



## CURRICULUM VITAE

### PORTER HOAGLAND

Public Policy

Senior Research Specialist

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**Date of Birth:** October 9, 1955

**Place of Birth:** Red Bank, New Jersey

**Nationality:** United States of America

### **EDUCATION:**

Ph.D., Marine Policy, University of Delaware, January 2000

M.P.A., Public Administration, Harvard University, May 1993

M.M.P., Marine Policy, University of Delaware, June 1982

B.S., Biology, Hobart College, June 1977

### **RESEARCH INTERESTS:**

Economics and public policy of marine resources and the ocean environment; optimal management of ocean and coastal resources and their uses; distribution and allocation of property rights in ocean and coastal resources; economic impacts of marine natural hazards; technology transfer and intellectual property problems; marine science and technology policy; underwater archaeological resource management.

### **PROFESSIONAL EXPERIENCE:**

Senior Research Specialist, Woods Hole Oceanographic Institution, 2008 to present

Research Specialist, Woods Hole Oceanographic Institution, 2000-08

Research Associate, Woods Hole Oceanographic Institution, 1985-2000

Research Assistant, Woods Hole Oceanographic Institution, 1983-84

Conservation Intern, National Wildlife Federation, 1982

Research Intern, Environmental Law Institute, 1981

Research Assistant, College of Marine Studies, University of Delaware, 1981-82

Administrative Legal Assistant, Howrey and Simon, 1979-80

Paralegal, Howrey and Simon, 1977-79

### **AWARDS:**

Cooperative Institute for North Atlantic Research (CINAR) Fellowship, 2013-15

Frances Severance Award for Dissertation in Public Policy, University of Delaware, 2000

Marine Policy Program Fellow, College of Marine Studies, University of Delaware, 1993-94

Crump Fellow, Center for Business and Government, Harvard University, 1992

E. Sam Fitz Professional Development Award, University of Delaware, 1983

Academic Council Award for Master's Thesis in Marine Policy, University of Delaware, 1982

**PROFESSIONAL ACTIVITIES:**

Adjunct Professor, Graduate Faculty, Department of Marine Affairs, University of Rhode Island, 2012 to present

Adjunct Professor, Intercampus Graduate School of Marine Sciences and Technology, University of Massachusetts, 2000 to present

Advisor, Institute Advisory Committee, WHOI Coastal Ocean Institute, 2001 to present

Advisor, WHOI Office for Applied Oceanography, 2009 to present

Editorial Advisory Board, *Harmful Algae*, 2014 to present

Editorial Advisory Board, *Encyclopedia of Ocean Sciences*, Academic Press, 2001 to present

Member, International Institute of Fisheries Economics and Trade, 2007 to present

Member, Marine Technology Society, 1996 to present

Research Associate, Center for Maritime & Underwater Resource Management, East Lansing, Michigan, 1995 to present

Member, National Harmful Algal Bloom Committee, 2006-13

Adjunct Professor, The Union Institute, Cincinnati, Ohio, 2001-08

Advisor, Stellwagen Bank National Marine Sanctuary Advisory Committee, 2007-2010 (Alternate Advisor 2001-2007)

Member, Steering Committee, National Scientific Research, Development, Demonstration, and Technology Transfer Plan on Reducing Impacts from Harmful Algal Blooms, 2006-2007

Director, Board of Directors, Council on Ocean Law, 1995-2005

Chairman, Marine Resources Division, Marine Technology Society, 1996 to 2004

Chairman, Ecosystem Alteration Working Group, Stellwagen Bank National Marine Sanctuary, 2004

Chairman, Site Characterization Working Group, Stellwagen Bank National Marine Sanctuary, 2003-2004

Member, Panel on Peer Review, Committee to Assess the US Army Corps of Engineers Methods of Analysis and Peer Review for Water Resources Project Planning, National Research Council, 2001-2002

Member, Working Group on the Economic Aspects of Marine Mammal-Fisheries Interactions, North Atlantic Marine Mammal Commission, 2000

Member, Steering Committee, Massachusetts Ocean Resources Roundtable, Massachusetts Office of Coastal Zone Management, 1997-98

Member, Massachusetts Governor's Task Force on Aquaculture Development and Marketing, 1995

Advisor, Plymouth Beaches Advisory Committee (Vice-Chairman 1992-93), Town of Plymouth, Massachusetts, 1990-93

