

# **Curriculum Vitae**

Calendar Year 2019

**Michael J. Wilberg**

**Chesapeake Biological Laboratory**

University of Maryland Center for Environmental Science

## *Certification*

I have reviewed this Curriculum Vitae and here certify  
that it is a current and accurate statement of my  
professional record for this calendar year.

Signed: \_\_\_\_\_ Date: \_\_\_\_\_

# Curriculum Vitae

## Michael J. Wilberg

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## I. Education

1997 B.S. Michigan State University

2000 M.S. University of Wisconsin-Stevens Point

2005 Ph.D. Michigan State University

## II. Professional Background

2005 – 2006, Visiting Assistant Professor, Department of Fisheries and Wildlife, Michigan State University, East Lansing, MI.

2006 – 2012, Assistant Professor, Chesapeake Biological Laboratory, University of Maryland Center for Environmental Science, Solomons, MD.

2012 – 2017, Associate Professor, Chesapeake Biological Laboratory, University of Maryland Center for Environmental Science, Solomons, MD.

2017 – present, Professor, Chesapeake Biological Laboratory, University of Maryland Center for Environmental Science, Solomons, MD.

### 1. Awards and Special Recognition

2011 Graduate Education Award for Excellence in Teaching and Dedicated Service, Graduate Student Organization, Marine Estuarine Environmental Sciences, University System of Maryland

2014 - present Associate Editor for Canadian Journal of Fisheries and Aquatic Sciences

2016. Co-author for 2015 Mercer Patriarche Best Paper in North American Journal of Fisheries Management Award.

2019. American Fisheries Society Tidewater Chapter 2018 Excellence in Fisheries Education Award

2019. UMCES' nominee for a USM Board of Regents Faculty Award for Service.

### **III. Research**

#### **A. Areas of professional expertise**

Population dynamics, fisheries stock assessment, management strategy evaluation, modeling, data analysis, fisheries management, and decision analysis.

#### **B. Peer-reviewed Publications**

##### **1. Papers in Refereed Journals**

1. Wilberg, M. J., J. R. Bence, and J. E. Johnson. 2002. Survival of juvenile lake trout stocked in western Lake Huron during 1974-1992. *North American Journal of Fisheries Management* 22: 213-218.
2. Wilberg, M. J., M. J. Hansen, and C. R. Bronte. 2003. Historic and modern abundance of wild lean lake trout in Michigan waters of Lake Superior: implications for restoration. *North American Journal of Fisheries Management* 23: 100-108.
3. Wilberg, M. J., C. R. Bronte, and M. J. Hansen. 2004. Fleet dynamics of the commercial lake trout fishery in Michigan waters of Lake Superior during 1929-1961. *Journal of Great Lakes Research* 30: 252-266.
4. Wilberg, M. J., and B. P. Dreher. 2004. GENECAP: a program for analysis of multilocus genotype data for non-invasive sampling and capture-recapture population estimation. *Molecular Ecology Notes* 4: 783-785.
5. Wilberg, M. J., J. R. Bence, B. Eggold, D. Makauskas, and D. Clapp. 2005. Dynamics of yellow perch in southwestern Lake Michigan during 1986-2002. *North American Journal of Fisheries Management* 25: 1130-1152.
6. Wilberg, M. J., and J. R. Bence. 2006. Performance of time-varying catchability estimators in statistical catch-at-age analysis. *Canadian Journal of Fisheries and Aquatic Sciences* 63:2275-2285.
7. Nesslage, G. M., M. J. Wilberg, and S. J. Riley. 2006. Range collapse of large carnivores in response to exploitation: the historical decline of cougars and wolves in early 20<sup>th</sup> century Montana. *Intermountain Journal of Science* 12: 63-76.
8. Wilberg, M. J., and T. J. Miller. 2007. Comment on "Impacts of biodiversity loss on ocean ecosystem services". *Science* 316; 1285b. [UMCES/CBL Contrib. # 4090]
9. Wagner, T., D. Hayes, J. R. Bence, M. Bremigan, and M. J. Wilberg. 2007. Regional trends in fish mean length at age: components of variance and the power to detect trends. *Canadian Journal of Fisheries and Aquatic Sciences* 64: 968-978.
10. Wilberg, M. J., and J. R. Bence. 2008. Performance of deviance information criterion model selection criteria in statistical catch-at-age analysis. *Fisheries Research* 93:212-221. [UMCES/CBL Contrib. # 4191]
11. Wilberg, M. J., B. J. Irwin, M. L. Jones, and J. R. Bence. 2008. Effects of source-sink dynamics on harvest policy performance for yellow perch in southern Lake Michigan. *Fisheries Research* 94:267-281. [UMCES/CBL Contrib. # 4193]
12. Irwin, B. J., M. J. Wilberg, J. R. Bence, and M. L. Jones. 2008. Evaluation of harvest policy performance for yellow perch in southern Lake Michigan. *Fisheries Research* 94: 282-289. [UMCES/CBL Contrib. # 4192]
13. Wilberg, M. J. 2009. Estimation of recreational bag limit noncompliance using contact creel survey data. *Fisheries Research* 99: 239-243. [UMCES/CBL Contrib. # 4311]

14. Wilberg, M. J., J. T. Thorson, B. C. Linton, and J. Berkson. 2010. Incorporating time-varying catchability into population dynamic stock assessment models. *Reviews in Fisheries Science* 18:7-24. [UMCES/CBL Contrib. # 4351]
15. Miller, T. J., J. Blair, T. F. Ihde, R. M. Jones, D. H. Secor, and M. J. Wilberg. 2010. FishSmart: an innovative role for science in stakeholder-centered approaches to fisheries management. *Fisheries* 35:424-433. [UMCES/CBL Contrib. # 4428]
16. Fenske, K. H., D. H. Secor, and M. J. Wilberg. 2010. Demographics and parasitism of American eels in the Chesapeake Bay, USA. *Transactions of the American Fisheries Society* 139:1699-1710. [UMCES/CBL Contrib. # 4433]
17. Irwin, B. J., M. J. Wilberg, M. L. Jones, and J. R. Bence. 2011. Applying structured decision making to recreational fisheries management. *Fisheries* 36:113-122. [UMCES/CBL Contrib. # 4484]
18. Ihde, T. F., M. J. Wilberg, D. A. Loewensteiner, D. H. Secor, and T. J. Miller. 2011. The increasing importance of marine recreational fishing: challenges for management. *Fisheries Research* 108:268-276. [UMCES/CBL Contrib. # 4480]
19. Fenske, K. H., M. J. Wilberg, D. H. Secor, and M. C. Fabrizio. 2011. An age- and sex-structured assessment model for American eels (*Anguilla rostrata*) in the Potomac River, Maryland. *Canadian Journal of Fisheries and Aquatic Sciences* 68: 1024-1037. [UMCES/CBL Contrib. # 4485]
20. Wilberg, M. J., M. E. Livings, J. S. Barkman, B. T. Morris, and J. M. Robinson. 2011. Overfishing, disease, habitat loss, and potential extirpation of oysters in upper Chesapeake Bay. *Marine Ecology Progress Series* 436: 131–144. [UMCES/CBL Contrib. # 4506]
21. Ihde, T. F., M. J. Wilberg, D. H. Secor, and T. J. Miller. 2011. FishSmart: harnessing the knowledge of stakeholders to enhance U.S. marine recreational fisheries with application to the Atlantic king mackerel fishery. *Proceedings of the 5<sup>th</sup> World Recreational Fisheries Conference. American Fisheries Society Symposium* 73:75–93. [UMCES/CBL Contrib. # 4378]
22. Annis, E. R., E. D. Houde, L. W. Harding, M. E. Mallonee, and M. J. Wilberg. 2011. Validation of a bioenergetics model linking primary production and Atlantic menhaden *Brevoortia tyrannus* growth in Chesapeake Bay. *Marine Ecology Progress Series* 437: 253-267.
23. Woodland, R., D. H. Secor, M. C. Fabrizio, and M. J. Wilberg. 2012. Comparing the nursery role of inner continental shelf and estuarine habitats for temperate marine fishes. *Estuarine Coastal and Shelf Science* 99:61-73. [UMCES/CBL Contrib. # 4602]
24. Pincin, J. S., and M. J. Wilberg. 2012. Surplus production model accuracy in populations affected by a no-take marine protected area. *Marine and Coastal Fisheries* 4:511-525. [UMCES/CBL Contrib. # 4646]
25. Nesslage, G. M., and M. J. Wilberg. 2012. Performance of surplus production models with time-varying parameters for assessing multispecies assemblages. *North American Journal of Fisheries Management* 32:1137-1145. [UMCES/CBL Contrib. # 4695]
26. Wilberg, M. J., J. Wiedenmann, and J. M. Robinson. 2013. Sustainable exploitation and management of autogenic ecosystem engineers: application to oysters in Chesapeake Bay. *Ecological Applications* 23:766-776. [UMCES/CBL Contrib. # 4713]

