
- Pikitch, E. K., P. D. Boersma, I. L. Boyd, D. O. Conover, P. Cury, T. E. Essington, S. S. Hoppell, E. D. Houde, M. Mangel, D. Pauly, E. Plaganyi, K. Sainsbury, R. S. Steneck. 2018. The strong connection between forage fish and their predators: A response to Hilborn et al. (2017). *Fisheries Research* 198:220-223.
- Levin, P. S., T. E. Essington, K. N. Marshall, L. E. Koehn, L. G. Anderson, A. Bundy, C. Carothers, F. Coleman, L. R. Gerber, J. H. Grabowski, E. Houde, O. Jensen, C. Möllmann, K. A. Rose, J. N. Sanchirico, and A. D. M. Smith. 2018. Building effective fishery ecosystem plans. *Marine Policy* 92:48-57.
- Roman, M. R., S. B. Brandt, E. D. Houde and J. J. Pierson. 2019. Interactive effects of hypoxia and temperature on coastal pelagic zooplankton and fish. *Frontiers in Marine Science* 6, Article 139. doi: 10.3389/fmars.2019.00139
- Koehn, L. E., T. E. Essington, P. S. Levin, K. N. Marshall, L. G. Anderson, A. Bundy, C. Carothers, F. Coleman, J. H. Grabowski, E. Houde, O. P. Jensen, C. Möllman, and A. D. M. Smith. 2020. Case studies demonstrate capacity for a structured planning process for ecosystem-based fisheries management. *Canadian Journal of Fisheries and Aquatic Sciences* 77:1256-1274.
- Slater, W. L., J. J. Pierson, M. B. Decker, E. D. Houde, C. Lozano and J. Seurberling. 2020. Fewer copepods, fewer anchovies, and more jellyfish: How does hypoxia impact the Chesapeake Bay zooplankton community? *Diversity* 12, 35; doi:10.3390/d12010035
- Auth, T. D., T. Arula, E. D. Houde and R. J. Woodland. 2020. Spatial ecology and growth in early life stages of bay anchovy *Anchoa mitchilli* in Chesapeake Bay (USA). *Marine Ecology Progress Series* 651:125-143.
- Woodland, R. J., A. Buchheister, R. J. Latour, C. Lozano, E. Houde, C. J. Sweetman, M. C. Fabrizio and T. D. Tuckey. 2021. Environmental drivers of forage fishes and benthic invertebrates at multiple spatial scales in a large temperate estuary. *Estuaries and Coasts* 44:921–938.
- Anstead, K. A., K. Drew, D. Chagaris, M. Cieri, A. M. Schueller, J. E. McNamee, A. Buchheister, G. Nesslage, J. H. Uphoff Jr. J. H., M. J. Wilberg, A. Sharov, M. J. Dean, J. Brust, M. Celestino, S. Madsen, S. Murray, M. Appelman, J. C. Ballenger, J. Brito, E. Cosby, C. Craig, C. C. Flora, K. Gottschall, R. J. Latour, E. Leonard, R. Mroch, J. Newhard, D. Orner, C. Swanson, J. Tinsman, E. D. Houde, T. J. Miller, and H. Townsend. 2021. The path to an ecosystem approach for forage

fish management: A case study of Atlantic menhaden. *Frontiers in Marine Science* 8, Article 607657. doi: 10.3389/fmars.2021.607657

Arula, T., M. Simm, K. Herkül, J. Kotta and E.D. Houde. 2022. A productivity bottleneck in the Baltic herring (*Clupea harengus membras*): Early life-history processes and recruitment variability. *Marine Environmental Research* 177 (2022) 105638

Whitfield, A. K., I. C. Potter, F. J. Neira and E. D. Houde. 2023. Modes of ingress by larvae and juveniles of marine fishes into estuaries: From microtidal to macrotidal systems. *Fish and Fisheries* 24:488–503.

Whitfield, A. K., E. D. Houde, F. J. Neira and I. C. Potter. 2023. Importance of marine-estuarine-riverine connectivity to larvae and early juveniles of estuary-associated fish taxa. *Environmental Biology of Fishes*.
<https://doi.org/10.1007/s10641-023-01474-2>

Marin Martinez, C. M., R. J. Latour, M. C. Fabrizio, E. D. Houde and E. J. Hilton. 2024. Larval fish assemblage dynamics in the York River estuary, Virginia, U.S.A. *In* Early Life History and Biology of Marine Fishes: Research inspired by the work of H Geoffrey Moser (J. M. Leis, W. Watson, B. C. Mundy, and P. Konstantinidis, guest eds.), p. 218–232. NOAA Professional Paper NMFS 24.
<https://doi.org/10.7755/PP.24.16>

2. Books or Chapters

Houde, E. D. and S. A. Berkeley. 1982. Food and growth of juvenile herring, *Clupea harengus pallasii*, in CEPEX enclosures. pp. 239-249, *In*: Grice, G. and M. Reeve (eds.), *Marine Mesocosms*. Springer-Verlag, New York-Heidelberg-Berlin.

Berkeley, S. A. and E. D. Houde. 1983. Age determination of broadbill swordfish, *Xiphias gladius*, from the Straits of Florida, using anal fin spine sections. pp. 137-143, *In*: Prince, E. D. and L. M. Pulos (eds.), *Proceedings of the International Workshop on Age Determination of Oceanic Pelagic Fishes: Tunas, Billfishes, and Sharks*. NOAA Tech. Rept., Spec. Sci. Rept. NMFS 8, 211 pp. UMCEES Tech. Rept. Ser. 26-84.

Houde, E. D. 1984. Bregmacerotidae: development and relationships. pp. 300-308, *In*: Moser, H. G., W. J. Richards, D. M. Cohen, M. P. Fahay, A. W. Kendall, Jr. and S. L. Richardson (eds.), *Ontogeny and Systematics of Fishes*. Am. Soc. Ichthyol. Herpetol. Spec. Publ. 1. 760 pp. UMCEES Contrib. No. 2078.

Houde, E. D. 1984. Callionymidae: development and relationships. pp. 637-640, *In*: Moser, H. G., W. J. Richards, D. M. Cohen, M. P. Fahay, A. W. Kendall, Jr. and S. L. Richardson (eds.), *Ontogeny and Systematics of Fishes*. Am. Soc. Ichthyol. Herpetol. Spec. Publ. 1. 760 pp. UMCEES Contrib. No. 2079.

- Gamble, J. C. and E. D. Houde. 1984. Growth, mortality and feeding of cod (*Gadus morhua* L.) larvae in enclosed water columns and in laboratory tanks. pp. 123-143, In: Dahl, E., S. Danielssen, E. Moksness and P. Solemdal (eds.), The Propagation of Cod *Gadus morhua* L. Inst. Mar. Res., Flødevigen Biol. Sta. Arendal, Norway. UMCEES Contrib. No. 1537.
- Jones, A. and E. D. Houde. 1986. Mass rearing of fish fry for aquaculture. pp. 351-373, In: Bilio, M., H. Rosenthal and C. J. Sinderman (eds.), Realism in Aquaculture: Achievements, Constraints, Perspectives. European Aquaculture Society, Review Papers, World Conference on Aquaculture. UMCEES Contrib. No. 1741.
- Houde, E. D. and C. E. Zastrow. 1991. Bay anchovy. pp. 8-1 to 8-14, In: Funderburk, S. L., J. A. Mihursky, S. J. Jordan and D. Riley (eds.), Habitat Requirements for Chesapeake Bay Living Resources, 2nd Edition. Living Resources Subcommittee, Chesapeake Bay Program. Annapolis, MD. UMCEES Contrib. No. 2286.
- Secor, D. H. and E. D. Houde. 1995. Larval mark-release experiments: Potential for research on dynamics and recruitment in fish stocks. pp. 423-445, In: Secor, D. H., S. Campana and J. M. Dean (eds.), Recent Developments in Fish Otolith Research. Belle W. Baruch Institute Library in Marine Sciences No. 19, Univ. of South Carolina Press, Columbia, 751 pp. UMCEES Contrib. No. 2670.
- Houde, E. D. 1996. Evaluating stage-specific survival during the early life of fish. pp. 51-66, In: Watanabe, Y., Y. Yamashita and Y. Oozeki (eds.). Survival strategies in early life stages of marine resources. Balkema, Rotterdam. UMCEES Contrib. No. 2758.
- Cowan, J. H., Jr., K. A. Rose and E. D. Houde. 1997. Size-based foraging success and vulnerability to predation: selection of survivors in individual-based models of larval fish populations. pp. 357-386. In: Chambers, R. C. and E. A. Trippel (eds.). Early Life History and Recruitment of Fish Populations. Chapman and Hall, London. UMCEES Contrib. No. 2937.
- Houde, E. D. 1997. Patterns and consequences of selective processes in teleost early life histories. pp. 173-196. In: Chambers, R. C. and E. A. Trippel (eds.). Early Life History and Recruitment of Fish Populations. Chapman and Hall, London. UMCEES Contrib. No. 2936.
- Houde, E. D., S. Jukic-Peladic, S. B. Brandt and S. D. Leach. 1999. Fisheries: Trends in catches, abundance and management. pp. 341-366, In: T. C. Malone, A. Malej, L. W. Harding, Jr., N. Smodlaka, and E. Turner [eds.], *Ecosystems at the Land-Sea Margin: Drainage Basin to Coastal Sea*. Coastal and Estuarine Science Series, Vol. 55, American Geophysical Union, Washington, D.C. [UMCEES Contrib. No. 3194].
- Simenstad, C. A. plus 6 co-authors (including E. D. Houde). 2000. Chapter 16. Habitat-biotic interactions. In: Hobbie, J. E. (ed.). Estuarine science. A synthetic approach to research and practice. Island Press, Washington, D.C.
- Heath, M. R. and E. D. Houde. 2001. Evaluating and modeling foraging performance of planktivorous and piscivorous fish: effects of containment and issues of scale. pp.