**REFeree:**

*Biodiv. Conserv.*; *Clim. Change*; *Coast. Manag.*; *Conserv. Bio.*; *Ecol. Econ.*; *Ecol. Food Nutr.*; *Environ. Dev. Econ.*; *Environ. Conserv.*; *Environ. Manag.*; *Environ. Mod. Softw.*; *Fish.*; *Fish. Res.*; *Harm. Alg.*; *ICES J. Mar. Sci.*; *Int'l Inst. Fish. Econ. Tr.*; *J. Coast. Res.*; *J. Environ. Dev.*; *J. Environ. Econ. Manag.*; *J. Environ. Manag.*; *J. Geog. Reg. Plan.*; *J. Oc. Univ. China*; *Mar. Pol'y*; *Mar. Poll. Bull.*; *Mar. Res. Econ.*; *Mar. Tech. Soc. J.*; *Nat. Resour. Res.*; *Oc. Coast. Manag.*; *Oc. Dev. Int'l L.*; *Oc. Yearbook*; *Resour. Pol'y*; *Science*; *ScienceNOW*; *Sustainability*.

#### **PAPERS IN REFEREED JOURNALS:**

- Reich A, Lazensky RF, Faris J, Fleming LE, Kirkpatrick B, Ullmann S, Kohler K, **Hoagland P**. 2015. Assessing the impact of shellfish harvesting area closures on neurotoxic shellfish poisoning (NSP) incidence during Florida red tide (*Karenia brevis*) blooms. *Harm. Alg.* (in press).
- Davidson K, Gowen RJ, Harrison PJ, Fleming LE, **Hoagland P**. 2014. Anthropogenic nutrients and harmful algae in coastal waters. *J. Environ. Manag.* 146:206-216. <http://www.sciencedirect.com/science/article/pii/S030147971400334X>.
- Hoagland P**, Jin D, Beet A, Kirkpatrick B, Reich A, Ullmann S., Fleming LE, Kirkpatrick G. 2014. The human health effects of Florida red tides: an expanded analysis. *Environ. Int'l.* 68:144-153. <http://dx.doi.org/10.1016/j.envint.2014.03.016>.
- Kirkpatrick B, Kohler K, Byrne M, Fleming LE Scheller K, Reich A, Hitchcock G, Kirkpatrick G, Ullman S, **Hoagland P**. 2014. Human responses to Florida red tides: policy awareness and the effectiveness of local fertilizer ordinances. *Sci. Tot. Environ.* 493:898-909. <http://www.sciencedirect.com/science/article/pii/S0048969714009565>.
- Hoagland P**, Kite-Powell HL, Jin D, Solow AR. 2013. Supply-side approaches to the economic valuation of coastal and marine habitat in the Red Sea. *J. King Saud Univ.-Sci.* 25:217-228. <http://dx.doi.org/10.1016/j.jksus.2013.02.006>.
- Jin D, Ashton A, **Hoagland P**. 2013. Optimal responses to shoreline changes: an integrated economic and geological model with application to curved coasts. *Nat. Res. Model* 26:572-604. <http://onlinelibrary.wiley.com/doi/10.1111/nrm.12014/abstract>.
- Jin D, **Hoagland P**, Wikgren B. 2013. An empirical analysis of the economic value of ocean space associated with commercial fishing. *Mar Pol'y* 42:74-84.
- Hoagland, P**, Jin D, Kite-Powell HL. 2012. The costs of beach replenishment along the US Atlantic coast. *J. Coast. Res.* 28:199-204. <http://dx.doi.org/10.2112/JCOASTRES-D-11-00066.1>.
- Jin D, **Hoagland P**, Dalton TM, Thunberg EM. 2012. Development of an integrated economic and ecological framework for ecosystem-based fisheries management in New England. *Prog. Oceanog.* 102:93-101. <http://dx.doi.org/10.1016/j.pocean.2012.03.007>.
- Jin D, Kite-Powell HL, **P. Hoagland P**, Solow AR. 2012. A bioeconomic analysis of traditional fisheries in the Red Sea off the coast of the Kingdom of Saudi Arabia. *Mar. Res. Econ.* 27:127-138. <http://dx.doi.org/10.5950/0738-1360-27.2.137>.
- Fleming LE, Kirkpatrick B, Backer LC, Walsh CJ, Nierenberg K, Clark J, Reich A, Hollenbeck J, Benson J, Cheng YS, Naar J, Pierce R, Bourdelais AJ, Abraham WM, Kirkpatrick G, Zaias J, Wanner A, Mendes E, S, **Hoagland P**, Stephan W, Bean J, Watkins S, Clarke T, Byrne M, Baden DG. 2010. Literature review of Florida red tide: implications for human health effects. *Harm. Alg.* 3:99-115. <http://dx.doi.org/10.1016/j.hal.2010.08.006>.
- Hoagland P**. 2010. A (social) scientific look at ecosystem-based management. *Oc. Coast. L. J.* 15:167-175. <http://mainelaw.maine.edu/academics/oclj/vol-15-no-1.html>.