27. Wiedenmann, J., M. J. Wilberg, and T. J. Miller. 2013. An evaluation of harvest control rules for data poor fisheries. *North American Journal of Fisheries Management* 33:845–860. [UMCES/CBL Contrib. # 4750]
28. Wilberg, M. J., J. M. Robinson, S. A. M. Rains, J. L. Humphrey, and R. N. Lipcius. 2013. Effects of location errors on estimates of dredge catchability from depletion based methods. *Fisheries Research* 148:1-8. [UMCES/CBL Contrib. # 4780]
29. Robinson, J. M., M. J. Wilberg, J. Adams, and M. L. Jones. 2013. A spatially specific age-structured model for describing sea lamprey (*Petromyzon marinus*) population dynamics. *Canadian Journal of Fisheries and Aquatic Science* 70:1709-1722. [UMCES/CBL Contrib. # 4800]
30. Colton, A. R., M. J. Wilberg, V. Coles, and T. J. Miller. 2014. An evaluation of the synchronization in the dynamics of blue crab populations in the western Atlantic. *Fisheries Oceanography* 23:132-146 [UMCES/CBL Contrib. # 4803]
31. Pincin, J. S., M. J. Wilberg, L. Harris, and A. Willey. 2014. Trends in relative abundance of fishes in Maryland's coastal bays during 1972-2009. *Estuaries and Coasts* 37: 791-800. [UMCES/CBL Contrib. # 4829]
32. Robinson, J. M., M. J. Wilberg, J. Adams, and M. L. Jones. 2014. Comparing methods for estimating larval sea lamprey (*Petromyzon marinus*) density and abundance for the purposes of control. *Journal of Great Lakes Research* 40:739-747. [UMCES/CBL Contrib. # 4915]
33. Humphrey, J., 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. [UMCES/CBL Contrib. # 4937]
34. Huang, P., R.T. Woodward, M.J. Wilberg, D. Tomberlin. 2015. Management evaluation for the Chesapeake Bay blue crab fishery: an integrated bio-economic approach. *North American Journal of Fisheries Management* 35:216-228. [UMCES/CBL Contrib. # 4970]. 2015 Best Paper in *North American Journal of Fisheries Management*.
35. Buchheister, A., M.J. Wilberg, T.J. Miller, R.J. Latour. 2015. Simulating bottom-up effects on predator productivity and consequences for the rebuilding timeline of a depleted population. *Ecological Modelling* 311:48-62. [UMCES/CBL Contrib. # 5018]
36. Wiedenmann, J., M.J. Wilberg, T.J. Miller, and A. Sylvia. 2015. Autocorrelated error in stock assessment estimates: Implications for management strategy evaluation. *Fisheries Research* 172: 325-334. [UMCES/CBL Contrib. # 5054]
37. Robinson, J. M., M. J. Wilberg, J. Adams, and M. L. Jones. 2016. Tradeoff between assessment and control of aquatic invasive species: a case study of Sea Lamprey management in the St. Marys River. *North American Journal of Fisheries Management* 36:11-20. [UMCES/CBL Contrib. # 5129]
38. Houde, E.D., E.R. Annis, L.W. Harding Jr., M.E. Malone, M.J. Wilberg. 2016. Factors affecting abundance of age-0 Atlantic Menhaden (*Brevoortia tyrannus*) in Chesapeake Bay. *ICES Journal of Marine Science* 73: 2238-2251.
39. Simpson, C.A., M.J. Wilberg, H. Bi, A.M. Schueller, G.M. Nessler, H. Walsh. 2016. Trends in relative abundance and early life survival of Atlantic Menhaden during 1977-2013 from long-term ichthyoplankton programs. *Transactions of the American Fisheries Society* 145:1139–1151 [UMCES/CBL Contrib. #5202]

40. Gaichas, S., R. Seagraves, J. Coakley, G. DePiper, V. Guida, J.A. Hare, P. Rago, M.J. Wilberg. 2016. A framework for incorporating species, fleet, habitat, and climate interactions into fishery management. *Frontiers in Marine Science* 3:105 [UMCES/CBL Contrib. # 5205].
41. Siskey, M., M.J. Wilberg, R.J. Allman, B.K. Barnett, D.H. Secor. 2016. Forty years of fishing: changes in age structure and stock mixing in the northwestern Atlantic Bluefin tuna (*Thunnus thynnus*) associated with size-selective and long-term exploitation. *ICES Journal of Marine Science* 73, 2518–2528.
42. Rains, S.M., M.J. Wilberg, and T. J. Miller. 2016. Sex ratios and average sperm per female Blue Crab in six tributaries of Chesapeake Bay. *Marine and Coastal Fisheries: Dynamics, Management, and Ecosystem Science* 8:492–501 [UMCES/CBL Contrib. # 5208].
43. Wiedenmann, J., M.J. Wilberg, A. Sylvia, T.J. Miller. 2017. An evaluation of acceptable biological catch (ABC) harvest control rules designed to limit overfishing. *Canadian Journal of Fisheries and Aquatic Sciences* 74: 1028-1040. [UMCES/CBL Contrib. # 5272].
44. Simpson, C.A., H. Bi, M.J. Wilberg, A.M. Schueller, G.M. Nessler, H. Walsh. 2017. Spawning Locations and Larval Dispersal of Atlantic Menhaden during 1977-2013. *ICES Journal of Marine Science* 6: 1574–1586.
45. Liang, D., G.M. Nessler, M.J. Wilberg, and T.J. Miller. 2017. Bayesian Calibration of Blue Crab (*Callinectes sapidus*) Abundance Indices Based on Probability Surveys. *Journal of Agricultural, Biological, and Environmental Statistics* 22: 481–497.
46. Lee, Y., E. Han, M.J. Wilberg, W.C. Lee, K. Choi, and C. Kang. 2018. Physiological processes and gross energy budget of the submerged longline-cultured Pacific oyster *Crassostrea gigas* in a temperate bay of Korea. *PLoS One* 13(7): e0199752. <https://doi.org/10.1371/journal.pone.0199752>. [UMCES/CBL Contrib. # 5506].
47. Rains, S.M., M.J. Wilberg, and T.J. Miller. 2018. Evaluation of fishery-induced sperm limitation in Chesapeake Bay blue crab using an individual based model. *Marine Ecology Progress Series* 596: 127–142. [UMCES/CBL Contrib. # 5507].
48. Liljestrand, E., M.J. Wilberg, A. Schueller. 2019. Estimation of Movement and Mortality of Atlantic Menhaden during 1966-1969 Using a Bayesian Multi-State Mark-Recovery Model. *Fisheries Research* 210:204-213. [UMCES/CBL Contrib. # 5537].
49. Liljestrand, E., M.J. Wilberg, A. Schueller. 2019. Multi-state Dead Recovery Mark-Recapture Model Performance for Estimating Movement and Mortality Rates. *Fisheries Research*. 210:214-223. [UMCES/CBL Contrib. # 5536].
50. Hutniczak, B., D. Lipton, J. Wiedenmann, and M.J. Wilberg. 2019. Valuing Changes in Frequency of Fish Stock Assessments. *Canadian Journal of Fisheries and Aquatic Sciences* 76: 1640–1652. [UMCES/CBL Contrib. # 5545].
51. Goethel, D.R., A.M. Berger, S.K. Gaichas, M.A. Karp, S.M. Lucey, P.D. Lynch, J.F. Walter, J.J. Deroba, S. Miller, M.J. Wilberg. 2019. Closing the Feedback Loop: On Stakeholder Participation in Management Strategy Evaluation. *Canadian Journal of Fisheries and Aquatic Sciences* 76: 1895–1913. [UMCES/CBL Contrib. # 5546].
52. Damiano, M., and M.J. Wilberg. 2019. Population dynamics of eastern oysters (*Crassostrea virginica*) in the Choptank River Complex, Maryland during 1989 – 2015. *Fisheries Research* 212:196-207. [UMCES/CBL Contrib. # 5553]

53. Arlinghaus, R. J. K. Abbott, E. P. Fenichel, S. R. Carpenter, L. M. Hunt, J. Alós, T. Klefoth, S. J. Cooke, R. Hilborn, O. P. Jensen, M. J. Wilberg, J. R. Post, and M. Manfredo. 2019. Governing the recreational dimension of global fisheries. *Proceedings of the National Academies of Science* 116:5209–5213. [UMCES/CBL Contrib. # 5565].
54. Wilberg, M.J., R.T. Woodward, P. Huang, and D. Tomberlin. 2019. Developing Precautionary Reference Points for Fishery Management Using Robust Control Theory: Application to the Chesapeake Bay Blue Crab Fishery. *Marine and Coastal Fisheries* 11:177–188. [UMCES/CBL Contrib. # 5708]
55. Nessler, G.M., and M.J. Wilberg. 2019. A performance evaluation of surplus production models with time-varying intrinsic growth in dynamic ecosystems. *Canadian Journal of Fisheries and Aquatic Sciences* 76: 2245–2255. [UMCES/CBL Contrib. # 5619]
56. Lee, Y., M.J. Wilberg, E. Han, K. Choi, W.C. Lee, C.K. Kang. 2020. Seasonal changes in the gross biochemical composition and scope for growth of the longline-cultured sea squirt *Halocynthia roretzi* in a temperate bay on the south coast of Korea. *Aquaculture*. [UMCES/CBL Contrib. # 5709]
57. Liang, D., G.M. Nessler, and M.J. Wilberg. 2020. A Spatial Simulation Approach to Hydroacoustic Survey Design: a Case Study for Atlantic Menhaden. *Fisheries Research*.
58. Punt, A.E., G. Tuck, J. Day, C. Canales, J. Cope, C. De Moor, M. Dickey-Collas, B. Elvarsson, M. Haltuch, A. Hicks, C.M. Legault, P.D. Lynch, and M.J. Wilberg. 2020. When are model-based stock assessments rejected for use in management and what happens then? *Fisheries Research* 224: 105465.
59. Mace, M.M. III, and M.J. Wilberg. In press. Using censored regression when estimating abundance with catch-effort data to account for daily catch limits. *Canadian Journal of Fisheries and Aquatic Sciences*.

