

OLAF P. JENSEN

Rutgers University
Institute of Marine & Coastal Sciences
71 Dudley Rd.
New Brunswick, NJ 08901

Tel. (410) 812-4842
olaf.p.jensen@gmail.com
marine.rutgers.edu/~ojensen

EDUCATION

| | |
|---|-------------|
| UNIVERSITY OF WISCONSIN, <i>Madison, Wisconsin</i> Ph.D. in Limnology & Marine Science Advisor: Jim Kitchell | 2004 – 2007 |
| UNIVERSITY OF MARYLAND, <i>College Park, Maryland</i> Master of Science in Marine, Estuarine, and Environmental Science Advisor: Tom Miller | 2000 – 2004 |
| CORNELL UNIVERSITY, <i>Ithaca, New York</i> Bachelor of Arts in Biology & Society with Distinction | 1994 – 1998 |

PROFESSIONAL EXPERIENCE

| | |
|--|----------------|
| Associate Professor Rutgers University Department of Marine & Coastal Sciences | 2016 – present |
| Assistant Professor Rutgers University Department of Marine & Coastal Sciences | 2010 – 2016 |
| David H. Smith Conservation Research Fellow, University of Washington School of Aquatic and Fishery Sciences Advisors: Ray Hilborn & Tim Essington | 2008 – 2010 |
| Postdoctoral Research Assistant and Lecturer, University of Wisconsin | 2007 – 2008 |
| Graduate Research Assistant, University of Wisconsin, Center for Limnology | 2004 – 2007 |
| Knauss Marine Policy Fellow, Biogeography Program, National Oceanic and Atmospheric Administration | 2003 – 2004 |
| Deutscher Akademischer Austausch Dienst (DAAD) Fellow, Institute for Geoecology, Technical University of Braunschweig, German | 2002 |

HONORS AND AWARDS

| | |
|---|-----------|
| Fellow, American Institute of Fishery Research Biologists | 2018 |
| Rockefeller Foundation Bellagio Center Residency | 2017 |
| Rutgers Board of Trustees Research Fellowship for Scholarly Excellence | 2016 |
| Distinguished Postdoctoral Mentor, National Socio-Environmental Synthesis Center (SESYNC) | 2015-2016 |
| Ecological Society of America, Sustainability Science Award (for Worm et al. 2009) | 2011 |

GRANTS

As Principal Investigator – Total: \$4.8 million
(including multi-institution projects on which I was the Rutgers PI)

Gulf of Mexico Research Initiative – Project title: “CWC-III: The effects of the 2018-2019

| | |
|---|--------------------------------|
| Macondo oil spill on coastal ecosystems” (Rutgers Co-PI: Paola Lopez Duarte, 9 PIs from other institutions) | Rutgers: \$270K |
| <i>United Nations Food and Agriculture Organization (UN FAO)</i> - Project title: "Development of multi-species catch-only models" | 2017-2018 \$92,707 |
| <i>New Jersey Sea Grant</i> – Project title: “Optimizing fishing regulations for New Jersey’s multi-species recreational bottom fishery to improve economic outcomes and angler satisfaction (Rutgers Co-PIs: Eleanor Bochenek, Doug Zemeckis) | 2018 - 2020 \$139,728 |
| <i>NOAA - RESTORE</i> - Project title: " Linking community and food web approaches to restoration: an ecological assessment of created and natural marshes influenced by river diversions. (Rutgers PI. 6 PIs from other institutions) | 2017-2020 Rutgers: \$331K |
| <i>National Science Foundation - Coupled Natural-Human Systems</i> - Project title: "Social-ecological dynamics of recreational fishery landscapes" (Rutgers PI. 4 PIs from other institutions) | 2017 - 2022 Rutgers: \$230K |
| <i>National Science Foundation - International Research Experience for Students</i> - Project title: " People, power, and rivers: social-ecological dynamics of hydroelectric development in northern Mongolia" | 2017 - 2020 Rutgers: \$250K |
| <i>Mid-Atlantic Fishery Management Council</i> – Project title: “Estimating and Mitigating the Discard Mortality Rate of Black Sea Bass in Offshore Recreational Rod-And-Reel Fisheries” (Co-PIs: Eleanor Bochenek and Jeffrey Kneebone) | 2016-2017 \$219,334 |
| <i>National Science Foundation - Macrosystems</i> - Project title: "Collaborative Research: Hierarchical Functioning of River Macrosystems in Temperate Steppes - From Continental to Hydrogeomorphic Patch Scales" (Rutgers PI. 8 PIs from other institutions) | 2015 - 2020 Rutgers: \$49K |
| <i>New Jersey DEP</i> – Project title: “A pilot trap survey of artificial reefs in New Jersey for monitoring of black sea bass, tautog, and lobster” | 2016 - 2019 \$313,972 |
| <i>New Jersey Sea Grant</i> – Project title: “Understanding the origins and growth rates of juvenile striped bass in small rivers and coastal bays. (Co-PIs: Ken Able, Paola Lopez Duarte) | 2016 - 2018 \$138,000 |
| <i>NOAA Saltonstall-Kennedy Program</i> – Project title: “A hook and line survey to assess spatial population dynamics of black sea bass (<i>Centropristis striata</i>)” (Rutgers Co-PI: Eleanor Bochenek) | 2015-2017 Rutgers: \$104K |
| <i>Gulf of Mexico Research Initiative</i> – Project title: “The effects of the Macondo oil spill on coastal ecosystems” (Rutgers Co-PIs: Ken Able, Paola Lopez Duarte; 16 PIs from other institutions) | 2015-2017 Rutgers: \$997K |
| <i>Taimen Conservation Fund</i> – Project title: Environmental impact assessment of the Egiin Gol Hydropower Plant Project (EGHPP). | 2014-2015 \$240,253 |
| <i>New Jersey DEP</i> – Project title: “Evaluating passage performance of spawning shad and river herring at the Island Farm Weir on the Raritan River” | 2012-2018 \$242,030 |
| <i>NOAA Northeast Cooperative Research Program</i> – Project title: “Experimental approaches to butterflyfish bycatch in the North Atlantic <i>Loligo</i> | 2011 - 2014 Rutgers: \$194K |

Fishery – option 2 Loligo squid predation” (Co-PI: Josh Kohut)

New Jersey DEP – Project title: “Multi-trophic level modeling of Barnegat Bay” (Co-PI: Heidi Fuchs) 2011-2015
\$370,000