- Hoagland P**, Beaulieu S, Tivey MA, Eggert RG, German C, Glowka L, Lin J. 2010. Deep-sea mining of seafloor massive sulfides. *Mar. Pol'y* 34:728-732. <http://dx.doi.org/10.1016/j.marpol.2009.12.001>.
- Nierenberg K, Kirner K, **Hoagland P**, Ullmann S, LeBlanc WG, Kirkpatrick G, Fleming LE, Kirkpatrick B. 2010. Changes in work habits of lifeguards in relation to Florida red tide. *Harm. Alg.* 9:419-425. <http://dx.doi.org/10.1016/j.hal.2010.02.005>. [Corrigendum: *Harm. Alg.* 9:647. <http://dx.doi.org/10.1016/j.hal.2010.05.003>.]
- Bauer, M., **P. Hoagland**, T.M. Leschine, B.G. Blount, C.M. Pomeroy, L.L. Lampl, C.W. Scherer, D.L. Ayres, P.A. Tester, M.R. Sengco, K.G. Sellner, and J. Shumacker. 2009. The importance of human dimensions research in managing harmful algal blooms. *Front. Ecol. Environ.* doi:10.1890/070181. <http://www.esajournals.org/doi/pdf/10.1890/070181>.
- Hoagland, P.**, D. Jin, L.Y. Polansky, B. Kirkpatrick, G. Kirkpatrick, L.E. Fleming, A. Reich, S.M. Watkins, S.G. Ullmann and L.C. Backer. 2009. The costs of respiratory illnesses arising from Florida Gulf Coast *Karenia brevis* blooms. *Environ. Health Persp.* 117:1239-1243. <http://ehp.niehs.nih.gov/docs/2009/0900645/abstract.html>.
- Kite-Powell, H.L., L.E. Fleming, L.C. Backer, E.M. Faustman, **P. Hoagland**, A. Tsuchiya, L.R. Younglove, B.A. Wilcox and R.J. Gast. 2008. Linking the oceans to public health: current efforts and future directions. *Environ. Health J.* 7(Supp. 2):S6. <<http://www.ehjournal.net/supplements/7/S2>>.
- Jin, D. and **P. Hoagland**. 2008. The value of HAB predictions to the commercial shellfish fishery in the Gulf of Maine. *Harm. Alg.* 7:772-781. <http://dx.doi.org/10.1016/j.hal.2008.03.002>.
- Jin, D., E. Thunberg and **P. Hoagland**. 2008. Economic impact of the 2005 red tide event on commercial shellfish fisheries in New England. *Oc. Coast. Manag.* 51:420-429. <http://dx.doi.org/10.1016/j.ocecoaman.2008.01.004>.
- Hoagland, P.** and D. Jin. 2007. Accounting for marine economic activities in large marine ecosystems. *Oc. Coast. Manag.* 51:246-258. <http://www.sciencedirect.com/science/journal/09645691>.
- Jin, D., H.L. Kite-Powell and **P. Hoagland**. 2007. Anticipating the growth of an open-ocean aquaculture industry. *Aquacult. Econ. Manag.* 11:225-242.
- Hoagland, P.** and D. Jin. 2006. Science and economics in the management of an invasive species. *BioSci.* 56:931-935. <http://hdl.handle.net/1912/1363>.
- Herrera, G. and **P. Hoagland**. 2006. Commercial whaling, tourism, and boycotts: an economic perspective. *Mar. Pol'y* 30:261-269. <http://dx.doi.org/10.1016/j.marpol.2004.12.005>.
- Jin, D., **P. Hoagland** and A.R. Solow. 2006. The economic value of environmental research in understanding the relative contributions of sources of nutrients to coastal waters. *Nat. Res. Model.* 19:201-220. <http://dx.doi.org/10.1111/j.1939-7445.2006.tb00180.x>. [WHOI Contrib. No. 11,296.]
- Jin, D., **P. Hoagland** and E. Thunberg. 2006. An analysis of the relationship between the fish