### **1.1 Submitted Articles**

- Sylvia, A., J. Wiedenmann, T.J. Miller, M.J. Wilberg. In revision. Effects of assessment interval and data-management lag on fishery management performance. *Fisheries Research*.
- Kennedy, V.S., L. Bolognini, J. Dulčić, R. J. Woodland, M. J. Wilberg, and L. A. Harris. In review. Fisheries of the Adriatic Sea and the Chesapeake Bay. In T. Malone, A. Malej, and J. Faganeli eds. *Vectors of Change in Coastal Ecosystems and the Services They Provide: A Comparative Analysis of the Northern Adriatic Sea and Chesapeake Bay*.
- Kazyak, D., R. Hilderbrand, M. Sell, A. Heft, and M.J. Wilberg. In Review. Brook Trout population dynamics under current and potential future conditions. *Canadian Journal of Fisheries and Aquatic Sciences*.
- Liang, D., G.M. Nessler, M.J. Wilberg, and T.J. Miller. In review. Ranking ecosystem impacts on Chesapeake Bay blue crab (*Callinectes sapidus*) using empirical Gaussian Graphical Models. *Canadian Journal of Fisheries and Aquatic Sciences*.

### **1.2 Communicated Articles**

- Wilberg, M.J. 2007. Exploring rules of thumb for ecosystem-based fisheries management reference points. *ICES CM 2007/R:12*.

- Wilberg, M.J., T. F. Ihde, T. J. Miller, and D. H. Secor. 2008. Enhancing sustainability in marine recreational fisheries: a stakeholder-driven process for evaluating angling practices and management options for king mackerel in the U.S. ICES CM 2008/K:17.
- Wilberg, M. J., T. F. Ihde, T. J. Miller, and D. H. Secor. 2009. FishSmart: A stakeholder-centered approach to improve fisheries conservation and management. ICES CM 2009/O:15.
- 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 2011/H:23.
- Abbott, J., J.L. Anderson, L. Campling, R. Hannesson, E. Havice, M.S. Lozier, M.D. Smith, and M.J. Wilberg. 2014. Steering the Global Partnership for Oceans. *Marine Resource Economics* 29:1-16.

## **2. Technical Reports**

- Secor, D., W. Pine, and M. Wilberg. 2006. Catfish harvest evaluation review. Review for Missouri Department of Conservation (conducted through SEI).
- Hamel, O., S. Nichols, and M. Wilberg. 2006. STAR Panel Report – Yelloweye Rockfish, <http://www.pcouncil.org/wp-content/uploads/YESTARreport06.pdf>.
- Irwin, B. J., M. J. Wilberg, J. R. Bence, and M. L. Jones. 2008. Specified input values for a stochastic simulation model for yellow perch in southern Lake Michigan. Quantitative Fisheries Center Technical Report T2008-03.
- Wilberg, M. J., T. J. Ihde, T. J. Miller, and D. H. Secor. 2008. FishSmart: decision analysis for the recreational fishery for the south Atlantic migratory group of king mackerel. South Atlantic Fishery Management Council Scientific and Statistical Committee Meeting, 12-1-2008.
- SEDAR. Procedural Guidance Document 2, Addressing Time-Varying Catchability. South East Data Assessment and Review Report, February 2009, <http://www.sefsc.noaa.gov/sedar/download/Catchability%20SEDAR%20Report%20Final.pdf?id=DOCUMENT>, 32 pp.
- Miller, T. J., M. J. Wilberg, A. M. Colton, G. R. Davis, A. Sharov, R. N. Lipcius, G. M. Ralph, E. G. Johnson, and A. G. Kaufman. 2011. Stock assessment of blue crab in Chesapeake Bay, 2011. <http://hjort.cbl.umces.edu/crabs/Assessment.html>, 214 pp.
- Maryland Department of Natural Resources. 2018. Maryland Oyster Stock Assessment. 329 pp. Annapolis, MD. [https://dnr.maryland.gov/fisheries/Documents/StockAssessment\\_EasternOysterMD.pdf](https://dnr.maryland.gov/fisheries/Documents/StockAssessment_EasternOysterMD.pdf)

## **C. Contracts and Grants**



## **1. Awarded**

### 2006

Secor, D. H., and M. J. Wilberg. Assessment of local abundance, demographics, health and exploitation of Chesapeake Bay American eel. NOAA Chesapeake Bay Office, 2007-2008, \$144k. (Co-PI, D. Secor lead PI, 8% time).

Miller, T. J., D. H. Secor, and M. J. Wilberg. FishSmart: Enhancing the sustainability of recreational fisheries through improved management and angling practices. Moore Foundation, 2007-2008, \$618k. (Co-PI, T. Miller lead PI, 12% time).

### 2007

Wilberg, M. J. ICES Annual Science Conference Travel Grant. Woods Hole Oceanographic Institute, 2007, \$2.5k.

Houde, E. D., D. H. Secor, and M. J. Wilberg. Temporal and spatial variability in larval influx, production & recruitment of young-of-the-year Atlantic menhaden & bay anchovy in Chesapeake Bay. NOAA Chesapeake Bay Office and Maryland Department of Natural Resources, 2007-2008, \$228k. (Co-PI, E. Houde lead PI, 4% time).

Wilberg, M. J., and T. J. Miller. Developing spatially explicit assessment tools for eastern oyster in Chesapeake Bay. Maryland Department of Natural Resources, 2007-2009, \$210k. (PI, 8% time).

Miller, T. J., B. Richkus, and M. Wilberg. Technical support for Maryland Chesapeake Bay oyster stock assessment, monitoring, and management including completion of the programmatic environmental impact statement (EIS) to evaluate alternative approaches to increasing oyster populations into the Chesapeake Bay. Maryland Department of Natural Resources, 2007-2008, \$400k. (Co-PI, T. Miller lead PI, 0% time).

### 2008

Wilberg, M. J., M. Jones, and J. Adams. Improving sea lamprey control through use of historical data to inform selection of sites for lampricide treatment. Great Lakes Fishery Commission, 2008-2011, \$184k. (PI, 8% time).

Houde, E. D., D. H. Secor, and M. J. Wilberg. Temporal and spatial variability in larval influx, production & recruitment of young-of-the-year Atlantic menhaden in Chesapeake Bay. NOAA Chesapeake Bay Office and Maryland Department of Natural Resources, 2008-2009, \$143k. (Co-PI, E. Houde lead PI, 2% time).

Wilberg, M. J. A creel survey for early spring fisheries of Maryland's Chesapeake Bay tributaries. Maryland Department of Natural Resources, 2008-2009, \$129k. (PI, 8% time).

Miller, T. J., B. Richkus, and M. Wilberg. Technical support for Maryland Chesapeake Bay oyster stock assessment, monitoring, and management including completion of the programmatic environmental impact statement (EIS) to evaluate alternative approaches to increasing oyster populations into the Chesapeake Bay. Maryland

Department of Natural Resources, 2007-2008, \$100k. (Co-Investigator, T. Miller lead PI, 0% time).

Wilberg, M. J., T. J. Miller, and W. Slacum. A survey of commercial blue crab effort in the Maryland portion of the Chesapeake Bay. Maryland Department of Natural Resources, 2008-2009, \$216k. (PI, 8% time).

#### 2009

Wilberg, M. J. A creel survey for early spring fisheries of Maryland's Chesapeake Bay tributaries. Maryland Department of Natural Resources, 2009, \$149k. (PI, 8% time).

Wilberg, M. J., T. J. Miller, and W. Slacum. A survey of commercial blue crab effort in the Maryland portion of the Chesapeake Bay, 2009. Maryland Department of Natural Resources, 2009-2010, \$337k. (PI, 8% time).

Miller, T. J., J. Hoenig, E. Johnson, R. Lipcius, and M. Wilberg. Assessment and research activities in support of management of the blue crab stock in Chesapeake Bay. NOAA Chesapeake bay Office. 2009-2011, \$715k. (Co-PI, T. Miller lead PI, 8%).

Houde, E. D., D. H. Secor, and M. J. Wilberg. 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, \$200k. (Co-PI, E. Houde lead PI, 8%).