National Science Foundation – International Research Experience for Students – Project title: “Climate change and threatened salmonid fishes in Northern Mongolia” (Co-PI: Tim Zimmerman) 2011-2013
\$149,988

Trust for Mutual Understanding – Project title: “Workshop on ecology and conservation of Lake Hovsgol, Mongolia” in collaboration with Freshwaters Illustrated 2011
\$15,000

NOAA Mid-Atlantic Research Set-Aside Program – Project title: “Understanding the effects of fishing on the size, age, and sex distribution of black sea bass (*Centropristis striata*) during the spawning season” (Co-PIs: Eleanor Bochenek, Thomas Grothues, David Berlinsky) 2011
\$385,571

The Billfish Foundation – Project title: “From the Bay to the Banks: understanding food web links between Magdalena Bay and the offshore pelagic fish community” (Co-PI: Sofia Ortega-Garcia) 2011-2012
\$39,930

NSF/NOAA CAMEO – Project title: “Fish productivity and fishing impacts compared across a range of marine ecosystems” (Rutgers PI, 3 PIs from other institutions) 2010 - 2013
Rutgers: \$187K

New Jersey Sea Grant – Project title: “Reducing uncertainty in stock-recruitment relationships and fishery reference points using Bayesian meta-analysis” 2010 - 2012
\$110,000

As Co-Principal Investigator – Total: \$1.4 million

National Science Foundation - Project title: " REU: Research Internships in Ocean Sciences" (PI: Josh Kohut) 2018-2020
\$241,993

New England Fishery Management Council – Project title: “Catch advice methods for the Northeast multispecies fishery” (PI: John Wiedenmann) 2015
\$134,616

New Jersey Sea Grant – Project title: “Determining Sustainable Catch Limits for Data-Poor Fisheries in New Jersey: Validation and Refinement of a Data-Poor Harvest Control Rule” (PI: John Wiedenmann) 2015-2016
\$79,958

New Jersey Sea Grant – Project title: “Understanding the impacts of climate change on the distribution, population connectivity, and fisheries for summer flounder (*Paralichthys dentatus*) in the Mid-Atlantic” (Rutgers PI: Malin Pinsky; Co-PIs: Ken Able, Joel Fodrie, Janet Nye, Hyemi Kim, Chris Kennedy) 2014-2016
Rutgers: \$140K

New Jersey Sea Grant – Project title: “Genetic monitoring to improve fish stock assessments” (PI: Malin Pinsky; Co-PI: Ken Able) 2014-2016
Rutgers: \$140K

Gulf of Mexico Research Initiative – Project title: “The effects of the Macondo oil spill on coastal ecosystems” (Rutgers PI: Ken Able) 2011-2014
Rutgers: \$413K

NOAA Northeast Cooperative Research Program – Project title: “Experimental approaches to butterflyfish bycatch in the North Atlantic *Loligo* Fishery” (PI: Josh Kohut) 2010 - 2012
\$217,089

TEACHING AND MENTORING

| | |
|---|--------------|
| <i>Social-Ecological Research: Hydropower Development in Mongolia</i> (online) | 2018 |
| <i>Advanced Ecological Data Analysis</i> (Rutgers) - Upper level graduate | 2017 |
| <i>Applied Population Ecology in R</i> (National University of Mongolia) – Graduate | 2016 |
| <i>Fishery Science</i> (Rutgers) – Upper level undergraduate and graduate | 2014, 16, 18 |
| <i>Spatial Statistics</i> (Rutgers) – Graduate | 2013 |
| <i>Seminar in Fishery Science & Management</i> (Rutgers) – Graduate | 2013, 15 |
| <i>Limnology</i> (Rutgers) – Upper level undergraduate | 2012 |
| <i>Fish in the City: Conservation of fish populations in urban and industrial Environments</i> (Rutgers) – Freshman (Byrne) seminar | 2011, 14, 16 |
| <i>Applied Population Dynamics</i> (Rutgers) – Graduate | 2011 |
| <i>Ecology of Fishes</i> (U. of Wisconsin - ZOO 510) Co-instructor (w/ Jim Kitchell) – Upper level undergraduate | 2008 |

“Distinguished Postdoctoral Mentor” – *National Socio-Environmental Synthesis* 2015-2016 Center (SESYNC), Annapolis, MD

Graduate Program Director – *Ecology & Evolution Graduate Program, Rutgers* 2016-present

Primary Graduate Advisor for: Mikaela Provost (Oceanography MS, 2013), Talia Young (Ecology & Evolution Ph.D, 2016), Orion Weldon (Ecology & Evolution Ph.D., on leave), Jim Vasslides (Ecology & Evolution Ph.D., 2016), Anthony Vastano (Oceanography MS, 2016), Chris Free (Oceanography Ph.D., 2018), Abigail Golden (Ecology & Evolution Ph.D., expected 2021), Ashley Trudeau (expected ~2023), Carolyn Iwicki (expected ~2023)

Graduate Committee Member or Summer Graduate Research Supervisor (NSF IRES grant) for: Taryn Kloeden (2018), Stephanie Kealy (2018), Lea Pollack (2018), Colin Dassow (2018), Katrina Catalano (2018), Sarah Borsetti (2017), Alex Safiq (2016), Jenny Paterno (2015), Jessica Lueders-Dumont (2015), Kaycee Coleman (2014), Orin Robinson (2013), Kirk Olson (2012, 2013), Majig Batsuh (2012, 2013), Trevor Krabbenhoft (2012), Corey Krabbenhoft (2012), Horol Chantuu (2012), Edward McGinley (2012), Anna Hermes (2012), G. Natseg (2011), Purev Tsogtsaikhan (2011), Tyler Ahrenstorff (2009)

Primary Postdoctoral Advisor for: Philipp Neubauer (2011-2013), Michael McCann (2015-2016), Doug Zemeckis (2016 – 2017), Kiva Oken (2017 – current)

Undergraduate Research Advisor for: Anna Hassan (2018), Laura Wiltsee (2018), Sarah Smith-Tripp (2018), Alice Beittel (2018), Robert Jarett (2017), Julia Engdahl (2017), Mattea Berglund (2016), Stephanie Melara (2016), Hayley Wolcott (2015), Emma Brush (2015), Andrew Lahr (2015), Alise Strauch (2015), Mario Hernandez (2014), Melissa Gronske (2014), Morgan Mattioli (2014), Jim Fiorendino (2014), Greg Byford (2013), Mario Garcia (2013), Frances Iannucci (2013), Jessica Gezymalla (2013), Anthony Vastano (2013), Evan Kwityn (2013), Mary Kate Swenarton (2012), Andrew Hassall (2011), Katie Wright (2011), Ivana Roman (2011), Michelle Jakaitis (2010)