- harvesting and processing sectors in New England. *Mar. Res. Econ.* 21:47-62.
- Hoagland, P.** and A.R. Solow. 2005. Regional ocean governance: a critique of two recent proposals. *Mar. Tech. Soc. J.* 38:61-67. [WHOI Contrib. No. 11,301.]
- Jin, D., H.L. Kite-Powell and **P. Hoagland**. 2005. Risk assessment in open-ocean aquaculture: a firm-level investment-production model. *Aquacult. Econ. Manag.* 9:369-387. <http://dx.doi.org/10.1080/13657300500242261>. [WHOI Contrib. No. 11,394.]
- Hoagland, P.,** D. Jin and H.L. Kite-Powell. 2003. The optimal allocation of ocean space: aquaculture and wild harvest fisheries. *Mar. Res. Econ.* 18:129-147. [WHOI Contrib. No. 10,932.]
- Jin, D., **P. Hoagland** and T.M. Dalton. 2003. Linking economic and ecological models for a marine ecosystem. *Ecol. Econ.* 46:367-385. <http://dx.doi.org/10.1016/j.ecolecon.2003.06.001>. [WHOI Contrib. No. 10,705.]
- Steele, J.H. and **P. Hoagland**. 2003. Are fisheries “sustainable”? *Fish. Res.* 64:1-3. <http://dx.doi.org/10.1016/j.fishres.2003.08.001>. [WHOI Contrib. No. 11,004.]
- Hoagland, P.,** D.M. Anderson, Y. Kaoru and A.W. White. 2002. The economic effects of harmful algal blooms in the United States: estimates, assessment issues, and information needs. *Estuar. Coast.* 25:677-695. <http://dx.doi.org/10.1007/BF02804908>. [WHOI Contrib. No. 10,637.]
- Kite-Powell, H.L., **P. Hoagland** and D. Jin. 1998. Policy, law, and public opposition: the prospects for abyssal ocean waste disposal in the United States. *J. Mar. Sys.* 14:377-396. [http://dx.doi.org/10.1016/S0924-7963\(97\)00036-5](http://dx.doi.org/10.1016/S0924-7963(97)00036-5). [WHOI Contrib. No. 9053.]
- Hoagland, P.** 1997. Managing the underwater cultural resources of the China Seas: a comparison of public policies in Mainland China and Taiwan. *Int'l J. Mar. Coast. L.* 12:265-283. <http://dx.doi.org/10.1163/157180897X00095>. [WHOI Contrib. No. 9148.]
- Hoagland, P.** and D. Jin. 1997. A model of bycatch involving a passive use stock. *Mar. Res. Econ.* 12:11-28. [WHOI Contrib. No. 9370.]
- Hoagland, P.,** H.L. Kite-Powell and M.E. Schumacher. 1996. Regulating marine toxic pollution under the London Convention. *Int'l Iss.* 39:25-43. [WHOI Contrib. No. 9324.]
- Schumacher, M., **P. Hoagland** and A.G. Gaines. 1996. Land-based marine pollution in the Caribbean: incentives and prospects for an effective regional protocol. *Mar. Pol'y* 20:99-121. [http://dx.doi.org/10.1016/S0308-597X\(95\)00044-7](http://dx.doi.org/10.1016/S0308-597X(95)00044-7). [WHOI Contrib. No. 9002.]
- Kaoru, Y. and **P. Hoagland**. 1994. The value of historic shipwrecks: conflicts and management. *Coastal Manag.* 22:195-213. <http://dx.doi.org/10.1080/08920759409362231>. [WHOI Contrib. No. 8384.]
- Hoagland, P.** and H.L. Kite-Powell. 1994. Technology transfer and scientific relevance. *Oceanog.* 6:68-77. <http://dx.doi.org/10.5670/oceanog.1993.01>. [WHOI Contrib. No. 8230.]
- Hoagland, P.** 1993. Manganese nodule price trends: dim prospects for the commercialization of deep seabed mining. *Res. Pol'y* 19:287-298. [http://dx.doi.org/10.1016/0301-4207\(93\)90041-K](http://dx.doi.org/10.1016/0301-4207(93)90041-K). [WHOI Contrib. No. 8435.]