Wilberg, M. J., T. J. Miller, and W. Slacum. A survey of commercial blue crab effort in the Maryland portion of the Chesapeake Bay, 2010. Maryland Department of Natural Resources, 2010-2011, \$333k. (PI, 8% time).

Wilberg, M. J., and T. J. Miller. Evaluation of Acceptable Biological Catch (ABC) Control Rules. Mid-Atlantic Fishery Management Council. 2009-2010, \$170k. (PI, 8% time).

#### 2010

Miller, T. J., J. Link, J. Collie, M. Frisk, R. Latour, H. Townsend, and M. Wilberg. CAMEO – Patterns of connectivity in northwest Atlantic fishery ecosystems. NSF and NOAA, project dates 2010-2013, \$676k. (Co-PI, T. Miller lead PI, 8% time).

Houde, E. D., D. H. Secor, M. J. Wilberg. 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, \$200k. (Co-PI, E. Houde lead PI, 8%).

#### 2011

Wilberg, M. J., T. J. Miller, and H.W.Slacum. Enhancing science to support blue crab management: commercial effort and reproductive potential. Maryland DNR, 2011-2012, \$252k. (PI, 8%).

Boreman, J., E. Powell, P. Sullivan, M. Wilberg, and B. Rothschild. A management strategy evaluation for the summer flounder recreational fishery. Partnership for Mi-Atlantic Fisheries Science. 2011-2012, \$222k. (Co-PI, 8%)

#### 2012

Woodward, R., M. J. Wilberg, J. Wiedenmann, and D. Tomberlin. Robust ecosystem-based management of the Chesapeake Bay blue crab fishery. Maryland Sea Grant, 2011-2012, \$100k.

Wilberg, M. J. Developing Biological Reference Points and Identifying the Status of the Stock for Fishery Management of Paddlefish (*Polyodon spathula*) in the Mississippi River Basin. Association of Fish and Wildlife Agencies, 2012-2013, \$33k. (PI, 4%)

Miller, T. J., E. D. Houde, R. Latour, H. Townsend, and M. J. Wilberg. Development of candidate ecosystem-based reference points, Maryland Sea Grant, \$14k (Co-PI 0%).

Wilberg, M. J., J. Wiedenmann, and T. J. Miller. Evaluation of acceptable biological catch control rules. Mid-Atlantic Fishery Management Council, \$342k (PI 8%).

#### 2013

Bi, H., M. J. Wilberg, A. Schueller, G. Nessler, and H. Walsh. Estimating early mortality and implications for reference points for the Atlantic menhaden stock. NOAA Fisheries and the Environment. 2013-2015. \$151k (Co-PI, 4%).

Wilberg, M.J., T. McConnell, and J. Holzer. The effect of catch restrictions on recreational catch. NOAA through CINAR. 2013-2014. \$199k (PI, 8%)

Wilberg, M., T. Miller, A. Schueller, J. Smith. Understanding Atlantic menhaden population dynamics through use of data from a large-scale historical tagging study. Maryland Sea Grant. 2014-2016. \$92k (PI, 12%).

#### 2014

Linton, B., and M. Wilberg. Development and testing of a new method for selecting among stock assessment models. NMFS Stock Assessment Improvement Program. 2014-2015. \$21k (co-PI, 8%).

North, E., J. Blair, J. Cornwell, T. Hartley, R. Hood, B. Jones, L. Wainger, M. Wilberg. Collaborative Proposal: Coastal SEES: Integrating stakeholder objectives with natural system models to enhance the development of sustainable natural resource policy. NSF Coastal SEES program. 2015-2019. \$2,000k (co-PI, 8%).

#### 2015

Miller, T., and M. Wilberg. Scope #4: CBSAC Research Needs – Analysis of blue crab survey data and reproductive output to assess causes of population variability. Chesapeake Bay Trust. 2015. \$76k (co-PI, 4%).

Wilberg, M. A management strategy evaluation for the Southeast U.S. Atlantic. NOAA. 2015-2016. \$78k (PI, 50%).

Nesslage, G., and M. Wilberg. Development of a Bayesian approach for estimating ecosystem-based reference points for Atlantic menhaden. Maryland Sea Grant, 2015-2017, \$86k, co-PI (12%).

## 2016

Nesslage, G., and M. Wilberg. An evaluation of commercial fishing activities within and near Assateague Island National Sea Shore. National Parks Service. 2016-2017, \$25k (co-PI, 4%).

North, E., F. Moser, and M. Wilberg. OysterFutures Sea Grant Symposium: learning from other places to improve oyster aquaculture and fisheries in Maryland. Sea Grant. 2016-2017, \$20k (co-PI, 0%).

Miller, T., D. Liang, G. Nesslage, and M. Wilberg. Scope #2: Evaluation of environmental factors influencing blue crab populations. Chesapeake Bay Trust, 2016-2017, \$50k (co-PI, 4%).

## 2017

Wilberg, M. Work Associated with the Sustainable Oyster Population and Fishery Act of 2016. Maryland Department of Natural Resources. 2017-2018, \$170k (PI, 12%).

Wilberg, M. and D. Liang. Review and development of ORP's oyster monitoring and assessment program. Oyster Recovery Partnership. 2017-2018, \$20k (PI, 5%).

## 2018

Slacum, H.W., M. Wilberg, D. Liang, D. Zaveta, and K. Paynter. Scope #1: Development of a Long-Term Oyster Monitoring Plan (Technical Assistance to Support Chesapeake Bay Program Goals and Outcomes – Fisheries, Habitat, Stewardship, Leadership, and Climate). Chesapeake Bay Trust. UMCES portion \$26k (co-PI, 4%).

Wilberg, M., and M. Mace, III. Work Associated with the Sustainable Oyster Population and Fishery Act of 2016 – Part 2. Maryland Department of Natural Resources. 2018-2019, \$102k (PI, 12%).

## 2019

Wilberg, M., D. Liang, and H. Bi. Funded. Design and testing of a combined aerial-hydroacoustics survey to estimate Atlantic menhaden biomass in Chesapeake Bay. Atlantic States Marine Fisheries Commission. 2019-2020, \$53k (PI, 4%).

Nesslage, G., M. Wilberg, A. Schueller, and K. Drew. Funded. Evaluating consequences of alternative harvest policies for Atlantic menhaden and the impacts on their predator Atlantic striped bass. Maryland Sea Grant. 2020-2022, \$129k (co-PI, 4%).

- Woodland, R., M. Wilberg, J. Pierson. Declined. Planktonic Omnivores and Stable Isotopes: Developing, Validating and Field-testing a Multi-species Functional Response Model. National Science Foundation. 2019-2022, \$813 (co-PI, 8%).
- Wilberg, M., and M. Mace III. Pending. Support for Maryland oyster stock assessment modeling. Maryland DNR. 2019-2020, \$39k (PI, 4%).

#### **D. Invited Seminars (\*) and Presentations (2010-present)**

- Wilberg, M. J. Uncertainty of stock assessments and consequences for P\* methods. SEDAR Procedural Workshop on Uncertainty, 2/24/2010.
- Barkman, J., and M. Wilberg. Indices of Abundance from the DNR Coastal Bays Trawl and Seine Survey. Tidewater AFS 3/19/2010, Annapolis.
- Livingston, M., M. Tarnowski, and M. Wilberg. Developing spatially-explicit assessment tools for eastern oyster in Chesapeake Bay. Tidewater AFS 3/20/2010, Annapolis.
- Wilberg, M., J. Barkman, K. Fenske, M. Livingston, B. Morris, and J. Robinson. Performance of a model for oyster stock assessments. Tidewater AFS 3/20/2010, Annapolis.
- Wilberg, M. Uncertainty of stock assessments and consequences for P\* methods. Chesapeake Modeling Symposium 5/11/2010, Annapolis.
- Barkman, J., and M. Wilberg. Indices of Abundance from the DNR Coastal Bays Trawl and Seine Survey. Maryland Coastal Bays meeting 6/2/2010, Cambridge.
- \*Wilberg, M. Assessing the collapse of oyster fisheries in Chesapeake Bay: effects of habitat, disease, and fisheries. Invited seminar at UMCES Horn Point Laboratory, 9/1/2010, Cambridge.
- Nesslage, G., M. Wilberg, Y. Chen, and L. Jacobson. Implications of maximum bin size selection in statistical length-structured stock assessment models. American Fisheries Society Annual Meeting, 9/13/2010, Pittsburgh.
- Wilberg, M., M. Livingston, J. Barkman, K. Fenske, B. Morris, and J. Robinson. Eastern oyster population dynamics in Maryland waters of Chesapeake Bay. American Fisheries Society Annual Meeting, 9/14/2010, Pittsburgh.
- Livingston, M., M. Tarnowski, and M. Wilberg. Developing spatially-explicit assessment tools for eastern oyster in Chesapeake Bay. American Fisheries Society Annual Meeting, 9/15/2010, Pittsburgh.
- Robinson, J., M. Wilberg, and J. Adams. Using long term data to improve sea lamprey control efforts in the Saint Mary's River, Michigan. American Fisheries Society Annual Meeting, 9/15/2010, Pittsburgh.
- Barkman, J., and M. Wilberg. The effects of a spatial gradient of fishing pressure in a developing fishery on stock assessments. American Fisheries Society Annual Meeting, 9/16/2010, Pittsburgh.