- 191-222. *In*: R. H. Gardner, W. M. Kemp, V. S. Kennedy and J. E. Petersen [eds.], *Scaling Relations in Experimental Ecology*. Columbia University Press, New York.
- Houde, E. D. 2001. Fish: fish larvae (ecology and behaviour of larvae, survival and mortality, effects of temperature and salinity, life in the plankton). *In*: Steele, J. H., S. Thorpe and K. Turekian (eds.). *Encyclopedia of Ocean Sciences*, Academic Press, London.
- Houde, E. D. (committee chair) and S. J. Roberts (study director). 2001. *Marine Protected Areas: Tools for Sustaining Ocean Ecosystems*. National Research Council, National Academy Press, Washington, D.C. [UMCES Contribution No. 3532-CBL].
- Houde, E. D. 2002. Marine fisheries. *In*: McGraw-Hill Encyclopedia of Science and Technology. MacGraw-Hill Companies, New York. [UMCES Contribution No. 3647-CBL].
- Houde, E. D. 2002. Chapter 3. Mortality. *In*: Fuiman, L. A. and R. G. Werner (eds.), *Concepts in Fisheries Sciences: The Unique Contribution of Early Life Stages*. Blackwell Scientific Publishing, Oxford. [UMCES Contribution No. 3646-CBL].
- Jones, C., L. Anderson, E. Houde, B. McCay, A. Rieser, P. Sullivan, E. R. Urban, Jr. and R. D. Young. 2002. Science and its role in the National Marine Fisheries Service. National Research Council, National Academy Press, Washington, D.C. [UMCES Contribution No. TS-393-02-CBL].
- Houde, E. D., J. Bichy and S. Jung. 2005. Effects of Hurricane Isabel on fish populations and communities in Chesapeake Bay, pp. 193-199, *In*: Sellner, K.G. (ed), *Hurricane Isabel in perspective*. Chesapeake Research Consortium, CRC Publication 05-160. Edgewater, MD. [UMCES Contribution No. 3855-CBL].
- CBFEAP. 2006. Fisheries ecosystem planning for Chesapeake Bay. (by Chesapeake Bay Fisheries Ecosystem Advisory Panel; E. D. Houde and M. McBride, panel co-chairs and editors). American Fisheries Society, Trends in Fisheries Science and Management 3, Bethesda, MD. (E. Houde is primary author of Ch. 1, "A Fisheries Ecosystem Plan for the Chesapeake Bay"; E. Houde is co-author of Ch. 3, Element 3, "Habitat, habitat requirements, and habitat management"; E. Houde is co-author of Ch. 3, Element 6, "Indicators of ecosystem health and biological reference points").
- Kemp, W. M., J. E. Petersen, E. D. Houde, C.-C. Chen, J. C. Cornwell and E. T. Porter. 2009. Spatial and temporal scaling. pp. 49-62. *In*: Kennedy, V. S., W. M. Kemp, J. E. Petersen and W. C. Dennison (eds.). *Experimental ecosystems and scale: Tools for understanding and managing coastal ecosystem*. Springer Publishing.
- Houde, E. D. and J. E. Petersen. 2009. Physical and ecological complexity. pp. 102-114. *In*: Kennedy, V. S., W. M. Kemp, J. E. Petersen and W. C. Dennison (eds.). *Experimental ecosystems and scale: Tools for understanding and managing coastal ecosystem*. Springer Publishing.

- Houde, E. D. and J. Bartsch. 2009. Chapter 4. Mortality. In: North, E. W., A. Gallego, and P. Petitgas (eds.). Manual of recommended practices for modeling physical-biological interactions in fish early-life history. ICES Coop. Res. Report 295.
- Houde, E. D. 2009. Chapter 3. Recruitment variability. pp. 91-171. In: Jakobsen, T., M. J. Fogarty, B. Megrey and E. Moksness (eds.). Fish reproductive biology and its implications for assessment and management. Wiley-Blackwell Publishers.
- Houde, E. D. 2011. Managing the Chesapeake's fisheries: a work in progress. Chesapeake Perspectives. Maryland Sea Grant, College Park, MD.
- Houde, E. D., A. Kenny and S. Zhou. 2014. Chapter 14. EBM in Highly impacted coasts and estuaries. pp. 475-522. In: Fogarty, M. J. and J. J. McCarthy (eds.). Marine ecosystem-based management. The Sea, Volume 16. Harvard University Press, Cambridge, MA.
- Houde, E. D. 2016. Chapter 3. Recruitment Variability. pp. 98- 187. In: Jakobsen, T., M. J. Fogarty, B. A. Megrey and E. Moksness (Editors). Fish reproductive biology: implications for assessment and management, Edition 2. Wiley-Blackwell.
- Houde, E. D. 2019. Fish Larvae. Encyclopedia of Ocean Sciences, 3rd Edition. Elsevier. Book ISBN: 9780128130810
- Houde, E. D., K. W. Able, N. A. Strydom, E. Wolanski and T. Arula. 2022. pp. 60-187. Chapter 3. Reproduction, Ontogeny and Recruitment. In: Whitfield, A. K. et al. (eds). *Fish and Fisheries in Estuaries: A Global Perspective*, First Edition. John Wiley & Sons Ltd.
- Whitfield, A. K., K. W. Able, S. J. M. Blaber, M. Elliott, A. Franco, T. D. Harrison and E. D. Houde. 2022. pp. 255-331. Chapter 5. Feeding Ecology and Trophic Dynamics. In: Whitfield, A. K. et al. (eds). *Fish and Fisheries in Estuaries: A Global Perspective*, First Edition. John Wiley & Sons Ltd.
- Elliott, M., E. D. Houde, S. J. Lamberth, J.-A. Lonsdale and J. R. Tweedley. 2022. pp. 706-797. Chapter 12. Management of Fishes and Fisheries in Estuaries. In: Whitfield, A. K. et al. (eds). *Fish and Fisheries in Estuaries: A Global Perspective*, First Edition. John Wiley & Sons Ltd.

3. Technical Reports (Selected reports, 1996-present)

- Houde, E. D., D. H. Secor, L. L. Kellogg and J. W. Gooch. 1996. Episodic water quality events and striped bass recruitment: larval mark-recapture experiments in the Nanticoke River. Final Report to Maryland Dept. Natur. Resources, Chesapeake Bay Research and Monitoring Division, Contract No. CB93-006-002. 317 pp.
- Miller, T. J., E. D. Houde and E. J. Watkins. 1996. Chesapeake Bay fisheries: prospects for multispecies management and sustainability. Chesapeake Bay Program,

- Scientific and Technical Advisory Committee, October 1996. 73 pp. [UMCES Contribution No. 2778].
- Houde, E. D., E. S. Rutherford and S. D. Leach. 1997. Interactions among environmental factors and recruitment potential in striped bass. Final Report to Maryland Dept. Natur. Resources, Chesapeake Bay Research and Monitoring Div., Contract No. CB94-011-002. Published as COWP-MANTA-AD-97-4. 202 pp.
- Houde, E. D. and S. D. Leach. 1997. Environmental factors and survival of American shad larvae. Final Report to Maryland Dept. Natur. Resources, Power Plant and Environmental Review Div., Contract No. PR95-009-002, R5018665. 73 pp.
- Houde, E. D., M. J. Fogarty and T. J. Miller. 1998. Prospects for multispecies fisheries management in Chesapeake Bay. Final report of a Workshop sponsored by the Scientific and Technical Advisory Committee of the Chesapeake Bay Program. Ref. No. [UMCES]CBL 98-069. 74 pp.
- Miller, T. J. and E. D. Houde. 1999. Blue crab target setting. Final report to the Living Resources Subcommittee of the Chesapeake Bay Program. Ref. No. [UMCES]CBL 99-100]. UMCES Tech Ser. No. TS-177-99-CBL. 167 pp.
- Costanza, R. and E. D. Houde. 1998. "Ecosystem Principles Advisory Panel. Ecosystem-Based Fishery Management." Report to Congress. [Sci. Ser. No. SS-51-00-CBL]. Ref. No. [UMCES]CBL 99-0433. 54 pp.
- Houde, E.D. and S. Minkinen. 2000. Evaluating and improving stocking as a method to restore American shad in Chesapeake Bay. UMCES Tech Ser. No. TS-274-00-CBL.
- Wood, R. J. and E. D. Houde. 2002. Variability in the dynamics of forage fish abundances in Chesapeake Bay: retrospective analysis, models and synthesis. pp. 43-52, *In*: Orner, D.M. (ed.), Chesapeake Bay Fisheries Research Program Symposium Report, 2002. NOAA Chesapeake Bay Office, Annapolis, MD. Ref No. [UMCES]CBL-02-0036. [*UMCES Technical Series No. TS-360-02-CBL*].
- Lipton, D. W., E. D. Houde and J. Freeman (eds.). 2002. Exploring alternatives for fisheries management in the Chesapeake Bay. Chesapeake Bay Program, Scientific and Technical Advisory Committee, STAC Publication 01-002. 25 pp. [*UMCES Technical Series No. TS-391-02-CBL*].
- Wood, R. J., E. D. Houde and S. Jung. 2004. Variability in the dynamics of forage fish abundances in Chesapeake Bay: retrospective analysis, models and synthesis. pp. 97-108, *In*: Orner, D. (ed.). Chesapeake Bay Fisheries Research Program Symposium Report 2003. NOAA Chesapeake Bay Office, Annapolis, MD. Ref No. [UMCES]CBL-04-013. [*UMCES Technical Series No. TS-431-04-CBL*].
- Scientific and Technical Advisory Committee. (E. Houde, convenor, editor). 2004. Spatial management in the Chesapeake Bay: applications, issues, and opportunities. STAC Workshop Report: STAC Publication 04-004. Edgewater, MD. Ref. No. [UMCES]CBL 04-. [*UMCES Technical Series No. pending*].

- Houde, E. D. and M. McBride, (Co-Chairs, Coordinators); several contributing authors. 2004. Fisheries Ecosystem Planning for Chesapeake Bay. NOAA Chesapeake Bay Office, Annapolis, MD. 363 pp. (http://noaa.chesapeakebay.net/Fish/FEP_DRAFT.pdf). Ref. No. [UMCES]CBL 04-115. [UMCES Technical Series No. TS-470-04-CBL].
- Secor, D. H. and E. D. Houde. 2005. Combined Final Report. Authors: D. H. Callihan and D. H. Secor. Coastal dependency of juvenile bluefish in the middle Atlantic Bight and Coastal patterns of juvenile recruitment in the Mid- and South Atlantic Bight: DelMarVa (2004). Report to NOAA/Rutgers University Institute of Marine and coastal Sciences, Award Nos. #NA17FE2747 (9/1/02-8/31/05) and #NA04NMF4550381 (3/1/04-8/31/05).
- Houde, E. D., M. R. Roman, S.-Y Chao, L. P. Sanford and R. R. Hood. 2005. How do estuarine turbidity maxima entrap particles, retain zooplankton, and promote recruitment of fish? Final Report to National Science Foundation, Award No. 0002543.
- Paerl, H. W., R. A. Luettich, R. T. Noble, J. L. Pinckney, L. W. Harding Jr., E. D. Houde, W. C. Boicourt, M. R. Roman, J. T. Morris, R. Torres, C. Hopkinson, M. Fonseca, J. Kenworthy, and D. Field. 2006. Atlantic Coast Environmental Indicators Consortium (ACE INC). Development and application of integrative indicators of ecological conditions in hydrologically- and biogeochemically-variable US east coast estuaries. Final Report to US Environmental Protection Agency. 1 April 2001-30 March 2006.
- Houde, E. D. 2007. Temporal and spatial variability in growth and production of Atlantic menhaden and bay anchovy in Chesapeake Bay. Final Report to NOAA Chesapeake Bay Office, Grant No. NA04NMF4570349. [UMCES]CBL-07-111
- Bonzek, C., E. D. Houde, S. Giordano, R. Latour, T. Miller and K. G. Sellner. 2007. Baywide and coordinated Chesapeake Bay fish stock monitoring. CRC Publication 07-163, Edgewater, MD.
- Martino, E. J., E. W. North and E. D. Houde. 2007. Biophysical controls and survival of striped bass larvae in the Chesapeake Bay estuarine turbidity maximum. ICES C.M./2007/G:23
- Houde, E. D. and L. W. Harding, Jr. 2008. Primary production, spring blooms and control of recruitment in pelagic fish (R/WQ-2a). Final Report to Maryland Sea Grant, Grant No. NA05OAR4171042. [UMCES] CBL-08-070, Tech Ser. TS-553-08
- Connelly, W. J. and E. D. Houde. 2008. Interannual and seasonal variability in biomass size spectra of estuarine larval and juvenile fish communities. ICES CM/F:11. 24 pp.
- Houde, E. D. and L. W. Harding, Jr. 2009. Menhaden abundance and productivity in

Chesapeake Bay: linking the environment and primary production to variability in fish recruitment. Final Report to NOAA Chesapeake Office, Grant No. NA04NMF4570359. [UMCES] CBL-09-014.