- LaMourie, M.J. and **P. Hoagland**. 1993. Government support of marine science and technology in Japan: the case of marine electronic instrumentation. *Mar. Tech. Soc. J.* 27:21-33. [WHOI Contrib. No. 8280.]
- Hoagland, P.** 1992. Measuring voting power on the Council of the International Seabed Authority. *Oc. Pol'y Res. (Korea)* 7:251-276. [WHOI Contrib. No. 8124.]
- Hoagland, P.** and H.L. Kite-Powell. 1991. European advanced marine electronic instrumentation: A U.S. perspective. *Mar. Pol'y* 15:431-454. [http://dx.doi.org/10.1016/0308-597X\(91\)90052-D](http://dx.doi.org/10.1016/0308-597X(91)90052-D). [WHOI Contrib. No. 7785.]
- Broadus, J.M. and **P. Hoagland**. 1990. Marine nonfuel minerals in the U.S. Exclusive Economic Zone: managing information as a resource. *Oc. Shore. Manag.* 13:275-294. [http://dx.doi.org/10.1016/0951-8312\(90\)90006-4](http://dx.doi.org/10.1016/0951-8312(90)90006-4). [WHOI Contrib. No. 7144.]
- Hoagland, P.** 1988. The conservation and disposal of ocean hard minerals: a comparison of ocean mining codes in the United States. *Nat. Res. J.* 28:451-508. [http://lawlibrary.unm.edu/nrj/28/3/03\\_hoagland\\_conservation.pdf](http://lawlibrary.unm.edu/nrj/28/3/03_hoagland_conservation.pdf). [WHOI Contrib. No. 6714.]
- Hoagland, P.** 1987. Performance requirements in ocean mineral development. *Mar. Pol'y Rep.* 9:5-10. [WHOI Contrib. No. 6399.]
- Hoagland, P.** 1986. Seabed mining patent activity: some first steps toward an understanding of strategic behavior. *J. Res. Manag. Tech.* 14:211-222. [WHOI Contrib. No. 6346.]
- Broadus, J.M. and **P. Hoagland**. 1984. Conflict resolution in the assignment of area entitlements for seabed mining. *San Diego L. Rev.* 21:541-576. [http://www.sandiego.edu/law/news/blogs\\_publications/publications/journals/law\\_review/archive/archive.php?focus=1635](http://www.sandiego.edu/law/news/blogs_publications/publications/journals/law_review/archive/archive.php?focus=1635).
- Hoagland, P.** 1983. Federal ocean resource management: interagency conflict and the need for a balanced approach to resource management. *Virginia J. Nat. Res. L.* 3(1):1-33.
- Einbender, G., A. Bakalian, T. Wall, **P. Hoagland** and K. Kamlet. 1982. The case for immediate controls on acid rain. *Mat. Soc.* 6:251-282.
- Hoagland, P.** 1981. The United States Coast Guard: Semper Paratus? *Mar. Pol'y Rep.* 3:1-4. [Reprinted in: U.S. Congress, House, Committee on Merchant Marine and Fisheries, Subcommittee on Coast Guard and Navigation, *Hearings on Coast Guard Authorization and Oversight*. 97th Cong., 2d sess., 1982, pp. 249-53.]

#### **CHAPTERS IN BOOKS:**

- Hoagland P.** 2014. Coupled nature-human (CNH) systems: generic aspects of human interactions with blooms of Florida red tide (*Karenia brevis*) and implications for policy responses. In Rossini GP, ed., *Toxins and Biologically Active Compounds from Microalgae*. Vol. 2: Biological Effects and Risk Management. Boca Raton, FL: CRC Press, pp. 502-537.
- Hoagland P.**, ed. 2010. *Marine Policy and Economics*. New York: Academic Press, 618pp.
- MacLeod MS, Lynch M, **Hoagland P.** 2009. Ocean zoning. In Steele JH, Thorpe SA, Turekian KK, eds., *Encyclopedia of Ocean Sciences*. 2<sup>nd</sup> edition. Cambridge, UK: Elsevier. Online at: <http://www.sciencedirect.com/science/referenceworks/9780123744739>.