- Wilberg, M. Empirical models of angler behavior and its consequences in fisheries. Workshop on Modeling Angler Behavior, 2/17/2011, Phoenix.
- Wilberg, M., M. Livings, J. Barkman, B. Morris, and J. Robinson. Overfishing, disease, habitat loss and potential extirpation of oysters in upper Chesapeake Bay. Atlantic Estuarine Research Society Annual Meeting, 4/10/2011, Solomons.
- Wilberg, M. Uncertainty of the overfishing limit for setting ABCs. Mid-Atlantic Scientific and Statistical Committee meeting, 7/27/2011, Baltimore.
- \*Wilberg, M. The FishSmart experience for king mackerel. Lake Erie Committee Stakeholder Workshop, 7/29/2011, Erie.
- Irwin, B., M. Wilberg, M. Jones, and J. Bence. Structured Decision Making and Recreational Fisheries Management. 6th World Recreational Fishing Conference, 8/4/2011, Berlin.
- Wilberg, M., K. Fenske, D. Secor, and M. Fabrizio. Consequences of alternative catchability assumptions for a stock assessment of American eels. American Fisheries Society Annual Meeting, 9/7/2011, Seattle.
- Nesslage, G., and M. Wilberg. Surplus production models with time-varying parameters for multispecies complexes. American Fisheries Society Annual Meeting, 9/6/2011, Seattle.
- Wiedenmann, J., M. Wilberg, and T. Miller. A management strategy evaluation of harvest control rule performance. American Fisheries Society Annual Meeting, 9/6/2011, Seattle.
- Robinson, J., and M. Wilberg. A spatially-explicit size-structured model for identifying areas of high larval sea lamprey density in a large river. American Fisheries Society Annual Meeting, 9/7/2011, Seattle.
- Bence, J., and M. Wilberg. Using random walks for time varying parameters: some positives, drawbacks, and alternatives. American Fisheries Society Annual Meeting, 9/6/2011, Seattle.
- Loewensteiner, D., T. Miller, M. Wilberg, and J. Humphrey. A model for predicting commercial fishing effort for blue crab in Chesapeake Bay tributaries. American Fisheries Society Annual Meeting, 9/5/2011, Seattle.
- Houde, E. D., C. Lozano, E. R. Annis, L. W. Harding, Jr., D. H. Secor, M. J. Wilberg, and R. L. Wingate. Recruitment of Atlantic menhaden to Chesapeake Bay: ecological processes during the larval-juvenile transition. ICES Annual Science Conference, 9/22/2011, Gedansk.
- Rains, S. M. Wilberg, T. Miller, and J. Humphrey. Latitudinal gradients of sex ratio and female carapace width for blue crabs of the Chesapeake Bay. Poster, Tidewater AFS meeting, 3/8/2012, Beaufort
- Humphrey, J. L., M. J. Wilberg, and E. D. Houde. Effects of temperature on young-of-the-year Atlantic menhaden growth in the Chesapeake Bay. Poster. Tidewater AFS meeting, 3/8/2012, Beaufort

- Robinson, J. M. M. Wilberg, J. Adams, and M. Jones. Population dynamics and control of sea lamprey in the St. Marys River. Tidewater AFS meeting, 3/9/2012, Beaufort.
- Wilberg, M., A. Buchheister, R. Latour, and T. Miller. Effects of predation refugia on the sustainability of predator-prey fisheries. 6<sup>th</sup> World Fisheries Congress, 5/9/2012, Edinburgh.
- Robinson, J. M. M. Wilberg, J. Adams, and M. Jones. Comparing techniques for predicting spatially-specific larval sea lamprey density in a large river. American Fisheries Society Annual Meeting, 8/21/2012, St. Paul.
- Zaveta, D., M. Wilberg, T. Miller. Estimating uncertainty in stock management reference points for Chesapeake Bay blue crabs. American Fisheries Society Annual Meeting, 8/22/2012, St. Paul.
- Rains, S., M. Wilberg, T. Miller, and J. Humphrey. Latitudinal trends in sex ratio and sperm counts of blue crabs in the Chesapeake Bay. American Fisheries Society Annual Meeting, 8/22/2012, St. Paul.
- Humphrey, J., M. Wilberg, and E. Houde. Effects of temperature and climate change on young-of-the-year Atlantic menhaden growth in the Chesapeake Bay. American Fisheries Society Annual Meeting, 8/22/2012, St. Paul.
- Wilberg, M., T. Miller, A. Buchheister, and R. Latour. Effects of migration patterns on the sustainability of linked predator-prey fisheries. American Fisheries Society Annual Meeting, 8/22/2012, St. Paul.
- Houde, E., C. Lozano, E. Annis, L. Harding, D. Secor, M. Wilberg, R. Wingate. Recruitment variability in Atlantic menhaden: processes acting during the larval-juvenile transition in Chesapeake Bay. American Fisheries Society Annual Meeting, 8/23/2012, St. Paul.
- Simpson, C.A., M.J. Wilberg, and E.S.J. Rauschert. Modeling blue crab growth in Chesapeake Bay. Poster. Tidewater AFS Meeting, 3/21/2013, Solomons.
- Buchheister, A., R. Latour, M. Wilberg, and T. Miller. Simulated effects of spatial connectivity and bottom up processes on production of a migratory predator in the northwest Atlantic. Tidewater AFS Meeting, 3/22/2013, Solomons.
- Rains, S., M. Wilberg, T. Miller, and J. Humphrey. Effects of sex ratio on sperm limitation for blue crabs in the Chesapeake Bay. Tidewater AFS Meeting, 3/22/2013, Solomons.
- Lane, H., A. Michaelis, M. Wilberg, and K. Paynter. Large-scale *Crassostrea virginica* population and habitat analysis in two rivers in the northern Chesapeake Bay. Tidewater AFS Meeting, 3/22/2013, Solomons.
- Humphrey, J, M. Wilberg, E. Houde, and M. Fabrizio. Effects of temperature on young-of-the-year Atlantic menhaden growth in the Chesapeake Bay. Tidewater AFS Meeting, 3/22/2013, Solomons.
- Woodward, R., P. Huang, M. Wilberg, J. Wiedenmann, and D. Tomberlin. Robust Ecosystem-Based Management of the Chesapeake Bay Blue Crab Fishery.

Center for Natural Resources Economics & Policy 2013 Annual Meeting,  
3/25/2013, New Orleans.

Huang, P., R. Woodward, M. Wilberg, and D. Tomberlin. Sustainable Bioeconomic Modeling of the Chesapeake Bay Blue Crab Fishery. 5/23/2013. North American Association of Fisheries Economists Forum 2013, St. Pete Beach, Florida.

Wilberg, M., J. Wiedenmann, and J. Robinson. Fits and starts with oyster conservation in Chesapeake Bay. 26<sup>th</sup> International Congress for Conservation Biology, 7/22/2013, Baltimore.

Huang, P., R. Woodward, M. Wilberg, and D. Tomberlin. Management Evaluation for the Chesapeake Bay Blue Crab Fishery: An Integrated Bioeconomic Approach. 2013 Annual Meeting of the Agricultural and Applied Economics Association, August 4-6, 2013, Washington, D.C.

\*Wilberg, M. Are Chesapeake Bay Fisheries Sustainable? Comparing Management of Oysters and Blue Crabs. Invited Seminar, Salisbury University, 10/24/2013, Salisbury.

Rains, S., M. Wilberg, and T. Miller. Effects of sex ratio on potential sperm limitation and future stock abundance in blue crab of Chesapeake Bay. Coastal and Estuarine Research Federation 22<sup>nd</sup> Biennial Meeting, 11/4/2013, San Diego.

Simpson, C., M. Wilberg, E. Rauschert. Modeling blue crab (*Callinectes sapidus*) growth in the Chesapeake Bay. Coastal and Estuarine Research Federation 22<sup>nd</sup> Biennial Meeting, 11/7/2013, San Diego. Best Undergraduate Presentation Award.

Simpson, C. M. Wilberg, A. Schueller, G. Nessler, H. Walsh, and H. Bi. Ichthyoplankton-based index of abundance for Atlantic menhaden. Tidewater AFS Meeting, 3/21/2014, Newport News, VA.

Sylvia, A., J. Wiedenmann, T. Miller, M. Wilberg. Effects of assessment frequency and data lag on Mid-Atlantic harvest control rule performance. Tidewater AFS Meeting, 3/21/2014, Newport News, VA.

Wilberg, M., and T. Miller. Stock-recruitment models for sex-specific fisheries management. Tidewater AFS Meeting, 3/22/2014, Newport News, VA.

\*Wilberg, M. Invited presentation at the Smithsonian Environmental Research Center, 3/27/2014, Edgewater, MD.

Simpson, C., M. Wilberg, A. Schueller, G. Nessler, H. Walsh, and H. Bi. Estimating Atlantic menhaden larval abundance along the Atlantic coast of the United States. Annual Meeting of the American Fisheries Society, 8/19/2014, Quebec City.