- Houde, E. D. and D. H. Secor. 2009. Temporal and spatial variability in growth and production of Atlantic menhaden and bay anchovy in Chesapeake Bay. Final Report to NOAA Chesapeake Bay Office, Grant No. NA06NMF4570301. [UMCES] CBL-09-013.
- Houde, E. D. (Chair, Team Leader), E. Annis, K. Friedland, C. Jones, R. Johnson, A. Sharov, J. Smith, B. Spear, J. Uphoff, D. Vaughan, M. Topolski and D. Lipton. 2009. Menhaden species team: background and issues briefs. Maryland Sea Grant, Ecosystem based fisheries management for Chesapeake Bay. College Park, MD. (<http://www.mdsg.umd.edu/programs/policy/ebfm/bioteam/menhaden/>)
- Gallejo, A., E. W. North and E. D. Houde. 2010. Workshop on understanding and quantifying mortality in pelagic early life stages of marine organisms: experiments, observations and models (WKMOR). International Council for the Exploration of the Sea. Workshop Report. (<http://www.ices.dk/workinggroups/ViewWorkingGroup.aspx?ID=330>)
- Houde, E. D., M. R. Roman, E. W. North, L. Sanford, B. Crump, R. Hood, S.-Y. Chao and J. Pierson. 2011. Dynamic stability and particle transformation. Tracing pathways of production in estuarine turbidity maxima. Final Report. National Science Foundation OCE-0453905. January 2011. [UMCES] CBL-11-003 and UMCES Technical Report Series No. TS-609-11.
- Zhang, X., R. Wood, E. Martino, E. Houde, H. Townsend and C. Wicks. 2011. Chapter 15. Modeling Atlantic menhaden recruitment in Chesapeake Bay: is the striped bass recovery a problem? pp. 121-125. In: Mason, A. L., D. Apeti and D. Whitall (eds.). A summary of National Centers for Coastal Ocean Sciences (NCCOS) research in Chesapeake Bay. NOAA Tech. Memo NOS NCCOS 128.
- Houde, E. D., C. Lozano, E. R. Annis, L. W. Harding, Jr., D. H. Secor, M. J. Wilberg, and R. L. Wingate. 2011. Recruitment of Atlantic menhaden to Chesapeake Bay: ecological processes during the larval-juvenile transition. ICES CM/H:23. 26 pp.
- Houde, E. D., D. H. Secor, and M. J. Wilberg. 2012. Spatial and temporal variability in menhaden eggs and larvae distributions in the coastal ocean: variability in transport potential and recruitment in Chesapeake Bay. Final Report to NOAA Bay Office, Grant No. NA07NMF4570340. January 2012. [UMCES] CBL 12-004 and TS-633-12
- Connelly, W. J. and E. D. Houde. 2012. A retrospective analysis of spatial and temporal patterns of growth and abundance of juvenile anadromous fishes in the Maryland Chesapeake Bay. Progress Report to NOAA Bay Office, Grant No. NA11NMF4570219. April 2012. [UMCES] CBL 12-011
- Pikitch, E. K. et al. (including E. Houde). 2012. Little fish: Big impact: Managing a critical link in ocean food webs. Forage Fish Task Force. Lenfest Ocean Program,

Washington, D.C. 108 pp.

- Houde, E. D., D. H. Secor and M. J. Wilberg. 2013. Recruitment of Atlantic menhaden: dynamics and ecology of the larval-juvenile transition in Chesapeake Bay. Final Report to NOAA Bay Office, Grant No. NA10NMF4570451. January 2013. [UMCES] CBL 13-001
- Houde, E. D., D. H. Secor and M. J. Wilberg. 2013. Recruitment of Atlantic menhaden: dynamics and ecology of the larval-juvenile transition in Chesapeake Bay. Final Report to NOAA Bay Office, Grant No. NA10NMF4570451. January 2013. [UMCES] CBL 13-001
- Houde, E. D., D. H. Secor and W. J. Connelly. 2013. Estimating Abundance of Atlantic Menhaden in Chesapeake Bay: Comparing and Evaluating Methods and Retrospective Analysis. Progress Report to Atlantic States Marine Fisheries Commission and Maryland Department of Natural Resources. MD DNR Contract No. K00B3400024. March 2013. [UMCES] CBL 13-009
- Houde, E. D. 2013. A Retrospective analysis of spatial and temporal patterns of growth and abundance of juvenile anadromous fishes in the Maryland Chesapeake Bay. Progress Report to NOAA Bay Office, Grant No. NA11NMF4570219. April 2013. [UMCES] CBL 13-017
- Secor, D. H. and E. D. Houde. 2013. Estimating abundance of Atlantic menhaden in Chesapeake Bay: comparing and evaluating methods and retrospective analysis. Progress Report to NOAA Bay Office, Grant No. NA11NMF 4570229. April 2013. [UMCES] CBL 13-016
- Houde, E. D. (editor, coordinator). 2013. Accreditation readiness report. Report prepared by UMCES for the Middle States Commission on Higher Education. August 2013.
- Houde, E. D. 2013. A Retrospective analysis of spatial and temporal patterns of growth and abundance of juvenile anadromous fishes in the Maryland Chesapeake Bay. Progress Report to NOAA Bay Office, Grant No. NA11NMF4570219. November 2013. [UMCES] CBL 13-060
- Secor, D. H. and E. D. Houde. 2013. Estimating abundance of Atlantic menhaden in Chesapeake Bay: comparing and evaluating methods and retrospective analysis. Progress Report to NOAA Bay Office, Grant No. NA11NMF 4570229. November 2013. [UMCES] CBL 13-059
- Secor, D. H. and E. D. Houde. 2014. Estimating abundance of Atlantic menhaden in Chesapeake Bay: comparing and evaluating methods and retrospective analysis. Final Report to NOAA Bay Office, Grant No. NA11NMF 4570229. January 2014. [UMCES] CBL 2014-003
- Houde, E. D. 2014. A retrospective analysis of spatial and temporal patterns of growth and abundance of juvenile anadromous fishes in the Maryland Chesapeake Bay. Final Report to NOAA Bay Office, Grant No. NA11NMF4570219. January 2014. [UMCES] CBL 2014-004

- Houde, E. D., D. H. Secor and W. J. Connelly. 2014. Estimating Abundance of Atlantic Menhaden in Chesapeake Bay: Comparing and Evaluating Methods and Retrospective Analysis. Final Report to Atlantic States Marine Fisheries Commission and Maryland Department of Natural Resources. MD DNR Contract No. K00B3400024. November 2014. [UMCES] CBL 2014-060 and TS-666-14
- Houde, E. D. (editor, coordinator). 2014. Self-Study Design. Report prepared by UMCES for the Middle States Commission on Higher Education. October 2014 and revised December 2014.
- Clay, P. M., G. DePiper, S. Gaichas, J. Hare, E. Houde and R. Seagraves. 2014. Managing forage fishes in the Mid-Atlantic region. A white paper to inform the Mid-Atlantic Fishery Management Council. Mid-Atlantic Fishery Management Council, November 2014.
- Ihde, T. F., E. D. Houde, C. F. Bonzek and E. Franke. 2015. Assessing the Chesapeake Bay forage base: existing data and research priorities. Scientific and Statistical Committee, Chesapeake Bay Program, STAC Publication Number 15-005. 198 pp. (UMCES TS-675-15).
- Houde, E. D. and E. Kropp (editors, Co-Chairs). 2015. UMCES Self-Study. Report prepared by UMCES for the Middle States Commission on Higher Education. October 2015.
- Buchheister, A. and E. D. Houde. 2016. Forage indicators and consumption profiles for Chesapeake Bay fishes. Final Report to Chesapeake Bay Trust, UMCES Project CBL 2015-045CBT 07-5-25759. [UMCES]CBL 2016-001
- Houde, E. D. 2016. Book Review of: Oneida Lake: Long-Term Dynamics of a Managed Ecosystem and Its Fishery. Authors, L. G. Rudstam et al. American Fisheries Society. Fisheries 41(8):494, 496.
- Essington, T. plus 13 co-authors, including E. D. Houde. 2016. Building effective fishery ecosystem plans; a report from the Lenfest Fishery Ecosystem Task Force. Lenfest Ocean Program, Washington, D.C. 59 pages plus appendices.
- Buchheister, A., T. J. Miller, E. D. Houde and D. H. Secor. 2017. Developing ecosystem-based reference points for the Atlantic menhaden fishery. Final Report to Lenfest Ocean Program, Washington, D.C. 146 pages. UMCES TS-694-17. [UMCES]CBL 2017-02
- Woodland, R., E. Houde, A. Buchheister, R. Latour, C. Lozano, M. Fabrizio, T. Tuckey and C. Sweetman. 2017. Environmental, spatial and temporal patterns in Chesapeake Bay forage population distributions and predator consumption. Final Report to Chesapeake Bay Trust. UMCES Project CBL2016-043CBT
- Houde, E. D., M. Bell, M. Cryer and A. Hart. 2017. Summary Report of the 63rd Northeast Regional Stock Assessment Review Committee (SARC 63). Stock Assessment Review Committee, Report to NOAA Northeast Fisheries Science

Center, Woods Hole.

Houde, E. D., O. Jensen, R. Latour and M. Wilberg. 2018. Improving the NEFSC Clam Survey for Atlantic Surfclams and Ocean Quahogs. Review of NE Fisheries Science Center Surfclam and Ocean Quahog Survey Design by Subcommittee of the Mid-Atlantic Fishery Management Council. May 2018.

Miller, T., A. Buchheister, E. Houde and D. Chagaris. 2020. Points of pride. On Deck Mail Buoy. National Fisherman, October 2020, page 6.

Wilberg, M., E. Houde and F. Serchuk. 2020. 2020 Management Track Peer Review Committee Report. NOAA, NEFSC Management Track Stock Assessment Peer Review, June 2020.
https://s3.amazonaws.com/nefmc.org/9a_2020-Management-Track-Assessment-Report-Revised-8-12-2020_508.pdf

Woodland, R., E. Houde and V. Lyubchich. 2021. Forage indicator development- -Using environmental drivers to assess forage status. Status Report 2. October 2021. Report to Chesapeake Bay Trust, UMCES Project CBL2021-038CBT.

Houde, E. D. 2021. In Memoriam: E. J. Chesney, Jr. and J. H. Cowan, Jr. American Fisheries Society, Early Life History Section Newsletter. Stages 42(3):19-21.