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- Hoagland P**. 2008. From jubilees to halos: clarifying the economic effects of harmful algal blooms on commercial fisheries. *Am. Fish. Soc. Symp.* 64:233-243.
- Hoagland, P.** and S. Scatasta. 2006. The economic effects of harmful algal blooms. In E. Granéli and J.T. Turner, eds., *Ecology of Harmful Algae*. Ecological Studies, Vol. 189. Berlin: Springer-Verlag, Chap. 30, pp. 391-402. [WHOI Contrib. No. 11,414.]
- Hoagland, P.**, D. Jin, E. Thunberg and S. Steinback. 2005. Economic activity associated with the northeast shelf large marine ecosystem: application of an input-output approach. In T.M. Hennessey and J.G. Sutinen, eds., *Sustaining Large Marine Ecosystems: The Human Dimension*. Large Marine Ecosystem Series Vol. 13. Oxford, U.K.: Elsevier Science B.V., pp. 157-179. [WHOI Contrib. No. 9,936.]
- Stone, G., L. Madin, K. Stocks, G. Hovermale, **P. Hoagland**, M. Schumacher, C. Steve-Sotka, H. Tausig, P. Etnoyer. 2004. Seamount biodiversity, exploitation and conservation. In L.K. Glover and S.A. Earle, eds., *Defying Ocean's End*. Washington: Island Press, pp. 43-70.
- Hoagland, P.**, K.M. Riaf, D. Jin and H.L. Kite-Powell. 2003. A comparison of access systems for natural resources: drawing lessons for ocean aquaculture in the US Exclusive Economic Zone. In Bridger, C.J. and B.A. Costa-Pierce, eds., *Open-Ocean Aquaculture: From Research to Commercial Reality*. Baton Rouge, LA: World Aquaculture Society, pp. 23-44.
- Kite-Powell, H.L., **P. Hoagland**, D. Jin and K. Murray. 2003a. Economics of open ocean growout of shellfish in New England: sea scallops and blue mussels. In Bridger, C.J. and B.A. Costa-Pierce, eds., *Open-Ocean Aquaculture: From Research to Commercial Reality*. Baton Rouge, LA: World Aquaculture Society, pp. 293-306.
- Kite-Powell, H.L., **P. Hoagland**, D. Jin and K. Murray. 2003b. Open ocean growout of finfish in New England: a bioeconomic model. In Bridger, C.J. and B.A. Costa-Pierce, eds., *Open-Ocean Aquaculture: From Research to Commercial Reality*. Baton Rouge, LA: World Aquaculture Society, pp. 319-324.
- Jin, D., **P. Hoagland** and H.L. Kite-Powell. 2003. A Model of the optimal scale of open-ocean aquaculture. In Bridger, C.J. and B.A. Costa-Pierce, eds., *Open-Ocean Aquaculture: From Research to Commercial Reality*. Baton Rouge, LA: World Aquaculture Society, pp. 55-64.
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- Hoagland, P.**, J. Yang, J.M. Broadus and D.K.Y. Chu. 1992. China Sea coastal and marine nonfuel minerals: investigation and development. In J.B. Marsh, ed., *Resources and Environment in Asia's Marine Sector*. Washington: Taylor & Francis, pp. 219-276.
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- TECHNICAL REPORTS AND MONOGRAPHS:**
- Dalton T, Foley C, **Hoagland P**, Jin D. 2013. Report on the potential economic effects on commercial fishing arising from the Block Island Wind Farm Working Area (BIWF/WA) during construction. Providence, RI: Deepwater Wind Block Island, LLC (November).
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- Hoagland, P.**, D. Jin and H.L. Kite-Powell. 2008. Regional economic analysis of the Northwest Atlantic marine eco-region. Boston, Mass. The Nature Conservancy (9 September).
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- Hoagland, P.** and D. Jin. 2006. Accounting for economic activities in Large Marine Ecosystems (LMEs) and Regional Seas (RS). Regional Seas Reports and Studies No.181. Amsterdam: United Nations Environment Programme (July).
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