Sylvia, A., J. Wiedenmann, T. Miller, M. Wilberg. Effects of assessment frequency and data lag on Mid-Atlantic harvest control rule performance. Annual Meeting of the American Fisheries Society, 8/21/2014, Quebec City.

Wilberg, M., A. Buchheister, R. Latour, and T. Miller. Effects of prey importance and migration patterns on the sustainability of linked predator-prey fisheries. Annual Meeting of the American Fisheries Society, 8/21/2014, Quebec City.



- Wilberg, M., A. Sylvia, D. Kazyak, and C. Simpson. When is it better to use sex-specific stock assessment models? Annual Meeting of the American Fisheries Society, 8/19/2014, Quebec City.
- Wiedenmann, J., M. Wilberg, A. Sylvia, and T. Miller. The impacts of alternative projection methods on sustainable catch limits estimated from stock assessment models. Annual Meeting of the American Fisheries Society, 8/21/2014, Quebec City.
- \*Wilberg, M. Performance of alternative ABC control rules. National Scientific and Statistical Committee Meeting, 2/24/2105, Honolulu.
- Simpson, C., M. Wilberg, A. Schueller, G. Nessler, H. Walsh, and H. Bi. Mysterious early lives of Atlantic menhaden. Annual Meeting of the Tidewater Chapter of the American Fisheries Society, 3/6/2015, Pine Knoll Shores, NC.
- \*Wilberg, M. Management Strategy Evaluation on the East Coast. East Coast Fishery Forum, 5/8/2015, Beaufort, NC.
- \*Wilberg, M. How well (or not) do ABCs include ecosystem effects? Mid-Atlantic Fishery Management Council Meeting, 6/8/2015, Virginia Beach.
- \*Wilberg, M. Management Strategy Evaluation for Mid-Atlantic Fisheries. Mid-Atlantic Fishery Management Council Meeting, 6/8/2015, Virginia Beach.
- Simpson, C., M. Wilberg, G. Nessler, H. Bi, A. Schueller, and H. Walsh. Atlantic Menhaden spawning locations inferred from long-term ichthyoplankton data. Annual Meeting of the American Fisheries Society, 8/18/2015, Portland.
- Sharov, A., and M. Wilberg. Developing biological reference points and identifying stock status for management of paddlefish *Polydon spathula* in the Mississippi River basin. Annual Meeting of the American Fisheries Society, 8/19/2015, Portland.
- Miller, T., M. Wilberg, H. Glandon, A. Colton, and L. Bauer. Chesapeake Bay blue crab: stock assessment and environmental change. Annual Meeting of the American Fisheries Society, 8/19/2015, Portland.
- \*Wilberg, M., OysterFutures: a stakeholder-centric process for developing a sustainable oyster fishery in Chesapeake Bay. Invited seminar, 3/4/2016, NOAA Beaufort Laboratory, Beaufort, NC.
- Damiano, M., and M. Wilberg. OysterFutures and the Current State of Harvest in the Choptank River. Tidewater AFS Annual Meeting, 4/7/2016, Edgewater, MD. (poster)
- Liljestrand, E., M. Wilberg, and A. Schueller. Atlantic Menhaden (*Brevoortia tyrannus*) seasonal migration, survival, and exploitation rates during 1966-1969. Tidewater AFS Annual Meeting, 4/7/2016, Edgewater, MD.
- Wilberg, M., A. Sylvia, J. Wiedenmann, and T. Miller. Exploring performance of harvest control rules through management strategy evaluation. 7th World Fisheries Congress, 5/24/2016, Busan, Republic of Korea.

- Nesslage, G. and M. Wilberg. Evaluating the performance of production models with time-varying parameters in changing ecosystems. 7<sup>th</sup> World Fisheries Congress, 5/24/2016, Busan, Republic of Korea.
- Wilberg, M., E. Williams, G. Haliwell, and C. Kelble. Management strategy evaluation to compare sampling programs in the southeastern U.S. 146<sup>th</sup> American Fisheries Society Annual Meeting, 8/22/2016, Kansas City.
- Liljestrand, E., M. Wilberg, and A. Schueller. Atlantic menhaden seasonal migration, survival and exploitation rates during 1966-1969. 146<sup>th</sup> American Fisheries Society Annual Meeting, 8/25/2016, Kansas City.
- Damiano, M. and M. Wilberg. Dynamics of eastern oysters in the Choptank River complex, Maryland. 146<sup>th</sup> American Fisheries Society Annual Meeting, 8/25/2016, Kansas City.
- Goelz, T., T. Hartley, E. North, J. Cornwell, R. Hood, T. Miller, L. Wainger, M. Wilberg, J. Blair, and R. Jones. Scientists and Local Ecological Knowledge in Participatory Oyster Management. AAAS Annual Meeting, 2/16/2017, Boston. Poster.
- Liljestrand, E., M. Wilberg, and A. Schueller. Estimating migration and mortality of adult Atlantic menhaden with data from a large-scale mark-recapture study. ICES/PICES Symposium on Drivers of dynamics of small pelagic fish resources, 3/8/2017, Victoria, Canada. \*Winner of the best student presentation.
- Damiano, M., and M. Wilberg. Population dynamics of eastern oysters in the Choptank River, Maryland during the 1988/89 through 2014/15 fishing seasons. Tidewater Chapter of the American Fisheries Society Annual Meeting, 3/10/2017, Virginia Beach.
- Doering, K., M. Wilberg, and M. Tarnowski. Improving a natural mortality estimator for the Eastern Oyster: application to the Patuxent River, MD. Tidewater Chapter of the American Fisheries Society Annual Meeting, 3/9/2017, Virginia Beach. \*2<sup>nd</sup> place best student poster.
- Wilberg, M., J. Blair, R. Jones, E. North, M. Damiano, R. Gawde, C. Hayes, R. Hood, M. Jackson, J. Cornwell, L. Wainger, T. Hartley, and T. Goelz. Facilitating success: using a stakeholder workgroup process to develop management recommendations for Chesapeake Bay oysters, American Fisheries Society Annual Meeting, 8/24/2017, Tampa.
- Wilberg, M., M. Damiano, E. North, R. Gawde, M. Jackson, R. Hood, Lisa Wainger, and C. Hayes. Incorporating ecosystem services, fisher behavior, and spatial recruitment complexity in a management strategy evaluation for Chesapeake Bay oysters. American Fisheries Society Annual Meeting, 8/23/2017, Tampa.
- Wilberg, M. Using population models to estimate abundance of oyster and sustainable fishing mortality rates in Chesapeake Bay. Center for Discrete Mathematics and Theoretical Computer Science, 8/29/2017, St. Leonard, MD.

- Doering, K., M. Wilberg, D. Liang, and M. Tarnowski. Spatial and Temporal Trends in Natural Mortality of Eastern Oyster in Chesapeake Bay, Maryland. American Fisheries Society Annual Meeting, 8/25/2017, Tampa.
- Gaichas, S., R. Seagraves, J. Coakley, G. DePiper, V. Guida, J.A. Hare, P. Rago, M.J. Wilberg. The Mid-Atlantic Fishery Management Council's Framework for Incorporating Species, Fleet, Habitat, and Climate Interactions into Fishery Management: Initial Risk Assessment. American Fisheries Society Annual Meeting, 8/23/2017, Tampa.
- Liang, D., G. Nessler, M. Wilberg, and T. Miller. Bayesian Calibration of Blue Crab (*Callinectes sapidus*) Abundance Indices Based on Probability Surveys. ICES Annual Science Conference, 9/20/2017, Fort Lauderdale. Poster.
- North, E., M. Wilberg, J. Blair, J. Cornwell, T. Hartley, R. Hood, R. Jones, L. Wainger, R. Gawde, C. Hayes, M. Jackson, T. Goelz, M. Damiano, D. Taillie, E. Nastase. OysterFutures: applying a spatially-explicit model and testing a collaborative process for developing oyster fishing regulations in Chesapeake Bay. ICES Annual Science Conference, 9/19/2017, Fort Lauderdale. \*Winner of best poster.
- North, E., M. Wilberg, J. Blair, J. Cornwell, T. Hartley, R. Hood, R. Jones, L. Wainger, R. Gawde, C. Hayes, M. Jackson, T. Goelz, M. Damiano, D. Taillie, E. Nastase. OysterFutures. Oyster Advisory Commission Meeting, 9/11/2017, Annapolis.
- \*Wilberg, M. Modeling oyster dynamics and nitrogen removal in the Choptank River, U.S.A., Long-term Marine Research Symposium, 11/22/2017, Busan, Republic of Korea.
- Doering, K., M. Wilberg, D. Liang, and M. Tarnowski. Spatial and temporal patterns of natural mortality of eastern oyster in Chesapeake Bay, Maryland during 1990 - 2015. Tidewater Chapter of the American Fisheries Society Annual Meeting, 1/26/2018, Beaufort.
- Wilberg, M., Matthew Damiano, E. North, R. Gawde, M. Jackson, R. Hood, L. Wainger, and C. Hayes. Modeling oyster dynamics and nitrogen removal in the Choptank River, U.S.A., Tidewater Chapter of the American Fisheries Society Annual Meeting, 1/27/2018, Beaufort.
- Doering, K., M. Wilberg, D. Liang, and M. Tarnowski. Spatial and temporal patterns of natural mortality of eastern oyster in Chesapeake Bay, Maryland during 1990 - 2015. National Shellfisheries Association Annual Meeting, 4/20/2018, Seattle. Poster.
- \*Wilberg, M., and E. North. Collaborative modeling – OysterFutures - overview and lessons learned. Association for Conflict Resolution, 6/14/2018, Arlington, VA.
- Wilberg, M. Maryland Oyster Stock Assessment Update. Maryland Oyster Advisory Committee, 6/11/2018, Annapolis.
- \*Wilberg, M. Collaborative modeling. Collaborative Modeling in Coastal and Marine Resource Management. 7/19/2018, Gloucester Point, VA.