INVITED PRESENTATIONS, KEYNOTES, WORKSHOPS, AND SYMPOSIA (PAST 5 YEARS)

"Coupled Social-Ecological Dynamics in Fisheries" Symposium at the *Annual Meeting of the American Fisheries Society, Atlantic City, NJ* (lead organizer) 2018

“The River Wolf and the Blue Pearl: ecology and conservation of endangered salmonids in Mongolia” Invited seminar, *Queens College, Dalhousie University, University of Washington, University of Florida, University of Maine, Wellesly College, University of Minnesota Duluth.* 2010-2018

| | |
|---|-----------|
| “Fisheries as ecosystem experiments: meta-analysis using the RAM Legacy Stock Assessment Database” Invited seminar, <i>University of Massachusetts Dartmouth, Oregon State University, UN Food and Agriculture Organization, Northeastern University Marine Science Center, U. of Southern Mississippi Gulf Coast Research Laboratory</i> | 2015-2018 |
| “The worst form of fisheries governance in the world (except for all the others): federal fisheries management under the Magnuson-Stevens Act” <i>Mid-Atlantic Chapter of the American Fisheries Society (MAC-AFS) Annual Meeting - Keynote Speaker</i> | 2017 |
| “The River Wolf and the Blue Pearl: Conserving Mongolia’s Aquatic Ecosystems in an Age of Global Change” Invited speaker <i>UC Berkeley conference: Deadly Modernity: The Environmental Crisis Behind Mongolia’s Swift Development</i> | 2016 |
| “Resilience and recovery of marine fish populations: points of no return and productivity regime shifts” <i>New York Chapter of the American Fisheries Society (NYCAFS) Annual Meeting – Keynote Speaker</i> | 2016 |
| “Diel vertical migration across contexts: fear, food, or fitness?” <i>Lacawac Ecology Conference, Lake Ariel, PA. – Keynote Speaker</i> | 2015 |
| “Geologically old, but ecologically young: ecosystem organization and change in Lake Hovsgol, Mongolia” <i>ASLO Annual Meeting, Granada, Spain.</i> | 2015 |
| “Recreational fisheries as complex adaptive social-ecological systems” Workshop organizer (co-organizers: Robert Arlinghaus and Mike Wilberg) <i>National Social Environmental Synthesis Center (SESYNC)</i> | 2014 |
| “Incorporation of climate information and uncertainty into stock assessments, biological reference points and ABC specifications” Invited speaker, <i>Mid-Atlantic Fishery Management Council Climate Workshop.</i> | 2014 |
| “Solving for Sustainable Seafood” Invited panel speaker. <i>Dauphin Island Sea Laboratory</i> | 2014 |
| “Ecosystem science and management of Lake Hovsgol” Invited speaker, <i>Lake Hovsgol National Park, Hatgal, Mongolia</i> | 2013 |
| “Rethinking the Global Fisheries Crisis” Invited seminar, <i>Virginia Institute of Marine Science, University of Minnesota – Duluth, U. of Rhode Island, Cornell University, Dauphin Island Sea Laboratory</i> | 2012-2014 |
| “Is Sustainable Seafood an Oxymoron? Balancing Nutrition, Health and Sustainability” Invited panel speaker. <i>Food & Nutrition Conference & Expo (Academy of Nutrition and Dietetics annual meeting), Philadelphia, PA</i> | 2012 |
| “Diel Vertical Migration: Scaling Down From Populations to Individuals” Symposium organizer (co-organizers: Tom Hrabik and Jason Stockwell) <i>American Fisheries Society, Minneapolis, MN</i> | 2012 |
| “Mongolian Ecological Research Symposium” Symposium organizer. <i>Rutgers University Marine Field Station, Tuckerton, NJ</i> | 2012 |

SERVICE AND AFFILIATIONS

Member of the Mid-Atlantic Fishery Management Council's Scientific and Statistical Committee (2013-present)

Member of the Lenfest Fishery Ecosystem Taskforce (2014-2016)

Co-chief Science Editor: *Fisheries* (2014-2016)

Editorial board (Associate or "Subject Matter" Editor): *Ecological Applications* (2012-2018) and *Animal Conservation* (2012-2015)

Delaware Bay Oyster Stock Assessment Review Panel – 2011-2013

Member of the *Society for Conservation Biology* (lifetime member), *American Institute of Fishery Research Biologists* (fellow), and *American Fisheries Society*

Panel or ad-hoc grant proposal reviewer for: *National Science Foundation*, *National Research Council - Research Associateship Program*, *USAID PEER program*, *David H. Smith Conservation Research Fellowship*, *North Pacific Research Board*, *Arctic-Yukon-Kuskokwim Sustainable Salmon Initiative*; *Maryland, Oregon, and Virginia Sea Grant Programs*, *MARFIN*, and *ArcticNet*

Manuscript reviewer for *Aquatic Living Resources*, *Canadian Journal of Fisheries & Aquatic Sciences*, *Climatic Change*, *Conservation Biology*, *Ecological Applications*, *Ecosystems*, *Estuaries*, *Freshwater Biology*, *Global Change Biology*, *Global Ecology and Biogeography*, *ICES Journal of Marine Science*, *Journal of Climate*, *Journal of Fish Biology*, *Journal of Great Lakes Research*, *Limnology & Oceanography*, *Marine Ecology Progress Series*, *Nature Communications*, *New Zealand Journal of Marine and Freshwater Research*, *Oikos*, *Proceedings of the National Academy of Sciences*, *Proceedings of the Royal Society of London B, Science*

PUBLICATIONS

Lab members (students, postdocs, and myself) in bold, † student (grad or undergrad when the research was done)

H-index – Google Scholar: 32 – Web of Science: 28

Peer-reviewed journals (in review)

Free†, **C.M.**, Thorson, J.T., Pinsky, M.L., **Oken, K.L.**, Wiedenmann, J., **Jensen, O.P.** *In first revision*. Global fisheries production has declined with historical warming. *Science*.