Buchheister, A., T. J. Miller, D. Chagaris, E. D. Houde and A. Schueller. 2021. Advancing ecological reference points and an ecosystem approach to management of Atlantic Menhaden fisheries using the NWACS ecosystem model. Final Report to Lenfest Ocean Program. Grant to Humboldt State University.

Woodland, R., E. Houde and V. Lyubchich. 2022. Scope of Work 7: Forage Indicator Development – Using environmental drivers to assess forage status. Final Report. March 2022. Report to Chesapeake Bay Trust, UMCES Project CBL2021-038CBT.

NRHA Subpanel. 2022. Findings of the SSC sub-panel review of the Northeast Regional Habitat Assessment (NRHA). Mid-Atlantic and New England Fishery Management Councils, June 2022. Panel Members: J. Boreman, M. Frisk (chair), E. Houde, J. Collie, A. Jordaan, and S. Truesdell.

NRHA Subpanel. 2023. Essential Fish Habitat and Habitat Areas of Particular Concern Designation Methods. Findings of the SSC sub-panel review of the Northeast Regional Habitat Assessment (NRHA). Mid-Atlantic and New England Fishery Management Councils, June 2023. Subpanel Members: J. Boreman, J. Collie, E. Houde, Y. Jiao, C. McManus (Chair), and S. Truesdell.

C. Contracts and Grants (2000-present)

Multiscale experimental ecosystem research center. U.S. Environmental Protection Agency. 1992-2003. Approx. \$10 million. (Several Co-Investigators, 10% time).

Trophic transfers in large estuarine ecosystems: pulsed inputs, physical features and biological patchiness. National Science Foundation. 1994-2001. \$2,999,963. Co-Principal Investigator. 10% time.

Recruitment processes in estuarine fishes: patterns, scale, and ontogenetic trends. National Science Foundation. 1995-2001. \$669,703. Principal Investigator. 12% time.

Comparison of habitat use by juvenile bluefish between Chesapeake Bay sub-estuaries and Maryland's coastal bays. NOAA/National Marine Fisheries Service through Rutgers University. 1998-2001. \$169,019. Co-Principal Investigator. 12% time.

Estuarine and coastal dependency of juvenile bluefish in Maryland's Chesapeake Bay and coastal zone. NOAA/National Marine Fisheries Service through Rutgers University. 2000-2001. \$100,000. Co-Principal Investigator. 5% time.

How do estuarine turbidity maxima entrap particles, retain zooplankton, and promote recruitment of fish? National Science Foundation. 2000-2003. \$1,322,141. Co-Principal Investigator. 12.5% time.

Variability in the dynamics of forage fish abundance in Chesapeake Bay: retrospective analysis, models and synthesis. NOAA, Chesapeake Bay Stock Assessment Committee. 2000-2001. \$41,724. Principal Investigator. 5% time.

Trophic complexity and scaling issues: fish predators in MEERC. U.S. EPA (MEERC). 1996-2003. \$318,309. (Principal Investigator, 15% time).

Recruitment of young-of-the-year bluefish: patterns, pulses and processes in the Chesapeake Bay estuarine system. Rutgers University and National Marine Fisheries Service. 1998-2002. \$78,689. (Co-Principal Investigator, 14% time).

Dynamics and trends in forage fish abundances and their role in the Chesapeake Bay ecosystem. UMCES, Integration and Application Network (IAN). 2000-2002. \$44,560. (Principal Investigator, 5% time).

Evaluating and improving larval stocking as a method to restore American shad in Chesapeake Bay. NOAA, Maryland Sea Grant. 2000-2004. \$187,871. (Co-Principal Investigator, 12.5%).

Variability in the dynamics of forage fish in Chesapeake Bay: retrospective analysis, models and synthesis. NOAA, Chesapeake Bay Stock Assessment Committee. 2000-2003. \$126,729. (Principal Investigator, 5% time).

Development and implementation of the Chesapeake Bay fishery-independent multispecies survey (CHESFIMS). NOAA, Chesapeake Bay Stock Assessment Committee. 2001-2005. \$1,334,096. (Co-Principal Investigator, 10% time).

Toward the census of marine life: Proof of concept. Sloan Foundation. 2001-2003. \$250,000. (Co-Principal Investigator, 5% time).

Atlantic Coast Environmental Indicators Consortium (ACE INC.). Trophic indicators of ecosystem health in Chesapeake Bay. U.S. Environmental Protection Agency. 2001-2006. \$1,977,715. (Co-Principal Investigator, 10% time).

Ecosystem variability and estuarine fisheries. NOAA, Coastal Ocean Program. 2002-2005. \$585,502. (Co-Principal Investigator, 10% time).

Coastal dependency of juvenile bluefish in the Middle Atlantic Bight. NOAA/National Marine Fisheries Service through Rutgers University. 2003-2004. \$145,181. (Co-Principal Investigator, 10% time).

SGER: Hurricane Isabel impacts on Chesapeake Bay. National Science Foundation. 2003-2004. \$100,000. (Co-Principal Investigator, 5% time).

Temporal and spatial variability in growth and production of Atlantic menhaden and bay anchovy in Chesapeake Bay. NOAA, Chesapeake Bay Office. 2004-2006. \$82,036. (Principal Investigator, 8.5% time).

Primary production, spring blooms and control of recruitment in pelagic fish. MD Maryland Sea Grant. 2005-2008. \$84,694. (Co-Principal Investigator, 8.5% time).

Menhaden abundance and productivity in Chesapeake Bay: linking the environment and primary production to variability in fish recruitment. NOAA Chesapeake Office. 2004-2008. \$523,790. (Co-Principal Investigator, 20% time).

Coastal patterns of juvenile recruitment in the Mid- and South-Atlantic Bight: DelMarVa (Field Season). NOAA, via Rutgers University. 2004-2005. \$70,076. (Co-Principal Investigator, 2% time).

Coastal patterns of juvenile recruitment in Mid- and South-Atlantic Bight: DelMarVa (Lab Work). NOAA, via Rutgers University. 2004-2006. \$85,761. (Co-Principal Investigator, 6.5% time).

Dynamic stability and particle transformations: Tracing pathways of production in estuarine turbidity maxima. National Science Foundation. 2005-2010. \$2,500,000. (Lead Scientist and Co-Principal Investigator, 20% time).

Competitive application for Maryland Sea Grant Research Fellow. Maryland Sea Grant; 2005-2006. ~\$34,500. (Principal Investigator). Award made to student Edward J. Martino.

Temporal and spatial variability in growth and production of Atlantic menhaden and bay anchovy in Chesapeake Bay. Maryland Department of Natural Resources and Atlantic States Marine Fisheries Commission. 2005-2007. \$239,454. (Co-Principal Investigator, 8.5% time).

Temporal and spatial variability in growth and production of Atlantic menhaden and bay anchovy in Chesapeake Bay. Maryland Department of Natural Resources and

- NOAA Chesapeake Bay Office. 2006-2008. \$272,144. (Co-Principal Investigator, 12.5% time).
- Temporal and spatial variability in larval influx, production, and recruitment of young-of-the-year Atlantic menhaden and bay anchovy in Chesapeake Bay: Year 3. Maryland Department of Natural Resources and NOAA Chesapeake Bay Office. 2007-2009. \$220,149. (Co-Principal Investigator, 12.5% time).
- Dynamics of ichthyoplankton ingress from the coastal ocean into Chesapeake and Delaware Bays. Maryland Sea Grant, 2007-2010. \$186,000. (Co-Principal Investigator, 8.5% time).
- Managing the Chesapeake's fisheries (paper for Chesapeake Perspectives). Maryland Sea Grant, 2007-2009. \$1,349. (Principal investigator, 5% time). (Funds to purchase a computer).
- Temporal and spatial variability in larval influx, production, and recruitment of young-of-the-year Atlantic menhaden and bay anchovy in Chesapeake Bay. Maryland Department of Natural Resources, 2008-2010. \$115,306. (Co-Principal Investigator, 17% time).
- Fisheries habitat products team: a MD DNR – NOAA – CBL partnership coordinated by the Cooperative Oxford Laboratory, 2008-2010. \$99,996. (Principal Investigator, 8.5% time).
- Recruitment of Atlantic menhaden: dynamics and ecology of the larval-juvenile transition in Chesapeake Bay. NOAA Chesapeake Bay Office and Maryland Department of Natural Resources, 2009-2010. \$200,000. (Co-Principal Investigator, 12.5% time).
- Collaborative Research: Hypoxia in marine ecosystems: implications for neritic copepods. U.S. National Science Foundation, 2010-2015. \$1,114,711. (Co-Principal Investigator, 12.5% time).
- ARRA- -Sustaining coastal experimentation and observing systems in support of marine ecosystems and climate science. National Science Foundation, 2010-2014, \$1,702,622. (Co-Principal Investigator). A facilities grant.
- Quantifying fine-scale spatial distribution of small jellyfish in Chesapeake Bay: implications for trophic interactions. Maryland Sea Grant, 2010-2011. \$8,500. (Co-Principal Investigator, 4.5% time).
- ICES: Travel support for academic participants, 2011-2015. National Science Foundation, 2011-2013, \$319,897. Proposal submitted through Woods Hole Oceanographic Institution (Co-Principal Investigator, 2% time, with John Steele). Subcontract to UMCES.
- Estimating abundance of Atlantic menhaden in Chesapeake Bay: comparing and evaluating methods and retrospective analysis. NOAA Chesapeake Bay Office, 2011-2014. \$135,000. (Co-Principal Investigator, 8.5% time).

A retrospective analysis of spatial and temporal patterns of growth and abundance of juvenile anadromous fishes in the Maryland Chesapeake Bay. NOAA Chesapeake Bay Office, 2011-2013. \$52,000. (Principal Investigator, 8.5% time).

Program Development Funds: Development of candidate ecosystem-based fishery reference points for the Chesapeake Bay. Maryland Sea Grant, 2012-2015. \$14,301. (Co-Principal Investigator, 5% time).

Spatial and temporal variability in the abundance and growth of young-of-the-year fishes in the Maryland Chesapeake Bay. Maryland Dept. Natur. Resour., 2012-2014. \$120,000. (Co-principal Investigator, 12.5% time)

Developing ecosystem-based reference points for the Atlantic menhaden fishery. Lenfest Ocean Foundation, 2012-2014. \$320,776. (Co-Principal Investigator, 12.5% time).

International Council for the Exploration of the Sea: Travel support for academic participants, 2014-2017. National Science Foundation, 2014-2017. \$331,667. Proposal submitted through Woods Hole Oceanographic Institution (Co-Principal Investigator, 2% time, with A. Solow). Subcontract to UMCES.

Scope #1: Forage fish indicator/metric development: Forage indicators and nutritional profiles for Chesapeake Bay fishes. Chesapeake Bay Trust, 2015-2016. \$49,000. (Co-Principal Investigator, 8.5% time).

Scope #1: Drivers of forage population trends and consumption patterns: Environmental, spatial and temporal patterns in Chesapeake Bay forage population distributions and predator consumption. Chesapeake Bay Trust, 2016-2017. \$60,000. (Co-Principal Investigator, 8.5% time).

Advancing ecological reference points and an ecosystem approach to management of Atlantic Menhaden fisheries using the NWACS ecosystem model. Lenfest Ocean Program, 2018-2020. Grant to Humboldt State University, \$139,785. (Co-Principal Investigator, advisory capacity).