- \*Wilberg, M. So you want to do a collaborative modeling project... Collaborative Modeling in Coastal and Marine Resource Management. 7/19/2018, Gloucester Point, VA.
- \*Wilberg, M. OysterFutures: A Collaborative Process for Developing Oyster Management Recommendations in Maryland. Warnell School of Forestry and Natural Resources invited seminar. 9/6/2018, University of Georgia, Athens, GA.
- \*Wilberg, M. Maryland Oyster Stock Assessment. Maryland Oyster Advisory Commission meeting. 11/19/2018. Annapolis, MD.
- \*Wilberg, M. Dynamics of Oysters in Maryland's Chesapeake Bay. Fisheries and Wildlife Department invited seminar. Michigan State University. 11/30/2018. East Lansing, MI.
- North, E., and M. Wilberg. Status and Management of Oysters in the Choptank. CHOPtalks 2, 12/10/2018, Cambridge, MD.
- \*Wilberg, M. Maryland Oyster Stock Assessment. Fisheries Goal Implementation Team (GIT) meeting. 12/18/2018. Newport News, VA.
- \*Wilberg, M. Improving fisheries management with collaborative modeling: an example with Maryland oysters. Tidewater Chapter of the American Fisheries Society Annual Meeting, 2/8/2019. Salisbury, MD. Keynote address.
- Mace, M., and M. Wilberg. Using censored regression when estimating abundance and exploitation rate with catch-effort data to account for daily catch limits. Tidewater Chapter of the American Fisheries Society Annual Meeting, 2/9/2019. Salisbury, MD.
- \*Wilberg, M. Oyster population dynamics in Chesapeake Bay: Implications for fishery sustainability. Long Term Marine Environmental Research (LTMER) Symposium. 6/5/2019. Gwangju Institute of Science and Technology, Gwangju, Republic of Korea.
- \*Wilberg, M. Analysis of Mississippi and Ohio River paddlefish data. Lower Mississippi River Conservation Coordinating Committee meeting, 9/17/2019, Memphis.
- \*Wilberg, M. Some recent CBL blue crab research. 10/14/2019. CBSAC and Fishery GIT meeting. Colonial Beach.

#### **E. Symposia Organized/Chaired for Professional Meetings**

Co-organizer (with Jim Bence and Brian Irwin) of "Performance of alternative harvest policies" symposium at the Annual Conference of the American Fisheries Society, 9/5/2007-9/6/2007, San Francisco.

Co-organizer (with Jim Thorson and Jim Bence) of "Parameters that aren't: Time-varying effects in stock assessment" symposium at the Annual Meeting of the American Fisheries Society, 9/6/2011, Seattle.

Co-organizer (with Olaf Jensen and Robert Arlinghaus) of a SESYNC workshop, Managing Recreational Fisheries as Complex Adaptive Socio-Ecological Systems, June 18-20, 2014, Annapolis, Maryland.

Moderator for Management Strategy Evaluation session at the 7<sup>th</sup> World Fisheries Congress, 2/24/2016, Busan, Republic of Korea.

Co-organizer (with E. North and F. Moser) OysterFutures Sea Grant Symposium: learning from other places to improve oyster aquaculture and fisheries in Maryland, 10/23/2016

Co-organizer (with T. Hartley, T. Goelz, J. Blair, R. Jones, E. North, F. Moser, and S. Lake) Collaborative Modeling in Coastal and Marine Resource Management, Virginia and Maryland Sea Grant Symposium, 7/29/2018, Gloucester Point, VA.

Co-organizer (with O. Jensen and R. Arlinghaus) Coupled Social-Ecological Dynamics. American Fisheries Society Annual Meeting, 8/23/2018, Atlantic City, NJ.

## F. Membership in Professional Societies

American Fisheries Society

Ecological Society of America

American Association for the Advancement of Science

## IV. Teaching and Training

### A. University System of Maryland Courses Taught

Course #	Title	Semester	# students enrolled	# credits
MEES 608S	Bayesian Statistics in Ecology	Fall 2007	7	1
MEES 698D	Adv. Pop. Dy. & Assess.	Spring 2008	8	3
MEES 682	Fish. Sci. & Manage. (w/Secor)	Fall 2008	13	3
MEES 698D	Adv. Pop. Dy. & Assess.	Spring 2009	7	3
MEES 682	Fish. Sci. & Manage. (w/Secor)	Fall 2010	14	3
MEES 698D	Adv. Pop. Dy. & Assess.	Spring 2011	13	3
MEES 699	Statistical Estimation	Fall 2011	1	2
MEES 608F	Ecosystems Complexity (w/Harris)	Spring 2012	12	1
MEES 682	Fish. Sci. & Manage. (w/Secor)	Fall 2012	12	3
MEES 698D	Adv. Pop. Dy. & Assess.	Spring 2013	9	3
MEES 682	Fish. Sci. & Manage. (w/Secor)	Fall 2014	18	3
MEES 712	Adv. Pop. Dy. & Assess.	Spring 2015	17	3
MEES 682	Fish. Sci. & Manage. (w/Nesslage)	Fall 2016	14	3
MEES 712	Adv. Pop. Dy. & Assess.	Spring 2017	11	4
MEES 682	Fish. Sci. & Manage. (w/Nesslage)	Fall 2018	9	3
MEES 712	Adv. Pop. Dy. & Assess.	Spring 2019	7	4
MEES 708D	Effects of Diseases on Population Dynamics of Marine Organisms (w/Schott)	Fall 2019	13	2

## B. Graduate Students Supervised

### 1. Degrees Completed

Kari Fenske	2009	M.S.	MEES (co-advised with D. Secor)
Maude Livings	2011	M.S.	MEES
Jennifer Pincin	2011	M.S.	MEES
Jason Robinson	2013	Ph.D.	MEES
Sarah Rains	2014	M.S.	MEES
Andrea Sylvia	2015	M.S.	MEES
Cara Simpson	2016	M.S.	MEES (co-advised with H.Bi)
Matthew Damiano	2017	M.S.	MEES
Emily Liljestrand	2017	M.S.	MEES
Kathryn Doering	2019	M.S.	MEES

### 2. Students Currently Supervised

### 3. Current and Completed (\*) Graduate Student Committee Memberships

Deanna McQuarrie*	M.S.	MEES
Ryan Woodland*	Ph.D.	MEES
Amanda Colton*	M.S.	MEES
Michael O'Brien*	M.S.	MEES
Virginia Clark *	M.S.	MEES
Jacob Goodwin*	Ph.D.	MEES
David Kazyak *	Ph.D.	MEES
Andrew Keppel*	M.S.	MEES
Matthew Siskey*	M.S.	MEES
Stephen Gray Redding*	M.S.	MEES
Noelle Olsen*	M.S.	MEES
Young-Jae Lee*	Ph.D.	Gwangju Institute of Science and Technology, Republic of Korea
Aimee Neely	Ph.D.	MEES
Christopher Hayes	Ph.D.	MEES
Jason Spires	Ph.D.	MEES
Reed Brodnick	Ph.D.	MEES
Cassidy Peterson	Ph.D.	Virginia Institute of Marine Science
Wilmelie Cruz	Ph.D.	MEES
Jerelle Jesse	M.S.	MEES
Kohma Arai	Ph.D.	MEES

### 4. Research Internships Supervised

Lisa Wilt, Project – Estimation of site-specific mortality rates of eastern oyster *Crassostrea virginica* in Chesapeake Bay and causes of regional variation, MD Sea Grant REU Program, 5/2007-8/2007.

Emily Hutchinson, Project – Variability in abundance of the American eel (*Anguilla rostrata*) in the Potomac River. MD Sea Grant REU Program, 5/2008-8/2008.

Jared Steed, Project – The effects of spawning period and weather condition on yellow perch (*Perca flavescens*) angler effort, MD Sea Grant REU Program, 5/2009-8/2009.

Joshua Epstein – Comparing methods to quantify sperm storage in female blue crab *Callinectes sapidus* spermathecae, MD Sea Grant REU Program, 5/2012-8/2012.

Cara Simpson – Developing a size-structured growth model for blue crabs in Chesapeake Bay, St. Marys College, 9/2012-5/12/2013.

Andrew Mealor – Methods for estimating catchability of a dredge survey, MD Sea Grant REU Program, 5/2013-8/2013.