Jensen, O.P., Martin, C.W., **Oken, K.L.**, Fodrie, F.J., Lopez-Duarte, P.C., Able, K.W., and Roberts, B.J. *In review*. Simultaneous estimation of dispersal and survival of the Gulf Killifish (*Fundulus grandis*) from a batch tagging experiment. *Marine Ecology Progress Series*.

Wiedenmann, J., **Free†**, **C.M.**, **Jensen, O.P.** *In review*. Insights into the performance of data-limited methods for setting catch targets through application to data-rich stocks: A case study using Northeast U.S. fish stocks. *Fisheries Research*.

Lueders-Dumont†, J.A., Sigman, D.M., Johnson, B.J., **Jensen, O.P.**, Ward, B.B. *In review*. Comparison of the isotopic composition of fish otolith-bound organic N with host tissue. *Canadian Journal of Fisheries and Aquatic Sciences*.

Olson†, K., Krabbenhoft, T., Hrabik, T., Mendsaikhan, B., and **O.P. Jensen**. *In review*. Pelagic-

littoral trophic polymorphism in Hovsgol grayling *Thymallus nigrescens* from Lake Hovsgol, Mongolia. *Ecology of Freshwater Fish*.

Free†, C.M., Jensen, O.P., Anderson, S.C., Gutierrez, N.L., Kleisner, K.M., Longo, C., Minto, C., Osio, G.C., Walsh, J.C. *In review*. Blood from a stone: can catch-only stock assessment methods provide reliable advice? *Fisheries*.

Peer-reviewed journals (published or in press)

83. Flanagan†, P., **Jensen, O.P.,** Morley, J., and Pinsky, M. *In press*. Response of marine communities to local temperature changes. *Ecography*.
82. Marshall, K.N., Koehn†, L., Levin, P.S., Essington, T., and **O.P. Jensen**. *In press*. Inclusion of ecosystem information in U.S. fishery stock assessments suggests progress towards ecosystem-based fisheries management. *ICES Journal of Marine Science*.
81. Tyler, S., **Jensen, O.P.,** Hogan, Z., Chandra, S., Galland†, L., and J. Simmons. *In press*. Perspectives on the application of unmanned aircraft for freshwater fisheries census. *Fisheries*.
80. Wiedenmann, J. and **O.P. Jensen**. *In press*. Could recent overfishing of New England groundfish have been prevented? A retrospective evaluation of alternative management strategies. *Canadian Journal of Fisheries and Aquatic Sciences*.
79. Walsh, J.C., Minto, C., Jardim, E., Anderson, S.C., **Jensen, O.P.,** Afflerbach, J., Dickey-Collas, M., Kleisner, K.M., Longo, C., Osio, G.C., Selig, E.R., Thorson, J.T., Rudd, M.B., Papacostas, K.J., Kittinger, J.N., Rosenberg, A.A., and A.B. Cooper. *In press*. Trade-offs for data-limited fisheries when using harvest strategies based on catch-only models. *Fish and Fisheries*.
78. **Young†, T., Pincin, J., Neubauer, P.,** Ortega-García, S., **Jensen, O.P.** 2018. Investigating diet patterns of highly mobile marine predators using stomach contents, stable isotope, and fatty acid analysis. *ICES Journal of Marine Science*. 75: 1583-1590.
77. Roman†, I., Bourgeois, Y., Reyes-Velasco, J., **Jensen, O.P.,** Waldman, J., and S. Boissinot. 2018. Contrasted patterns of divergence and gene flow among five fish species in a Mongolian rift lake following glaciation. *Biological Journal of the Linnean Society*. 125: 115-125.
76. Levin, P.S., Essington, T.E., Marshall, K.N., Koehn†, L.E., Anderson, L.G., Bundy, A., Carothers, C., Coleman, F., Gerber, L.R., Grabowski, J.H., Houde, E., **Jensen, O.P.,** Möllmann, C., Rose, K., Sanchirico, J.N., and Smith, A.D.M. 2018. Building effective fishery ecosystem plans. *Marine Policy*. 92:48-57
75. Lueders-Dumont†, J.A., Wang, X.T., **Jensen, O.P.,** Sigman, D.M., and B.B. Ward. 2018. Nitrogen isotopic analysis of carbonate-bound organic matter in modern and fossil fish otoliths. *Geochimica et Cosmochimica Acta*. 224: 200–222
74. Marshall, K.N., Levin, P.S., Essington, T.E., Koehn†, L.E., Anderson, L.G., Bundy, A., Carothers, C., Coleman, F., Gerber, L.R., Grabowski, J.H., Houde, E., **Jensen, O.P.,** Möllmann, C., Rose, K., Sanchirico, J.N., and Smith, A.D.M. 2018. Ecosystem-based fisheries management for social–ecological systems: renewing the focus in the United States with next generation fishery ecosystem plans. *Conservation Letters*. 11: 1-7
73. Wiedenmann, J. and **O.P. Jensen**. 2018. Uncertainty in stock assessment estimates for New England groundfish and its impact on achieving target harvest rates. *Canadian Journal of Fisheries and Aquatic Sciences*. 75: 342-356