Scope of Work 7: Forage Indicator Development – Using Environmental Drivers to Assess Forage Status. Chesapeake Bay Trust, 2021-2022. \$60,000. (Co-Principal Investigator, 8.5% time). CBL Proposal # CBL2021-038CBT

D. Invited Seminars and Presentations (since 2000)

Houde, E. D. 2000. Estuarine turbidity maxima, water quality, and recruitment of anadromous fish in the upper reaches of estuaries. Scientific and Technical Advisory Committee, Chesapeake Bay Program and Susquehanna River Basins Commission workshop on the impact of Susquehanna sediments on the Chesapeake Bay, Hershey, PA.

Houde, E. D. 2000. Restoration of American shad in Chesapeake Bay. National Sea Grant Review of Maryland Sea Grant Program, Baltimore, MD.

- Houde, E. D. 2000. The fishes, fisheries, and fisheries management in Chesapeake Bay. Docent's lecture, Solomons, MD.
- Houde, E. D. 2000. Trophic dynamics and recruitment variability in Chesapeake Bay. Marine Sciences research Center. State Univ. of New York, Stony Brook.
- Houde, E. D. 2001. Dredging windows: recruitment processes and overwintering of anadromous fish in estuaries. National Research Council, Transportation Research Board, Conference on "Environmental Windows for Dredging," Washington, D.C.
- Houde, E. D. 2001. Networking issues and concerns with regard to implementation of Marine Protected Areas. NOAA Coastal Ocean Program 'Networks Workshop,' Silver Spring, MD.
- Houde, E. D. 2001. Science issues and needs to support fisheries management. Testimony to U.S. House of Representatives, Committee on Resources, Subcommittee on Fisheries, Conservation, Wildlife and Oceans (testimony regarding reauthorization of the Magnuson-Stevens Sustainable Fisheries Act). Washington D.C.
- Houde, E. D. 2001. Mesocosms and marine research. John Steele Symposium. Woods Hole Oceanographic Institution, Woods Hole, MA.
- Houde, E. D. 2001. Academic excellence and eminence in Maryland's educational institutions. Invited testimony. Maryland Higher Education Commission, Washington College, Chestertown, MD.
- Houde, E. D. 2001. A National Academy perspective on Marine Protected Areas in the USA. MPA Symposium, Woods Hole Oceanographic Institution, Woods Hole, MA.
- Houde, E. D. 2001. Marine Protected Areas. Chesapeake Biological Laboratory, Solomons, MD.
- Houde, E. D. 2002. The state of marine fisheries and management. Chair of a Panel Discussion, American Museum of Natural History, New York, NY.
- Houde, E. D. 2002. Determinants of recruitment success in anadromous and estuary-spawning fishes. American Fisheries Society, Baltimore, MD.
- Houde, E. D. 2002. Testimony: Discussion draft of legislation to reauthorize the Magnuson-Stevens Fishery Conservation and Management Act. U.S. House of Representatives, Committee on Resources, Subcommittee on Fisheries Conservation, Wildlife and Oceans, Washington, D.C.
- Houde, E. D. 2002. Testimony: Use of marine protected areas (MPAs) as a fisheries management tool, as a means to protect and restore marine ecosystems, and as a research tool. U.S. House of Representatives, Committee on Resources, Subcommittee on Fisheries Conservation, Wildlife and Oceans, Washington, D.C.

- Houde, E. D. 2002. The state of the world's fisheries. National Press Foundation, Washington, D.C.
- Houde, E. D. 2003. Marine fisheries: science and management to attain sustainability. Chancellor's Lecture, Louisiana State University, Baton Rouge, LA.
- Houde, E. D. 2003. What controls and regulates recruitment in estuarine-dependent fishes? School of the Coast and Environment, Louisiana State University, Baton Rouge, LA.
- Houde, E. D. 2003. Dynamics and trends in forage fish abundance. UMCES Integration and Application Network, Current Projects and Future Directions. College Park, MD.
- Houde, E. D. 2003. Global fisheries and their sustainability. Maryland Sea Grant, College Park, MD.
- Houde, E. D. 2003. Global fisheries: are they sustainable? Invited presentation to Research Experiences for Undergraduates (REU) students. Solomons, MD.
- Houde, E. D. 2003. Marine protected areas: an old tool for new circumstances. Symposium Keynote Presentation. American Fisheries Society Annual Meeting, Quebec City, Quebec, Canada.
- Houde, E. D. 2003. Dancing in Hjort's shadow. Keynote Plenary Talk. American Fisheries Society, Early Life History Section, Santa Cruz, CA.
- Houde, E. D. 2003. Fish recruitments: biology, physics, and features in estuarine ecosystems. Estuarine Research Federation Biennial Meeting, Seattle, WA.
- Houde, E. D. 2003. Are marine fisheries sustainable? Honors Program Lecture, Gallaudet University, Washington, D.C.
- Houde, E. D. 2003. The Chesapeake Bay Fisheries Ecosystem Plan. Conference on Managing Our Nation's Fisheries, Regional Fisheries Management Councils, Washington, D.C.
- Houde, E. D. 2004. Fisheries ecosystem planning for Chesapeake Bay. Chesapeake Bay Fisheries Research Symposium. Sponsored by NOAA Chesapeake Bay Office, Laurel, MD..
- Houde, E. D. 2004. The Chesapeake Bay Fisheries Ecosystem Plan. Living Resources Subcommittee, Chesapeake Bay Program, Annapolis, MD.
- Houde, E. D. 2004. Fisheries management: can we improve its performance? Panel on Chesapeake Bay: past, present, future. Atlantic Estuarine Research Society, Salisbury, MD.
- Houde, E. D. 2004. Marine fisheries: management and sustainability. St. Mary's College, lecture to class in Biology of Fishes, St. Mary's City, MD.

- Houde, E. D. 2004. Managing for sustainability. Lecture to CBL Docents, Solomons, MD.
- Houde, E. D. 2004. The Fisheries Ecosystem Plan. Maryland Department of Natural Resources. Presented to administrators, Annapolis, MD.
- Houde, E. D. 2004. The Chesapeake Bay Fisheries Ecosystem Plan. South Atlantic Fisheries Management Council, Key West, FL.
- Houde, E. D. 2004. Spatial management, protected areas, and fisheries ecosystem planning in Chesapeake Bay. International Council for the Exploration of the Sea, Annual Science Conference, Vigo, Spain.
- Houde, E. D. 2004. Summary of the workshop and possible ecosystem-based approaches in fisheries management. Atlantic States Marine Fisheries Commission, Menhaden Workshop/Meeting, 13-14 Oct. 2004, Alexandria, VA.
- Houde, E. D. 2005. Three facts: Fisheries in Chesapeake Bay. Chesapeake Bay Commission, Annapolis, MD, 6 Jan. 2005.
- Houde, E. D. 2005. New circumstances demand broader implementation of spatial approaches: Knowns and unknowns in MPA science. Marine Protected Areas Federal Advisory Committee, Arlington, VA, 16 Feb. 2005.
- Houde, E. D. 2005. Beyond stock and recruitment: including age structure in recruitment theory. American Association for the Advancement of Science, Annual Meeting, Washington, D.C., 19 Feb. 2005.
- Houde, E. D. 2005. Panel moderator: New fisheries: science and management sustaining fisheries. American Association for the Advancement of Science, Annual Meeting, Washington, D. C., 21 Feb. 2005.
- Houde, E. D. 2005. Development of ecosystem-based approaches to fisheries management in Chesapeake Bay. Keynote Talk, Interagency Ecological Program, San Francisco Estuary, Monterey, CA, 2 Mar. 2005.
- Houde, E. D. 2005. Planning for ecosystem-based fisheries management in Chesapeake Bay. Living Marine Resources Cooperative Science Center, University of Maryland Eastern Shore, Princess Anne, MD, 6 Apr. 2005.
- Houde, E. D. 2005. Reproductive risks and recruitment variability in striped bass. School of Marine Science and Technology, University of Massachusetts at Dartmouth, Dartmouth, MA, 28 Apr. 2005.
- Houde, E. D. 2005. Biomass size spectra and size-based indicators of stress in estuaries. Eutrophication and Fisheries, Multi-stressors Workshop, Smithsonian Environmental Research Center, Edgewater, MD, 17 May 2005.

- Houde, E. D. 2005. Are marine fisheries sustainable? Invited lecture to Research Experience for Undergraduates, Maryland Sea Grant, Chesapeake Biological Laboratory, Solomons, MD, 9 Jun. 2005.
- Houde, E. D. 2005. Developing and implementing ecosystem-based approaches to fisheries Norfolk, VA, 20 Oct. 2005.
- Houde, E. D. 2005. Early life history and recruitment dynamics of marine fishes: emerging from Hjort's shadow. Dynamics of the Marine Biosystem Symposium, Tokyo, Japan, 17 Nov. 2005.
- Houde, E. D. 2005. The control and regulation of recruitment levels in Chesapeake Bay striped bass. Laboratory of Estuarine Ecology, Kyoto University, Kyoto, Japan, 21 Nov. 2005.
- Houde, E. D. 2006. Emerging from Hjort's shadow: why do fish stocks have variable recruitments? Horn Point Laboratory, University of Maryland Center for Environmental Science, Cambridge, MD. 1 Feb. 2006.
- Houde, E. D. 2006. Fisheries ecosystem planning: can ecosystem-based approaches be instituted in Chesapeake Bay? Fort Johnson Marine Science Seminar Series; Hollings Marine Laboratory, Charleston, SC. 21 Apr. 2006.
- Houde, E. D. 2006. Atlantic menhaden: variability in abundance, recruitment and productivity. NOAA Chesapeake Bay Office 2006 Integrated Research Symposium, Williamsburg, VA. 26 Apr. 2006.
- Houde, E. D. 2006. Ecosystem-based approaches to fisheries management: planning for Chesapeake Bay. Marine Fish Conservation Network, Keynote Presentation, Annual Meeting, Alexandria, VA. 6 June 2006.
- Houde, E. D. 2007. Good science, good management, and good luck: collapse and recovery of striped bass. Invited seminar. Duke University Marine Laboratory, Beaufort, NC. 21 March 2007.
- Houde, E. D. 2007. Fisheries research at the Chesapeake Biological Laboratory. Dedication of the Fisheries Research Complex Building, Solomons, MD. 21 May 2007.
- Houde, E. D. 2007. Welcoming remarks. PICES-ICES Young Scientists Conference, Baltimore, MD. 26 June 2007.
- Houde, E. D. 2007. Chesapeake portraits: fish and fisheries in a challenged ecosystem. Invited talk, American Fisheries Society, Annual Meeting, San Francisco, CA. 6 September 2007.
- Houde, E. D. 2007. Emerging from Hjort's shadow. Invited Keynote talk, North Atlantic Fisheries Organization, ICES and PICES, Symposium on Reproductive and Recruitment Processes in Exploited Marine Fish Stocks, Lisbon, Portugal, 1 October 2007.