Carlos Disla – Individual Transferable Quotas: Heroes or Hype? University of Maryland – College Park Sustainable Development and Conservation Biology Program, 1/2014-5/2014.

James Fiorendino – Examination of the effect of sex, age, and maturity on winter blue crab distributions in Chesapeake Bay, MD Sea Grant REU Program, 5/2014-8/2014.

## **5. Postdoctoral Researchers Supervised**

Dr. John Wiedenmann, 8/2010-10/2012

Dr. Marvin Mace III, 4/2017 – present

## **6. Faculty Research Assistants Supervised**

Jennifer Humphrey 2008-2013

Brian Morris 2009-2010

## **7. International Scholars Supervised**

Eunah Han - Modeling the Effects of Salinity and Temperature on Growth of the Eastern Oyster *Crassostrea virginica* in the Choptank River System. Visiting Scholar from Gwangju Institute of Science and Technology, Republic of Korea, 9/2016-3/2017.

# **V. Outreach and Service**

## **C. Federal/State/Local Government**

### **1. Federal**

Member of Mid-Atlantic Fisheries Management Council Scientific and Statistical Committee, 12/2008-present.

Chair of the Scientific Uncertainty (SUN) subcommittee of Mid-Atlantic Fisheries Management Council Scientific and Statistical Committee, 3/2009-8/2015.

Stock Assessment Review panel member for NMFS Northwest Science Center yelloweye rockfish stock assessment, Alaska Fisheries Science Center, 2/13-15/2006.

Southeast Data Assessment and Review workshop on modeling time-varying catchability in stock assessment models, co-leader, 2/9/2009-2/12/2009.

National SSC workshop participant, Representative of the Mid-Atlantic SSC, St. Thomas, U.S. Virgin Islands, 11/10/2009-11/13/2009.

Southeast Data Assessment and Review workshop on implementing scientific uncertainty for federally managed U.S. fish stocks, participant, 2/23/2010-2/25/2010.

National SSC workshop participant, Representative of the Mid-Atlantic SSC, Charleston, 10/19/2010-10/21/2010.

Reviewer for management reference points for spiny dogfish. Mid-Atlantic Fishery Management Council, 8/19/2011.

Participant in workshop on assessing and managing protogynous hermaphroditic fishes, Raleigh, 8/29/2012-8/30/2012.

Reviewer for the Gulf of Maine cod stock assessment, New England Fishery Management Council, 8/2014.

Reviewer for the black sea bass pot survey, Mid-Atlantic Fishery Management Council, 7/2014.

2012, 2015. Panel member for the National Marine Fisheries Service Sea Grant Population Dynamics Fellowship.

Management Strategy Evaluation Expert for the East Coast Fisheries Forum, 5/8/2015, Beaufort, NC.

Chair of the Stock Assessment Review Committee for Atlantic Surfclam, NOAA Northeast Fisheries Science Center, Woods Hole, MA, 7/19-21/2016.

Member of the Review Committee for the NEFSC Clam Survey Redesign 4/2018-6/2018.

## **2. Regional**

Harvest Policy Decision Analysis for Yellow Perch in Southern Lake Michigan, 3/2005-7/2008.

Instructor for short course on maximum likelihood estimation in fisheries, Baltimore, MD. Atlantic States Marine Fisheries Commission, 7/9/2007-7/13/2007.

Member of Ecosystem-based Management in Chesapeake Bay, Stock Dynamics Quantitative Ecosystem Team, 12/2008-2012.

Co-Instructor (w/ P. Sullivan) for short course on AD Model Builder, Providence, RI. Atlantic States Marine Fisheries Commission, 7/18/2011-7/21/2011.

Advised the Atlantic States Marine Fisheries Commission and the Mid-Atlantic Fisheries Management Council on recreational regulations for the summer flounder fishery. 2012-2014.



Consulting scientist for the NOAA Restoration Center, Oyster Restoration Program, 2012-present.

President-elect, Tidewater Chapter of the American Fisheries Society, 3/2012-3/2013.

President, Tidewater Chapter of the American Fisheries Society, 3/2013-3/2014.

Past-president, Tidewater Chapter of the American Fisheries Society, 3/2014-3/2015.

Chesapeake Bay Stock Assessment Committee member, 2014-present.

Peer reviewer for the New Jersey Delaware Bay Oyster Stock Assessment 2018-present.

Peer reviewer for the Spot and Croaker stock assessment, Atlantic States Marine Fisheries Commission, 4/17/2017-4/20/2017.

Peer reviewer for the Bluefish, Black Sea Bass, Scup, and Monkfish Operational Assessments 8/5/2019-8/7/2019.

Member of the Summer Flounder management strategy evaluation conceptual model committee (2018-2019).

### **3. State**

Catfish Harvest Evaluation Program, Missouri Department of Natural Resources coordinated by Sustainable Ecosystems Institute, 2006.

Member of Maryland Department of Natural Resources Stock Monitoring and Assessment Task Force, 5/2008-11/2008.

Peer reviewer for the 2008 Maryland Chesapeake Bay yellow perch stock assessment.

Co-leader (with L. Fegley) of the Maryland Oyster Stock Assessment team, 2016-2018.

2019 – Testified on oysters for the Maryland Senate and House of Delegates.

I frequently provide advice to Maryland DNR on fisheries and stock assessment issues.

### **D. International**

Member of the American Fisheries Society Publications Overview Committee, 2010-2015.

Guest Editor for Ecological Applications, 2012.

Technical Advisor to NOAA for ICCAT species management, 2013-2015.

Associate Editor, Canadian Journal of Fisheries and Aquatic Sciences, 2014-present.  
Handle approximately 20 manuscripts per year.

Invited participant, International Whaling Commission, 2018-present.

### **E. University System of Maryland**

2006-2018 – MEES Fisheries AOS committee member

2010-2018 – Co-chair of the MEES Fisheries Area of Specialization (AOS)

2010-2016, 2017-2018 – MEES program committee member

2018 – present – UMCES representative to the Council of University System Faculty (CUSF)

#### **F. UMCES and CBL**

2006-2007 – Ad hoc committee on CBL faculty teaching of MEES courses.

Co-leader of the CBL brown bag series (with L. Cooper), Fall 2008.

Co-leader of the CBL seminar series (with L. Wainger), Spring 2009.

2008, 2009 – Maryland Sea Grant REU selection committee member

Instructor for AD Model Builder short course for seven CBL graduate students, 10/16/2009-10/18/2009.

2009-2010 – Faculty search committee member.

2011 – CBL facilities planning committee member

2011 – Search committee member for IT specialist

2011-2014 – CBL computer committee chair

2012 -2013– Chair of search committee for Estuarine Systems Ecologist

2013 – Member of the ad hoc committee to revise bylaws for UMCES graduate faculty status

2013-present – Advisor for the University of Maryland student subunit of the Tidewater Chapter of the American Fisheries Society

2013 – Co-Chair (with M. Li) for the Outcomes Assessment ad hoc subcommittee to prepare the UMCES Accreditation Readiness Report for the Middle States Commission on Higher Education

2013-2015, 2018 – Member of the ad hoc subcommittee of the GFC on awarding competitive UMCES graduate fellowships

2013-2015, 2017-2018 – CBL representative on the UMCES Graduate Faculty Council

2014 – Chair of search committee for Environmental Statistician Cluster Hire

2014-15 – Chair of the CBL Graduate Education Committee

2014-15 – Chair of Working Group 3 (student retention and support) for UMCES accreditation

2014-15 – Member of Working Group 6 (assessment, now 5) for UMCES accreditation

2014-15 – Member of the Steering Committee for UMCES accreditation

2014-15 – Chair of faculty tenure and promotion committee.

2015-2018 – Member of the CBL Graduate Education Committee

2017-2018 – Member of the UMCES PCC

2017-2018 – Member of faculty promotion committee

2018 – Member of the UMCES tenure and promotion appeals committee

2018 – present – UMCES Faculty Senate Chair.

2019 – present – Member of the Steering Committee for UMCES reaccreditation

2019 – present – Member of working group for Standard VII

2019 – Co-chair of the UMCES Committee on improving awareness of mental healthcare options

2019-present – Chair of faculty promotion committee.

### **G. Other Professional Service**

I give public presentations on a range of fisheries topics (4-8 per year).

I review about 4-8 manuscripts per year for a variety of professional journals and multiple proposals per year for various funding agencies including *Canadian Journal of Fisheries and Aquatic Sciences*, *PLoS One*, *Journal of Cetacean Research and Management*, *ICES Journal of Marine Science*, *Transactions of the American Fisheries Society*, *North American Journal of Fisheries Management*, *Ecological Applications*, *Fisheries Research*, *Journal of Fish Biology*, *Journal of Experimental Marine Biology, Fisheries Management and Ecology*, *Journal of Applied Ichthyology*, *Acta Ichthyologica et Piscatoria*, *Gulf and Caribbean Research*, National Science Foundation, National Oceanic and Atmospheric Administration, Alaska Sea Grant, Florida Sea Grant, New Jersey Sea Grant, and the Great Lakes Fishery Commission.