72. Rosenberg, A.A., Kleisner, K.M., Afflerbach, J., Anderson, S.C., Dickey-Collas, M., Cooper, A.B., Fogarty, M.J., Fulton, E.A., Gutiérrez, N.L., Hyde, K.J.W., Jardim, E., **Jensen, O.P.**, Kristiansen, T., Longo, C., Mente-Vera, C.V., Minto, C., Mosqueira, I., Osio, G.C., Ovando, D., Selig, E.R., Thorson, J.T., Walsh, J.C., and Ye, Y. 2018. Applying a new ensemble approach to estimating stock status of marine fisheries around the world. *Conservation Letters*. 11:1-9.
71. **Vasslides†, J.M.**, and **O.P. Jensen**. 2017. Quantitative versus semi-quantitative ecosystem models: comparing alternate representations of an estuarine ecosystem. *Journal of Coastal Research*. 78:287-296.
70. Mascia, M.B., Fox, H.E., Glew, Ahmadi, G., Agrawal, Barnes, M., A., L., Basurto, X., Craigie, I., Darling, E., Geldmann, J., Gill, D., Holst, S., **Jensen, O.P.**, Lester, S.E., McConney, P., Mumby, P., Nenadovic, M., Parks, J., Pomeroy, R., and A. White. 2017. Analyzing Conservation Impacts: Evaluation, Theory, and Marine Protected Areas. *Annals of the New York Academy of Science*. 1399: 93–115
69. **Vastano†, A.R.**, K.W. Able, **O.P. Jensen**, P.C. Lopez-Duarte, C.W. Martin, B.J. Roberts. 2017. Age Validation and Seasonal Growth Patterns of a Subtropical Marsh Fish: The Gulf Killifish, *Fundulus grandis*. *Environmental Biology of Fishes*. 10: 1315-1327.
68. **Free†, C.M.**, **Jensen, O.P.**, Wiedenmann, J., and J. J. Deroba. 2017. The refined ORCS approach: a catch-based method for estimating stock status and catch limits for data-poor fish stocks. *Fisheries Research*. 193: 60-70.
67. Gill, D., Mascia, M.B., Ahmadi, G., Glew, L., Lester, S.E., Barnes, M., Craigie, I., Darling, E., **Free†, C.**, Geldmann, J., Holst, S., **Jensen, O.P.**, White, A., Basurto, X., Coad, L., Gates, R.D., Guannel, G., Mumby, P., Thomas, H., Whitmee, S., Woodley, S., and H.E. Fox. 2017. Capacity shortfalls hinder the performance of marine protected areas globally. *Nature*. 543:665-669
66. Hilborn, R., Amoroso, R., Bogazzi, E., **Jensen, O.P.**, Parma, A., Szuwalski, C., and C.J. Walters. 2017. When does fishing forage species affect their predators? *Fisheries Research*. 191: 211-221
65. **Provost†, M.**, Berlinksy, D., and **Jensen, O.P.** 2017. Influence of size, age, and spawning season on sex change in Black Sea Bass. *Marine & Coastal Fisheries*. 9:126-138.
64. Anderson, S.C., A. B. Cooper, **O. P. Jensen**, C. Minto, J.T. Thorson, J.C. Walsh, J. Afflerbach, M. Dickey-Collas, K.M. Kleisner, C. Longo, G. C. Osio, D. Ovando, I. Mosqueira, A.A. Rosenberg, E.R. Selig. 2017. Improving estimates of population status and trend with superensemble models. *Fish & Fisheries*. 18:732-741
63. **McCann, J.M.**, Able, K.W., Christian, R.R., Fodrie, F.J., **Jensen, O.P.**, Johnson, J.J., López-Duarte, P.P., Martin, C.W., Olin, J.A., Polito, M.J., Roberts, B.J., Ziegler, S.L. 2017. Key taxa in food web responses to stressors: The Deepwater Horizon Oil Spill. *Frontiers in Ecology and Evolution*. 15: 142-149
62. Robinson†, O., **Jensen, O.P.**, **Provost†, M.**, Huang, S., Fefferman, N., Kebir, A., and J. Lockwood. 2017. Evaluating the impacts of fishing on sex-changing fish: a game-theoretic approach. *ICES Journal of Marine Science*. 74:652-659
61. Tsogtsaikhan†, P., Mendsaikhan, B., Jargalmaa†, G., Ganzorig, B., Weidel, B.C., **Filosa†, C.M.**, **Free†, C.M.**, **Young†, T.**, and **Jensen, O.P.** 2017. Comparison of age and growth of lenok, *Brachymystax lenok* (Pallas 1773), and grayling, *Thymallus spp.*, in

- lentic and lotic habitats of Northern Mongolia. *Journal of Applied Ichthyology*. 33: 108-115.
60. **Vasslides†, J.M.**, Townsend, H., Belton, T., and **Jensen, O.P.** 2017. Modeling the effects of a power plant decommissioning on an estuarine food web. *Estuaries & Coasts*. 40:604-616.
59. Pons†, M., Branch, T.A., Melnychuk, M.C., **Jensen, O.P.**, Brodziak, J., Fromentin, J.M., Harley, S.J., Haynie, A.C., Kell, L.T., Maunder, M.N., Parma, A.M., Restrepo, V.R., Sharma, R., Ahrens, R. and R. Hilborn. 2017. Effects of biological, economic and management factors on tuna and billfish stock status. *Fish & Fisheries*. 18: 1-21
58. Hartman, K.J. and **Jensen, O.P.** 2017. Anticipating climate change impacts on Mongolian salmonids: bioenergetics models for lenok and Baikal grayling. *Ecology of Freshwater Fish*. 26: 383-396
57. López-Duarte, P.C., Fodrie, F.J., **Jensen, O.P.**, Whitehead, A., Galvez, F., Dubansky, B., and K.W. Able. 2016. Is exposure to Macondo oil reflected in the otolith chemistry of marsh-resident fish? *PLoS ONE*. 11(9): e0162699. doi:10.1371/journal.pone.0162699.
56. Cambridge†, J., **Hernandez†, M.**, **Jensen, O.**, Buckley, B., McCandlish, E. and M. Robson. 2016. Concentrations of heavy metals in fish species targeted by anglers in central New Jersey: a pilot study. *Human and Ecological Risk Assessment: An International Journal*. 22:1593-1601
55. DeVanna Fussella, K.M., Smith, R.E.H., Fraker, M.E., Boegman, L., Frank, K.T., Miller, T.J., Tyson, J.T., Arend, K.K., Boisclair, D., Guildford, S.J., Hecky, R.E., Höök, T.O., **Jensen, O.P.**, Llopiz, J.K., May, C.J., Najjar, R.G., Rudstam, L.G., Taggart, C.T., Rao, Y.R. and S.A. Ludsin. 2016. A perspective on needed research, modeling, and management approaches that can enhance Great Lakes fisheries management under changing ecosystem conditions. *Journal of Great Lakes Research*. 42: 743-752
54. Olson†, K., **Jensen, O.P.**, and Hrabik, T. 2016. Feeding ecology and prey resource partitioning of lenok (*Brachymystax lenok*) and Baikal grayling (*Thymallus arcticus baicalensis*) in the Eg and Uur Rivers, Mongolia. *Ecology of Freshwater Fish*. 25:565-576
53. Foss-Grant†, A.P., Zipkin, E.F., Thorson, J.T., **Jensen, O.P.**, and W.F. Fagan. 2016. Hierarchical analysis of taxonomic variation in intraspecific competition across fish species. *Ecology*. 97: 1724-1734
52. Madenjian, C.P., **Jensen, O.P.**, Krabbenhoft, D.P., DeWild, J.F., Ogorek, J.M., and **A. Vastano†**. 2016. Mercury Accumulation and the Mercury-PCB-Sex Interaction in Summer Flounder. *Journal of Marine Science Research and Development* 6: 188. doi:10.4172/2155-9910.1000188
51. Lenker†, M.A., Weidel, B.C., **Jensen, O.P.**, and Solomon, C.T. 2016. Developing recreational harvest regulations for an unexploited lake trout population. *North American Journal of Fisheries Management*. 36:385-397.
50. Madenjian C.P., **Jensen O.P.**, Rediske R.R., O'Keefe J.P., **Vastano A.R.†**, Pothoven S.A. 2016. Differences in energy expenditures and growth dilution explain higher PCB concentrations in male summer flounder. *PLoS ONE* 11(1): e0147223. doi:10.1371/journal.pone.0147223.
49. **Free†, C.M.**, **Jensen, O.P.**, and Mendsaikhan, B. 2016. Quantifying illegal fishing and