- Houde, E. D. 2007. Ecosystem-based fisheries management: a challenge for Chesapeake Bay. Chesapeake Bay Program, MD-VA Sea Grant, and NOAA, Workshop on Economics of Ecosystem-based Fisheries Management Plans in the Chesapeake Bay, Washington, D.C. 16 October 2007.
- Houde, E. D. 2008. Fish stock assessment and fisheries management. Maryland Task Force on Fisheries Management, Annapolis, MD. 8 January 2008
- Houde, E. D. 2008. Forage fisheries: managing for sustainability and ecosystem services. Marine Fish Conservation Network, Annapolis, MD. 13 March 2008.
- Houde, E. D., L. W. Harding, Jr., E. Annis and M. Mallonee. 2008. Menhaden YOY recruitment variability and primary production in Chesapeake Bay. NOAA Chesapeake Bay Office, Webinar Series on Menhaden Research. 28 May 2008.
- Houde, E. D., C. Lozano, and A. Hashinaga. 2008. Menhaden larval ingress: Chesapeake Bay mouth. NOAA Chesapeake Bay Office, Webinar Series on Menhaden Research. 28 May 2008.
- Annis, E., E. D. Houde, M. Mallonee and W. Wilberg. 2008. Bioenergetics modeling of YOY Atlantic menhaden growth in Chesapeake Bay: Interannual variability in growth and growth potential. NOAA Chesapeake Bay Office, Webinar Series on Menhaden Research. 6 June 2008.
- Houde, E. D. 2008. Men, menhaden, and ecosystem-based fishery management. Research Experience for Undergraduates, Maryland Sea Grant, UMCES Seminar Series. 11 July 2008.
- Grimes, C. B. and E. D. Houde. 2008. Oceanography and reproductive strategies of tunas and mackerels. American Fisheries Society Annual Meeting, Ottawa, Canada. 19 August 2008.
- Houde, E. D. 2008. CAMEO: Town Hall Meeting. "Perspectives." National Science Foundation and NOAA, Ottawa, Canada. 19 August 2008.
- Houde, E. D. 2008. Recruitment variability: emerging from Hjort's shadow and abandoning the search for the Holy Grail. Virginia Institute of Marine Science, Gloucester Pt., VA. 5 November 2008.
- Houde, E. D. 2009. Developing, adopting, and implementing EBFM in Chesapeake Bay. Chesapeake Research Consortium, Conference on Ecosystem Based Management, Baltimore, MD. 23 March 2009.
- Houde, E. D., C. Lozano and A. Hashinaga. 2009. Ingress of larval Atlantic menhaden to Chesapeake Bay: supply-side dynamics. NOAA Chesapeake Bay Office Research Symposium, Laurel, MD. 22 April 2009.
- Houde, E. D., E. A. Annis, L. W. Harding, Jr. and M. J. Wilberg. 2009. Menhaden abundance and productivity: linking recruitment variability to environment and

- primary production in Chesapeake Bay. NOAA Chesapeake Bay Office Research Symposium, Laurel, MD. 22 April 2009.
- Houde, E. D. 2009. Forage fish and fisheries in Chesapeake Bay. Lenfest Foundation, Task Force on Forage Fishes, Alexandria, VA. 18 May 2009.
- Houde, E. D. 2009. Men and menhaden: managing for sustainability and a healthy Bay ecosystem. Chesapeake Biological Laboratory, Science Social, Solomons, MD. 24 June 2009.
- Houde, E. D. 2009. EBFM in Chesapeake Bay. New England Fisheries Management Council, Workshop/Symposium on EBFM, Newport, RI. 27 August 2009.
- Houde, E. D. 2010. Solving the recruitment problem: the Holy Grail of fisheries science. Hatfield Marine Science Center, Distinguished Lecturer, Newport, OR. 21 January 2010.
- Houde, E. D. 2010. Men and menhaden: fisheries, management, and policy in Chesapeake Bay. Hatfield Marine Science Center, Distinguished Lecturer, Newport, OR. 22 January 2010.
- Houde, E. D. 2010. Planning for ecosystem-based fisheries management in Chesapeake Bay. University of Maryland Eastern Shore, Princess Anne, MD. 1 February 2010.
- Houde, E. D. 2010. Forty Years of fisheries science on Chesapeake Bay. Science Symposium: Forty years of science on Chesapeake Bay. Salisbury University, Salisbury, MD. 13 February 2010.
- Houde, E. D. 2010. How does fisheries science support marine resources policy and management? AGU-ASLO)-TOS Ocean Sciences Meeting, Portland, OR. 26 February 2010.
- Houde, E. D. 2010. What do we know about death in the sea? ICES Workshop on Mortality in the Sea (WKMOR), Aberdeen, Scotland. 22 March 2010.
- Houde, E. D. 2010. Emerging from Hjort's Shadow. University of South Florida, School of Marine Science, St. Petersburg, FL. 23 April 2010.
- Houde, E. D. and S. L. Green. 2010. Strategic and tactical planning for ecosystem approaches to manage Chesapeake Bay fisheries. American Fisheries Society Annual Meeting, Pittsburgh, PA. 15 September 2010.
- Houde, E. D. 2011. What is the future of early life history research? Early Life History Section, American Fisheries Society, Wilmington, NC. 23 May 2011.
- Houde, E. D. 2011. Guidance for developing ecosystem-based approaches for fisheries management in the mid-Atlantic region. Mid-Atlantic Fishery Management Council, Scientific and Statistical Committee, Baltimore, MD. 25 July 2011.

- Houde, E. D., C. Lozano, E. R. Annis, L. W. Harding, Jr., D. H. Secor, M. J. Wilberg, and R. L. Wingate. 2011. Recruitment of Atlantic menhaden to Chesapeake Bay: ecological processes during the larval-juvenile transition. International Council for the Exploration of the Sea, Annual Science Conference, Gdansk, Poland. 22 September 2011.
- Houde, E. D. 2011. Did U.S. GLOBEC meet the tough challenges and promises on climate and ecosystems? U.S. GLOBEC Final Symposium, Washington, D.C. 5 October 2011.
- Houde, E. D. 2011. Men and menhaden: declining recruitment challenges management in Chesapeake Bay. Invited Seminar, Scripps Institution of Oceanography, La Jolla, CA. 30 November 2011.
- Houde, E. D. and W. J. Connelly. 2012. A retrospective analysis of spatial and temporal patterns of growth and abundance of juvenile anadromous fishes in the Maryland Chesapeake Bay. Invited presentation, NOAA Chesapeake Bay Office, Edgewater, MD. 10 January 2012.
- Houde, E. D. 2012. Men and menhaden: declining recruitment challenges management in Chesapeake Bay. Invited seminar. IMET and LMRCSC, Baltimore, MD. 16 March 2012.
- Houde, E. D. 2012. Working to insure sustainable fisheries in Chesapeake Bay. Invited presentation. Scientific and Technical Advisory Committee, Chesapeake Bay Program, Rose Haven, MD. 27 March 2012.
- Houde, E. D. 2012. Little fish; big impact. Ecological and economic impacts. Invited presenter and panelist. Lenfest Ocean Foundation, Washington, D.C. 3 April 2012.
- Houde, E. D., C. Lozano, E. Annis, L. Harding, Jr., D. Secor, M. Wilberg and R. Wingate. 2012. Recruitment variability in Atlantic menhaden: processes acting during the larval-juvenile transition in Chesapeake Bay. Invited presentation. American Fisheries Society, Annual Meeting, St. Paul, MN. 23 August 2012.
- Houde, E. D. 2012. Forage fishes and YOY anadromous fishes in Chesapeake Bay: causes of variability in abundance. Invited presentation. Fisheries Goal Implementation Team, Chesapeake Bay Program, Port Isobel, VA. 7 December 2012.
- Houde, E. D. 2013. What causes variability in abundance of Atlantic menhaden? Invited presentation. UMCES Board of Visitors, Solomons, MD. 8 February 2013.
- Houde, E. D. 2013. Managing lower trophic level species in the Mid-Atlantic Region. Invited presentation and panel member, Mid-Atlantic Fisheries Management Council, Forage Fish Workshop, Raleigh, NC. 11 April 2013.
- Houde, E. D. and D. H. Secor. 2013. Estimating abundance of Atlantic menhaden in Chesapeake Bay: comparing and evaluating methods. Invited presentation.

Atlantic States Marine Fisheries Commission, Menhaden Technical Committee, Arundel Mills, MD. 18 September 2013.

Houde, E. D. and D. H. Secor. 2013. Forage fish in Chesapeake Bay: status, trends, science and monitoring. Chesapeake Bay Fisheries Goal Implementation Team, Chesapeake Bay Program, Solomons, MD. 4 December 2013.

Houde, E. D. 2014. Men and menhaden: fluctuations in menhaden abundance and ecological concerns. Invited presentation. Central Atlantic States Association of Food and Drug Officials and Food and Drug Administration, Annual Meeting, Virginia Beach, VA. 16 April 2014.

Houde, E. D., S. Gaichas and R. Seagraves. 2014. Managing forage fishes in the Mid-Atlantic region. Invited presentation. Mid-Atlantic Fishery Management Council, Scientific and Statistical Committee, Baltimore, MD. 18 September 2014.

Houde, E. D. 2014. Forage fish harvests. Invited presentation. Scientific and Technical Advisory Committee, Chesapeake Bay Program, Forage Workshop, Solomons, MD. 12 November 2014.

Houde, E. D. 2015. Fish, fish ecology and fishery management. Maryland Master Naturalists, Maryland State Extension Service, Prince Frederick, MD. 6 April 2015.

Houde, E. D. 2015. Forage fish and ecosystem-based fisheries management. Presentation to Research Experience for Undergraduates, Maryland Sea Grant, Solomons, MD. 8 July 2015.

Houde, E. D. 2015. Little fish, big impact: forage fishes and ecosystem-based fishery management. Science for Citizens Lecture, Chesapeake Biological Laboratory, Solomons, MD. 27 October 2015.

Houde, E. D. 2015. Little fish, big impact: forage fishes and ecosystem-based fishery management. Coastal Conservation Association, Fisheries Symposium, Annapolis, MD. 5 December 2015.

Houde, E. D. 2016. Chesapeake Fisheries 101. Chesapeake Bay Commission, Annapolis, MD. 7 January 2016.

Vogt, B., T. Ihde and E. D. Houde. 2016. Creating a science-based strategy to manage Chesapeake Bay forage. Chesapeake Bay Goal Implementation Teams Management Board, Annapolis, MD. 14 April 2016.

Houde, E. D. 2016. Abundance and consumption of forage by predator fishes in Chesapeake Bay. Sustainable Fisheries Goal Implementation Team, Forage Action Team, Annapolis, MD. 20 September 2016.

Houde, E. D. 2016. Lenfest Fishery Ecosystem Task Force: Providing a blueprint for ecosystem-based fisheries management. NOAA Marine Fisheries Advisory Committee (MAFAC). Silver Spring, MD. 1 November 2016.

Arula, T., R. J. Woodland and E. D. Houde. 2019. Defining the trophic role of a key forage species in a large coastal ecosystem. Associated Societies of Limnology and Oceanography. San Juan, Puerto Rico. February 2019.

Greznik, M., A. Buchheister, D. Chagaris, T. Miller, A. Schueller, and E. Houde. 2021. Managing Menhaden: How ecosystem models can be used to incorporate climate and ecology in forage fish management. American Fisheries Society, Annual Meeting. September 2021 (Virtual presentation).

E. Symposia Organized/Chaired for Professional Meetings (since 2000)

Fishery Ecosystem Plan Workshop. Chair, Scientific and Technical Advisory Committee, Chesapeake Bay Program, and NOAA. Solomons, MD. 12-13 July 2000.

Spatial and temporal patterns in recruitment processes. Co-Convener, International Council for the Exploration of the Sea. Bruges, Belgium. 27-30 Sept. 2000.

Eutrophication and living resources. Session Chair, SCOR Symposium on Eutrophication, Washington, D.C. 11-13 October 2000.

Exploring alternatives for fisheries management in Chesapeake Bay. Workshop Co-convener. Chesapeake Bay Program, Scientific and Technical Advisory Committee. Baltimore, MD. 10-11 April 2001.

Determining appropriate restoration targets for fisheries under moratorium: American shad in Chesapeake Bay. Workshop organizer and Steering Committee Chair. Chesapeake Bay Program, Scientific and Technical Advisory Committee. Baltimore, MD. 12-13 December 2001.

Bluefish Research Program. Workshop Chair and Co-Organizer. National Marine Fisheries Service and Rutgers University. Baltimore, MD. 19-20 May 2003.

Prey-predator interactions in dynamic environments: methods, approaches and key issues for the study of recruitment processes. Co-Convener. International Council for the Exploration of the Sea, Annual Science Conference, Vigo, Spain, 22-23 September 2004.

Physical dynamics and pathways for production in river-estuarine transition zones. Theme Session, Co-convener. Estuarine and Coastal Research Federation, Biennial Meeting, Providence, RI. 4-7 November 2007.

Death in the sea: Mortality in the zooplankton and early-life stages of marine fish (estimates, processes, and outcomes). Theme Session, International Council for the Exploration of the Sea, Annual Science Conference, Berlin, Germany, 23-24 September 2009.

Death in the sea. International Workshop (WKMOR) on mortality of early life stages of fishes and zooplankton. Workshop Co-Convener (with A. Gallego and E. North).

International Council for the Exploration of the Sea, Aberdeen, Scotland, 22-24
March 2010.

Population connectivity on the East Coast of the United States. Co-convener. Workshop,
NOAA Cooperative Institute for North Atlantic Research. Linthicum, MD. 22-24
February 2011.

Recruitment processes: Early life history dynamics- -from eggs to juveniles. Theme
Session Co-convener. International Council for the Exploration of the Sea, Annual
Science Conference, Gdansk, Poland, 20-22 September 2011.

Forage Workshop. Co-Chair. Workshop, Scientific and Technical Advisory Committee,
Chesapeake Bay Program, Solomons, MD. 12-13 November 2014.

F. Active Memberships in Professional Societies (2022)

American Fisheries Society
Associated Societies of Limnology and Oceanography
American Association for the Advancement of Science
American Geophysical Union
The Oceanography Society
Estuarine and Coastal Research Federation
Atlantic Estuarine Research Society

V. Teaching and Training

Member, Graduate Faculty, University of Maryland System, 1980-Present.

A. University System of Maryland Courses Taught

Course No.	Title	Institution	Semester	Enrollment	Credit Hrs.	Co-Instructors	No. Lectures
MEES 698F	Fisheries Science and Management	CEES via IVN: UMCP, HPEL, CBL	Fall 1994	17	3		-15 3-hr lectures
MEES 682	Fisheries Science and Management	UMCES via IVN: UMCP, AL, HPL, UMES, CBL, UMBC, COMB	Fall 1996 Fall 1998 Fall 2000 Fall 2002 Fall 2004 Fall 2006 Fall 2008	23 33 22 19 12 12 ~10	3		-15 3-hr lectures -15 3-hr lectures -14 3-hr lectures -27 1.5-hr lectures 14 3-hr lectures 14 3-hr lectures 2 1.5 hr lectures
MEES 608C	Fisheries Seminar	CBL	Fall 1996 Fall 1997 Fall 1998 Fall 1999 Fall 2000 Fall 2003	12 10 9 10 11 8	1	Secor/Miller	-15 1-hr sessions -15 1-hr sessions -15 1-hr sessions -15 1-hr sessions -13 1-hr sessions -14 1-hr sessions

- Large-Mulligan, H. Ph.D. Zoology 1991, University of Maryland College Park
 "Comparative bioenergetics and patterns of growth and development in larval striped bass, *Morone saxatilis*, and striped bass x white bass, *M. chrysops*, hybrids."
- Rutherford, E. S. Ph.D. MEES 1992, University of Maryland College Park
 "Relationship of larval stage growth and mortality to recruitment of striped bass, *Morone saxatilis*, in Chesapeake Bay."
- Wang, S.-B. M.S. MEES 1992, University of Maryland College Park
 "Abundance, relative biomass, production and energy storage of bay anchovy, *Morone saxatilis*, in the Chesapeake Bay."
- Dorsey, S. E. M.S. MEES 1993, University of Maryland College Park
 "Daily variability in mortality of bay anchovy (*Anchoa mitchilli*) eggs and yolk-sac larvae in Chesapeake Bay, USA."
- Abbott, T. A. M. S. MEES 1994, University of Maryland College Park
 "Ecology of upper tidal salt marsh fishes: investigating the impacts of a salt marsh impoundment in Chesapeake Bay."
- MacGregor, J. M. M. S. MEES 1994, University of Maryland College Park
 "Temporal and spatial variability in cross-bay distribution and abundance of bay anchovy (*Anchoa mitchilli*) eggs and larvae."
- Andreasen, L. L. M. S. MEES 1995, University of Maryland College Park
 "Predation on hatchery-reared striped bass fingerlings in the Patuxent River, Maryland."
- Kellogg, L. L. M. S. MEES 1996, University of Maryland College Park
 "Striped bass (*Morone saxatilis*) egg production and environmental factors influencing larval population dynamics and recruitment in the Nanticoke River, 1992-1993."
- Olney, J. E. Ph.D. MEES 1996, University of Maryland College Park
 "Community structure, small-scale patchiness, transport and feeding of larval fishes in an estuarine plume."
- Rilling, G. C. M. S. MEES 1996, University of Maryland College Park
 "Regional and temporal variability in growth, mortality and age structure of bay anchovy (*Anchoa mitchilli*) eggs and larvae in the Chesapeake Bay."

- Keister, J. E. M. S. MEES 1996,
University of Maryland College Park
“Habitat selection and predation risk: effects of low dissolved oxygen on fish larvae in Chesapeake Bay.”
- Mowitt, W. P. M. S. MEES 1999,
University of Maryland College Park
“Scale-dependence of bay anchovy (*Anchoa mitchilli*) growth and top-down control by anchovies of plankton communities in estuarine mesocosms.”
- North, E. W. Ph.D. MEES 2001,
University of Maryland College Park
“Transport and retention of fish early-life stages in Chesapeake Bay: mechanisms and implications for recruitment.”
- O’Brien, D. A. M.S. MEES 2002,
University of Maryland College Park
”Scales and patterns of recruitment processes in the bay anchovy (*Anchoa mitchilli*) in Chesapeake Bay.”
- Jung, S. Ph.D. MEES 2002,
University of Maryland College Park
“Fish community structure and the spatial and temporal variability in recruitment and biomass production in Chesapeake Bay.”
- Muffley, B. W. M.S. MEES 2002,
University of Maryland College Park
“Scale-dependent predatory effects of the Atlantic silverside, *Menidia menidia*, and lobate ctenophore, *Mnemiopsis leidyi*, on plankton communities in estuarine mesocosms.”
- Auth, T. D. M.S. MEES 2003, University of Maryland College Park
“Interannual and regional patterns of abundance, growth, and feeding ecology of larval bay anchovy (*Anchoa mitchilli*) in Chesapeake Bay.”
- Campfield, P. A. M.S. MEES 2004, University of Maryland College Park
“Ichthyoplankton community structure and feeding ecology in the Patuxent River estuarine transition zone.”
- Martino, E. J. Ph.D. MEES 2008, University of Maryland College Park
“Environmental controls and biological constraints on recruitment of striped bass *Morone saxatilis* in Chesapeake Bay.”
- Connelly, W. J. Ph.D. MEES 2011, University of Maryland College Park
“Scales of variability in the size composition and community structure of fishes in estuarine ecosystems.”
- Lozano, C. M.S. MEES 2011, University of Maryland College Park
“Dynamics of ingress, hatch dates, growth, and feeding of Atlantic menhaden, *Brevoortia tyrannus*, larvae at the Chesapeake Bay mouth.”

Chandler Shideler, A M.S. MEES 2011, University of Maryland College Park
“Patterns in distribution, growth, and trophodynamics of striped bass early life stages in the estuarine transition region of upper Chesapeake Bay.”

2. Students Currently Supervised

C. Postdoctoral Scientists Supervised

Edward Chesney	1984-1987
Doreen Monteleone	1990-1991
David Secor	1991-1994
James Cowan, Jr.	1990-1993
Seiichi Matsui	1998
Jun Shoji	2002 - 2003
Sukgeun Jung	2003 – 2006
Eric Annis	2006 – 2007
Filipe Ribeiro	2009 – 2011

VI. **Outreach and Service (selected activities since 2000)**

A. Editorships

Estuaries and Coasts. Associate Editor for Fisheries, 2008-2011

B. Public Service (selected since 2000)

Radio Interview. Public radio, ‘Ecosystem-Based Fisheries Management.’ Discussed and explained EBFM; interview was based on a paper in *Science* by Pikitch et al. (2004). I was an author. July 2004.

Popular Article. ‘Fisheries likely to revive.’ (story on post-Hurricane Katrina potential for fisheries in the Gulf of Mexico). *Solomons Sketches*, Vol. 8, No. 3, page 4. 2005.

CBL Docents Invited Lecture; ‘Chesapeake Bay Fisheries: Managing for Sustainability,’ May 2004.

Reviewer, Popular Booklet on ‘Sustaining Fisheries and Marine Ecosystems,’ for NAS-NRC, September 2007.

Popular Article. ‘Bold new science and precautionary management.’ *Solomons Sketches*, Vol. 10, No. 1, pp. 4-5. 2007.

Public lecture. ‘Men and Menhaden: Fish Men and menhaden: managing for sustainability and a healthy Bay ecosystem.’ Chesapeake Biological Laboratory, Science Social, Solomons, MD. 24 June 2009.

Maryland Sea Grant Newsletter Article. ‘Managing Atlantic menhaden in Chesapeake Bay: an ecosystem perspective. Ecosystem-based fisheries management in Chesapeake Bay, Maryland Sea Grant. July 2009.
(<http://www.mdsg.umd.edu/programs/policy/ebfm/update/july09/>)

Maryland Sea Grant Newsletter Article. ‘Managing Atlantic menhaden in Chesapeake Bay: an ecosystem perspective. Ecosystem-based fisheries management in Chesapeake Bay, Maryland Sea Grant. July 2009.
(<http://www.mdsg.umd.edu/programs/policy/ebfm/update/july09/>)

Popular Article/Newsletter Contribution. ‘Memory of a goldfish’ Edward D. Houde. International Council for the Exploration of the Sea, Newsletter ‘Inside Out,’ November 2011. Remembrances of ICES Annual Science Conferences, past and present.