- its impact on the endangered endemic Hovsgol grayling (*Thymallus nigrescens*) in Lake Hovsgol National Park, Mongolia. PLoS ONE. 10(12): e0143960. doi:10.1371/journal.pone.0143960
48. Melnychuk, M.C., Essington, T.E., Branch, T.A. *, Heppell, S.S. *, **Jensen, O.P. ***, Link, J.S. *, Martell, S.J.D. *, Parma, A.M. *, Pope, J.G. *, Smith, A.D.M. * 2016. Which design elements of individual quota fisheries help to achieve management objectives? Fish & Fisheries. doi:10.1111/faf.12094. *Order of authors arranged alphabetically
 47. **Vasslides†, J.** and **Jensen, O.P.** 2015. Fuzzy cognitive mapping in support of integrated ecosystem assessments: developing a shared conceptual model among stakeholders. Journal of Environmental Management. 166:348-356.
 46. **Provost†, M.** and **Jensen, O.P.** 2015. The impacts of fishing on hermaphroditic species and treatment of sex change in stock assessments. Fisheries. 40:536:545
 45. **Young†, T. O.P. Jensen,** B. Weidel, and S. Chandra. 2015. Natural trophic variability in a large, oligotrophic, near-pristine lake. Journal of Great Lakes Research. 41:463-472.
 44. **Neubauer, P.** and **O.P. Jensen.** 2015. Bayesian estimation of predator diet composition from fatty acids and stable isotopes. PeerJ. 3:e920; DOI 10.7717/peerj.920
 43. Thorson, J.T., **O.P. Jensen,** and R. Hilborn. 2015. Probability of stochastic depletion: an easily interpreted diagnostic for stock assessment modelling and fisheries management. ICES Journal of Marine Science. 72: 428-435
 42. Able, K.W., P. C. Lopez-Duarte, F. J. Fodrie, **O. P. Jensen,** C. W. Martin, B.J. Roberts, J. Valenti†, K. O'Connor†, S.C. Halbert†. 2014. Fish assemblages in Louisiana salt marshes: effects of the Macondo oil spill. Estuaries and Coasts
 41. Cooke, S.J., R. Arlinghaus*, D. M. Bartley*, T.D. Beard*, I.G. Cowx*, T.E. Essington*, **O.P. Jensen***, A. Lynch*, W.W. Taylor*, and R. Watson*. 2014. Where the waters meet: Sharing ideas and experiences between inland and marine realms to promote sustainable fisheries management. Canadian Journal of Fisheries and Aquatic Sciences. 71:1593-1601
 40. Fodrie, F.J. K.W. Able*, F. Galvez*, K.L. Heck* Jr., **O.P. Jensen***, P.C. Lopez-Duarte*, C.W. Martin*, R.E. Turner*, and A. Whitehead*. 2014. Integrating organismal and population responses of estuarine fishes to the Macondo spill reveals research priorities in the Gulf of Mexico. Bioscience. 64:778-788
 39. **Free†, C.M., O.P. Jensen,** S.A. Mason, M. Eriksen, N.J. Williamson, and B. Boldgiv. 2014. High-levels of microplastic pollution in a large, remote, mountain lake. Marine Pollution Bulletin. 85:156-163
 38. Hilborn, R., D. Hively, **O.P. Jensen,** and T.A. Branch. 2014. The dynamics of fish populations at low abundance and prospects for rebuilding and recovery. ICES Journal of Marine Science. 71: 2141-2151
 37. Thorson, J.T., **O.P. Jensen,** and E.F. Zipkin. 2014. How variable is recruitment for marine fishes? A hierarchical model for testing life history theory. Canadian Journal of Fisheries and Aquatic Sciences. 71: 973 – 983.
 36. **Neubauer, P., O.P. Jensen,** J.A. Hutchings, and J.K. Baum. 2013. Resilience and recovery of overexploited marine populations. Science. 340:347-349.
 35. Vert Pre†, K.A., R.O. Amoroso, **O.P. Jensen,** R. Hilborn. 2013. The frequency and intensity

of productivity regime shifts in marine fish stocks. *Proceedings of the National Academy of Sciences*. 110: 1779-1784