Popular Science, News Article. ‘Dipping into the lives of Chesapeake fish.’ AAAS Member Spotlight. Article written with freelance writer Carrie Madren and published 22 March 2012. AAAS Member Central.
<http://membercentral.aaas.org/blogs/member-spotlight/dipping-lives-chesapeake-fish?page=0,0>

Produced a ‘Spark 101’ Video under direction of David Kressburg and Amy Pelsinsky. ‘Atlantic menhaden, a key forage species in the Chesapeake Bay ecosystem: its fishery and management.’ A 9.5-minute video for supplemental classroom teaching of high school students. 2013.
(<http://www.spark101.org/video/menhaden/>)

News Post. 2016. Bay anchovy. Chesapeake Bay Program News. E. D. Houde interview by CBP. (www.chesapeakebay.net/blog/post/by_the_numbers_458,000).

2017. Played prominent role in a Chesapeake Bay Program video, “Fish Food,” produced by Will Parsons, and placed on the CBP web page.
www.chesapeakebay.net/videos/clip/bay_101_fish_food

C. Federal/State/Local Government

Living Resources Subcommittee, Chesapeake Bay Program, 1987-

Fishery Management Plan Coordination Workgroup, Chesapeake Bay Program, 1989-

Scientific and Technical Advisory Committee (STAC), Chesapeake Bay Program, 1992-2005.

Bi-State Blue Crab Advisory Committee’s Technical Advisory Group, 1996-

NOAA Chesapeake Bay Program. Co-Chair of Expert Panel to develop a “Fisheries Ecosystem Plan for Chesapeake Bay.” 2000- 2006.

Fisheries Steering Committee. Principal Fisheries Managers from Chesapeake Bay Program, NOAA, Atlantic States Marine Fisheries Commission, MD DNR, VMRC, PRFC. Oversight, Coordination and Planning Committee to coordinate fisheries management in Chesapeake Bay. 2001- 2007.

Chesapeake Bay Program. Chair and Convenor of Workshop on ‘Spatial Management in Chesapeake Bay,’ by Scientific and Technical Advisory Committee, April 2004.

Maryland Sea Grant, “Dissolved Oxygen Workshop.” Member of Steering Committee and workgroup co-chair, 2004.

Maryland, Governor’s Task Force on Fisheries Management. Appointed Chair of Peer Review Group, 2007-2010.

Maryland Sea Grant Ecosystem-Based Fishery Management Planning Project.
Menhaden : Biological Background Development Team, Chair and Team Leader, 2008-

Maryland Sea Grant Ecosystem-Based Fishery Management Planning Project.
Quantitative Evaluation Team, 2008-

Chesapeake Research Consortium, Conference on Ecosystem Based Management.
Co-convenor of session “Developing, adopting, and implementing EBFM in Chesapeake Bay. Baltimore, MD, 2009.

Forage Management Strategies Workgroup, Sustainable Fisheries Goal Implementation Team. Chesapeake Bay Program. 2015-

Forage Action Team, Chesapeake Bay Program, 2016-

D. National/International

Scientific and Statistical Committee, Mid-Atlantic Fishery Management Council, 1981-

Recruitment Processes Working Group, International Council for the Exploration of the Sea, 1990-

Interagency Ecological Program for the San Francisco Bay/Delta Estuary Program, Scientific Advisory Group, 1994-

Member, U.S. delegation to International Council for the Exploration of the Sea. Committee on Living Resources, 1997-2008

Florida Bay Program, Science Oversight Panel. Several Federal Agencies, 1999-

Research Vessel Design Committee. University of Delaware and Universities National Oceanographic Laboratory System (UNOLS). 2000-2006.

North Pacific Research Board, Science Advisory Panel, 2002-2004.

NOAA, NMFS Panel: Graduate Fellowships in Marine Fisheries Population Dynamics. Reviewer/evaluator, 2004.

National Research Council, Board on Environmental Studies and Toxicology. Review Coordinator for "Review of AYK (Western Alaska) Research and Restoration Plan for Salmon, Part 1," 2005.

NOAA Marine Protected Areas Center. Appointment to Technical Working Group to integrate MPAs with conventional fisheries science and management. 2004-2005.

Panel Member, "Ecosystem-Based Approaches to Fisheries Management." Conference on Managing Our Nation's Fisheries. Regional Fisheries Management Councils, Washington, D.C., 2005.

Panel Member and Advisor, Workshop on "Predation Issues in Water Projects in the San Francisco-Bay-Delta." CALFED, Tiburon, CA, 2005.

National Research Council, Board on Environmental Studies and Toxicology. Review Coordinator for "Review of AYK (Western Alaska) Research and Restoration Plan for Salmon, Part 2" 2006.

U.S. Delegate to the International Council for the Exploration of the Sea (ICES). U.S. State Department appointment, 2006-2013.

International Council for the Exploration of the Sea (ICES). Chair of Awards Committee (Outstanding Achievement, Prix d'Excellence, and Early Career Scientist Presentation Awards), 2006-2013.

CAMEO (Comparative Analysis of Marine Ecosystem Organization) appointed to Interim Steering Committee, NOAA and NSF, 2007- 2008.

Scientific and Statistical Committee, Regional Fisheries Management Councils, National Workshop, Honolulu, HI, November 2008.

CAMEO (Comparative Analysis of Marine Ecosystem Organization), appointed to Steering Committee, NOAA and NSF, 2009-2012.

Independent Science Board, Delta Stewardship Council. Water resources and living resources issues in the San Francisco Bay and San Joaquin-Sacramento Rivers Delta. State of California, 2010-2013.

Science and Engineering Board, Louisiana Office of Coastal Protection and Restoration. State of Louisiana, 2010-2012.

Scientific and Statistical Committee, Mid-Atlantic Fishery Management Council, Ecosystem-Based Fisheries Management Subcommittee (Lead), 2011-

Mid-Atlantic Fishery Management Council, Vision and Strategic Plan Working Group, 2012 – 2013.

U.S. Environmental Protection Agency. Fish and TMDLs, Expert Panel and Working Group. 2013.

NOAA, Northeast Fisheries Science Center, Mid-Atlantic Fisheries Management Council and New England Fisheries Management Council. Chaired a Stock Assessment Review Committee (SARC 56) on surf clam and white hake, and wrote/edited reports, 2013.

Science and Engineering Board, Louisiana Office of Coastal Protection and Restoration. Review and advise on science issues related to the 2017 Coastal Master Plan development for Louisiana, 2015-2017.

NOAA, Northeast Fisheries Science Center, Mid-Atlantic Fisheries Management Council. Chaired a Stock Assessment Review Committee (SARC 63) on ocean quahog, and wrote/edited reports, 2017.

Middle States Commission on Higher Education. Committee on Periodic Review Reports. Served as reviewer/evaluator to assess progress of two institutions of higher

education in the Mid-Atlantic region. Written reports and Commission meeting, May-October 2017.

Mid-Atlantic Fishery Management Council. Chaired a Scientific and Statistical Committee Review Panel to evaluate and critique a sampling survey design program for Atlantic surfclam and ocean quahog proposed by the NOAA Northeast Fisheries Science Center. February-May, 2018.

Mid-Atlantic and New England Fishery Management Councils. Panel member. Management Track Assessment, Peer Review Meeting. Review management planning for Atlantic herring, butterfish, Atlantic surfclam and longfin squid. 22-26 June 2020.

New England Fishery Management Council. Panel member. Review Northeast Regional Habitat Assessment and produce a peer-review report. June 2022.

E. University System of Maryland, UMCES and Laboratory

Library Information and Management Committee, University System of Maryland, February 2000-2002

University of Maryland Ocean Institute Task Force, 2002-2005.

CBL Library Committee, Chair, 1999-2002.

Represent UMCES in University consortium to promote development of a NOAA/Universities Cooperative Marine Education and Research (CMER) Program, 2002-2004.

University of Washington, School of Aquatic and Fishery Sciences, 10-year Program Review. Member of Review Committee, 2003.

University of Maryland Eastern Shore. Member of Technical Advisory Board to the NOAA "Living Marine Resources Cooperative Science Center," 2004-2008.

UMCES New Research Vessel Planning Committee, 2004-2008

UMCES 'Promotion and Tenure Appeals' Panel, 2004.

UMCES Strategy Implementation Leadership Team (SILT), for "Science to Support Ecosystem-Based Management, 2005-

Co-Chair of CBL Distinguished Scholars Seminar Series, Spring 2007.

UMCES, Faculty Comprehensive Review Committee, 2007.

UMCES Professor Emeritus Review Committee, 2010 – 2011, 2014.

Chaired the UMCES Comprehensive Review Committee (five-year review of tenured faculty members), 2012.

MEES Graduate Program Administrative Council, 2013 – 2016.

University System of Maryland, Provosts' Academic Affairs Advisory Council, 2013 – 2016.

UMCES Task Force on MEES Graduate Program Curriculum Restructuring, 2013.

MEES Graduate Program Curriculum Committee, 2013 – 2016.

MEES Program Administrative Council, University System of Maryland, 2013 – 2016.

University System of Maryland Academic Affairs Advisory Council, 2013 – 2016.

MEES Curriculum Committee (*ex officio* appointment), 2013 – 2015.

UMCES Graduate Faculty Council, Chair (VP for Education chairs the GFC), 2013 – 2016.

UMCES Executive Council (VP for Education), 2012 – 2016.

UMCES Administrative Council (VP for Education), 2012- 2016.

UMCES Workgroup on Sexual Misconduct, 2014- 2016.

University System of Maryland, Environmental Summit. Chaired panel on “University System Initiatives,” 17 April 2015.

UMCES Accreditation Steering Committee. Chaired the SC and led Self-Study effort for successful accreditation of UMCES by the Middle States Commission on Higher Education, 2013-2016.

G. Other

G. Other Professional Services (since 2004 and current)

Estuary Enhancement Environmental Program, Advisory Committee to Public Service Electric and Gas Company, Delaware Bay and Estuary, 2001-2017.

Sette Award Selection Committee, American Fisheries Society. Recognizes lifetime achievement in marine fisheries science, 2004-

Appointed to “Promotion Review Advisory Committee.” Smithsonian Environmental Research Center, 2005-2007.

Reviewer, NAS-NRC Report on Ocean Research Priorities Plan (ORPP) by JSOST, 2007.

Steven A. Berkeley Marine Conservation Fellowship, Selection Committee. American Fisheries Society, 2008-

Forage Fish Task Force, Lenfest Ocean Program, 2009-2012.

Ecosystem-Based Fisheries Management Task Force, Lenfest Ocean Program; develop recommendations on implementation of ecosystem-based management plans for marine fisheries, 2014 – 2016.

U.S – Pakistan Ocean Science and Technology Program. Served on panel to review joint US-Pakistan proposals. USAID and National Research Council. 2015.

Professional Review, scientific and professional achievements; reviewed one scientist. Smithsonian Environmental Research Center, Edgewater, MD. 2022.