34. Merlin†, Y., Hernández, A., Calderón, M., **Jensen, O.P.**, Zaragoza, R., and L. Zambrano. 2013. Urban expansion into a protected natural area in Mexico City: alternative management scenarios. *Journal of Environmental Planning and Management*. 56: 398-411
33. Thorson†, J.T., Cope, J.M., Branch, T.A., and **O.P. Jensen**. 2012. Spawning biomass reference points for exploited marine fishes, incorporating taxonomic and body size information. *Canadian Journal of Fisheries and Aquatic Sciences*. 69: 1556-1568.
32. Essington, T.E., Melnychuk, M.C., Branch, T.A.*, Heppell, S.S.*, **Jensen, O.P.***, Link, J.S.*, Martell, S.J.D.*, Parma, A.M.*, Pope, J.G.*, Smith, A.D.M.* 2012. Catch shares, fisheries and ecological stewardship: a comparative analysis of resource responses to a rights-based policy instrument. *Conservation Letters*. 5: 186-195.
31. Thorson†, J.T., Branch, T.A., and **O.P. Jensen**. 2012. Using model-based inference to evaluate global fisheries status from landings, location and life history data. *Canadian Journal of Fisheries and Aquatic Sciences*. 69:645-655.
30. **Jensen, O.P.**, Branch, T.A., and R. Hilborn. 2012. Marine fisheries as ecological experiments. *Theoretical Ecology*. 5:3-22.
29. Ahrenstorff†, T.D., **Jensen, O.P.**, Weidel, B.C., Mendsaikhan, B., and T.R. Hrabik. 2012. Abundance, spatial distribution, and diet of endangered Hovsgol grayling (*Thymallus nigrescens*). *Environmental Biology of Fishes*. 94:465-476.
28. Hilborn, R., Stewart, I.J., Branch, T.A., and **O.P. Jensen**. 2012. Defining trade-offs among conservation of species diversity, profitability, and food security in the California Current bottom trawl fishery. *Conservation Biology*. 26:257-266.
27. Benson, B., Magnuson, J.J., **Jensen, O.P.**, Card, V.M., Hodgkins, G., Korhonen, J., Livingstone, D.M., Stewart, K.M., Weyhenmeyer, G.A., Granin, N.G. 2012. Extreme events, trends, and variability in Northern Hemisphere lake-ice phenology (1855 - 2005). *Climatic Change*. 112:299-323.
26. Ricard†, D., Minto, C., **Jensen, O.P.**, Baum, J.K. 2012. Examining the status of commercially exploited marine species with the RAM Legacy Stock Assessment Database. *Fish & Fisheries*. 13: 380-398.
25. Melnychuk, M.C., Essington, T.E., Branch, T.A.*, Heppell, S.S.*, **Jensen, O.P.***, Link, J.S.*, Martell, S.J.D.*, Parma, A.M.*, Pope, J.G.*, Smith, A.D.M.* 2012. Can catch share fisheries better track management targets? *Fish & Fisheries*. 13:267-290.
24. Pinsky†, M.L., **O.P. Jensen**, D. Ricard, S.R. Palumbi. 2011. Unexpected patterns of fisheries collapse in the world's oceans. *Proceedings of the National Academy of Sciences*. 108:8317-8322.
23. Branch, T.A., **O.P. Jensen**, D. Ricard, Y. Ye, and R. Hilborn. 2011. Contrasting global trends in marine fishery status obtained from catches and from stock assessments. *Conservation Biology*. 25:777-786.
22. Salomon, A.K., S. Gaichas, **O.P. Jensen**, V.N. Agostini, N.A. Sloan, J. Rice, T. McClanahan, R. Fujita, M. Ruckelshaus, P. Levin, N.K. Dulvy, and E.A. Babcock. 2011. Bridging the divide between fisheries and marine conservation science. *Bulletin of Marine Science*. 87(2):251-274.

21. **Jensen, O.P.**, S. Hansson, T. Didrikas, J. D. Stockwell, T. R. Hrabik, T. Axenrot, J. F. Kitchell. 2011. Foraging, bioenergetic, and predation constraints on diel vertical migration: field observations and modeling of reverse migration by young-of-year herring *Clupea harengus*. *Journal of Fish Biology*. 78:449-465
20. Weyhenmeyer, G. A., D. M. Livingstone, M. Meili, **O. Jensen**, B. Benson, J. J. Magnuson. 2011. Large geographical differences in the sensitivity of ice-covered lakes and rivers in the Northern Hemisphere to temperature changes. *Global Change Biology*. 17:268-275
19. Bakker, V.J., J.K. Baum, J.F. Brodie, A.K. Salomon, B.G. Dickson, H.K. Gibbs, **O.P. Jensen**, P.B. McIntyre. 2010. The changing landscape of conservation funding. *Conservation Letters*. 3:435-444
18. Gilroy†, D.J., **O.P. Jensen**, B.C. Allen, S. Chandra, B. Ganzorig, Z. Hogan, J. Maxted, M.J. Vander Zanden. 2010. Home range and seasonal movement of taimen, *Hucho taimen*, in Mongolia. *Ecology of Freshwater Fish*. 19:545-554
17. Hutchings, J.A., C. Minto, D. Ricard, J.K. Baum, **O.P. Jensen**. 2010. Trends in the abundance of marine fishes. *Canadian Journal of Fisheries & Aquatic Sciences*. 67:1205-1210.
16. **Jensen, O.P.**, S. Ortega-Garcia, S.J.D. Martell, R. Ahrens, M.L. Domeier, C.J. Walters, and J.F. Kitchell. 2010. Local management of a “highly migratory species?” The effects of longline closures and recreational catch-and-release for Baja California striped marlin fisheries. *Progress in Oceanography*. 86:176-186.
15. Stockwell, J.D., T.R. Hrabik, **O.P. Jensen**, D.L. Yule, and M. Balge. 2010. Empirical evaluation of predator-driven diel vertical migration in Lake Superior. *Canadian Journal of Fisheries and Aquatic Sciences* 67:473-485.
14. Diebel, M.W., J.T. Maxted, **O.P. Jensen**, and M.J. Vander Zanden. 2010. A spatial autocorrelative model for targeting stream restoration to benefit sensitive non-game fishes. *Canadian Journal of Fisheries and Aquatic Sciences* 67:165-176.
13. **Jensen, O.P.**, D.J. Gilroy, Z. Hogan, B.C. Allen, T.R. Hrabik, B.C. Weidel, S. Chandra, M.J. Vander Zanden. 2009. Evaluating recreational fisheries for an endangered species: a case study of taimen, *Hucho taimen*, in Mongolia. *Canadian Journal of Fisheries and Aquatic Sciences* 66:1707-1718.
12. Worm, B., R. Hilborn, J.K. Baum*, T. A. Branch*, J. S. Collie*, C. Costello*, M. J. Fogarty*, E. A. Fulton*, J. A. Hutchings*, S. Jennings*, **O. P. Jensen***, H. K. Lotze*, P. M. Mace*, T. R. McClanahan*, C. Minto*, S. R. Palumbi*, A. M. Parma*, D. Ricard*, A. A. Rosenberg*, R. Watson*, D. Zeller*. 2009. Rebuilding global fisheries. *Science* 325: 578-585.
11. White, M.A., K.M. de Beurs, K. Didan, D.W. Inouye, A.D. Richardson, **O.P. Jensen**, J. O’Keefe, G. Zhang, R.R. Nemani, W.J.D. van Leeuwen, J.F. Brown, A. de Wit, M. Schaeppman, X. Lin, M. Dettinger, A.S. Bailey, J. Kimbal, M.D. Schwartz, D.D. Baldocchi, J.T. Lee, and W.K. Lauenroth. 2009. Intercomparison, interpretation, and assessment of spring phenology in North America estimated from remote sensing for 1982-2006. *Global Change Biology*. doi: 10.1111/j.1365-2486.2009.01910.x
10. Pine, W.E., S.J.D. Martell, **O.P. Jensen**, C.J. Walters, J.F. Kitchell. 2008. Effects of release mortality on the efficacy of length limits and catch-and-release policies: a case study of blue, white, and striped marlin. *Canadian Journal of Fisheries and Aquatic Sciences* 65: 975-988.

9. **Jensen, O.P.**, B.J. Benson, J.J. Magnuson, V.M. Card, M.N. Futter, P.A. Soranno, K.M. Stewart. 2007. Spatial analysis of ice phenology trends across the Laurentian Great Lakes region during a recent warming period. *Limnology & Oceanography* 52:2013-2026.
8. Kitchell, James F., S. J. D. Martell, C. J. Walters, **O. P. Jensen**, I. C. Kaplan, J. R. Watters, T. E. Essington and C. H. Boggs. 2006. Billfishes in an ecosystem context. *Bulletin of Marine Science* 79: 669-682.
7. Hrabik, T.R., **O.P. Jensen**, S.J.D. Martell, C.J. Walters, and J.F. Kitchell. 2006. Diel vertical migration in the Lake Superior pelagic community. I. Changes in vertical migration of coregonids in response to varying predation risk. *Canadian Journal of Fisheries and Aquatic Sciences* 63: 2286-2295.
6. **Jensen, O.P.**, T.R. Hrabik, S.J.D. Martell, C.J. Walters, and J.F. Kitchell. 2006. Diel vertical migration in the Lake Superior pelagic community. II. Modeling trade-offs at an intermediate trophic level. *Canadian Journal of Fisheries and Aquatic Sciences* 63: 2296-2307.
5. Olden, J.D., **O.P. Jensen**, and M.J. Vander Zanden. 2006. Implications of long-term dynamics of fish and zooplankton communities for among-lake comparisons. *Canadian Journal of Fisheries and Aquatic Sciences* 63: 1812-1821.
4. **Jensen, O.P.**, M.C. Christman, and T.J. Miller. 2006. Landscape-based geostatistics: A case study of the distribution of blue crab in Chesapeake Bay. *Environmetrics* 17: 605-621.
3. **Jensen, O.P.** and T.J. Miller. 2005. Geostatistical analysis of blue crab (*Callinectes sapidus*) abundance and winter distribution patterns in Chesapeake Bay. *Transactions of the American Fisheries Society* 134: 1582-1598.
2. **Jensen, O.P.**, R. Seppelt, T. J. Miller, and L. J. Bauer. 2005. Winter distribution of blue crab (*Callinectes sapidus*) in Chesapeake Bay: Application and cross-validation of a two-stage generalized additive model (GAM). *Marine Ecology Progress Series* 299:239-255.
1. Kendall, M.S., **O.P. Jensen**, M.E. Monaco, D. Field, C. Alexander, G. McFall, and R. Bohne. 2005. Benthic mapping on the Georgia bight: sonar, video transects, and an innovative approach to accuracy assessment. *Journal of Coastal Research* 21:1154-1165.

Technical reports, book chapters, and conference proceedings

- Miller, T., Jones, C.M., Hanson, C., Heppell, S., **Jensen, O.**, Livingston, P., Lorenzen, K., Mills, K., Patterson III, W., Sullivan, P., and Wong, R. 2018. Scientific considerations informing Magnuson-Stevens Fisheries Conservation and Management Act reauthorization. American Fisheries Society Policy Report.
- Jensen, O.P.** 2017. MARCO and Marine Spatial Planning. In Keenan, J.M. and Weisz, C. Blue Dunes: Climate Change by Design. Columbia University Press.
- Handel, S.N., Marra, J., Kaunzinger, C.M.K., Bricelj, V.M., Burger, J., Camhi, M., LaBelle, J., Rosenbaum, H.C., Colon, C.P., **Jensen, O.P.**, and Schlesinger, M.D. *In Press*. Chapter 3: Change and resilience of Jamaica Bay's ecological systems. *In Resiliency Practice in the Jamaica Bay Watershed: Building a Research and Policy Agenda for Action*
- Hogan, Z. & **Jensen, O.** 2012. Hucho taimen. In: IUCN 2012. IUCN Red List of Threatened Species. Version 2012.2. <http://www.iucnredlist.org/details/188631/0>
- Jensen, O.P.**, P.M. Yurista, T.R. Hrabik, J.D. Stockwell. 2009. Densities and diel vertical

- migration of *Mysis relicta* in Lake Superior: a comparison of optical plankton counter and net-based approaches. Verh. Internat. Verein. Limnol. 30:957-963.
- Magnuson, J. J., B. J. Benson, **O. P. Jensen**, T. B. Clark, V. Card, M. N. Futter, P. A. Soranno, K. M. Stewart. 2005. Persistence of coherence of ice-off dates for inland lakes across the Laurentian Great Lakes region. Verh. Internat. Verein. Limnol. 29:521-527.
- Jensen, O.**, H. Carter, G. Ford, J. Kellner, and J. Christensen. 2006. Biogeography of marine birds. In R. Clark, J. Christensen, C. Caldow, J. Allen, M. Murray, and S. MacWilliams, Eds. A biogeographic assessment of the Channel Islands National Marine Sanctuary. NOAA Tech. Memo. NOS NCCOS 21.
- Jensen, O.**, K. Forney, J. Barlow, B. Hatfield, M. Lowry. 2006. Biogeography of marine mammals. In R. Clark, J. Christensen, C. Caldow, J. Allen, M. Murray, and S. MacWilliams, Eds. A biogeographic assessment of the Channel Islands National Marine Sanctuary. NOAA Tech. Memo. NOS NCCOS 21.
- Kendall, M.S., L.T. Takata, **O. Jensen**, Z. Hillis-Starr, and M.E. Monaco. 2005. An ecological characterization of Salt River Bay National Historical Park and Ecological Preserve U.S. Virgin Islands. NOAA Technical Memorandum NOS NCCOS 14, 116 pp.
- NOAA National Centers for Coastal Ocean Science (NCCOS) 2003. A Biogeographic Assessment off North/Central California to Support the Joint Management Plan Review for Cordell Bank, Gulf of the Farallones, and Monterey Bay National Marine Sanctuaries: Phase I - Marine Fishes, Birds and Mammals. Prepared by NCCOS's Biogeography Program in cooperation with the National Marine Sanctuary Program, Silver Spring, MD. 149 pp.