Curriculum vitae: Christopher James Harvey

NOAA Fisheries, Northwest Fisheries Science Center
Conservation Biology Division / Ecosystem Sciences Program / Integrative Marine Ecology Team
2725 Montlake Blvd. E, Seattle, WA 98112
Tel: (206) 860-3228. FAX: (206) 860-3475
Email: Chris.Harvey@noaa.gov

Education:

1997-2001	Ph.D., Limnology and Marine Science, University of Wisconsin, Madison, WI (advisor: James F. Kitchell)
1991-1994	M.S., Fisheries Science, University of Washington, Seattle, WA (advisor: Donald E. Rogers)
1987-1991	B.S., Biology, Wake Forest University, Winston-Salem, NC.

Professional Experience:

2010-present	Supervisory fishery biologist, Northwest Fisheries Science Center
2002-2010	Research fishery biologist, Northwest Fisheries Science Center
2001-2002	National Research Council post-doctoral associate, Northwest Fisheries Science Center
2001	Post-doctoral researcher, Department of Systems Ecology, Stockholm University, Stockholm, Sweden
1994-1996	Research assistant, Ecosystems Center, Marine Biological Laboratory, Woods Hole, MA

Funded proposals:

Hunsicker, M., M. Litzow, **C. Harvey**, S. McClatchie, E. Ward, and S. Zador. An early-warning index for abrupt change in Northeast Pacific ecosystems. FATE (Fisheries and the Environment) Program, NOAA Fisheries Office of Science and Technology, 2016-2018, $49,100.

K.S. Andrews, **C.J. Harvey**, N. Tolimieri, K. Nichols, L. Park, D. Tonnes, D. Lowry, and R. Pacunski. Does Puget Sound represent a distinct population segment for yelloweye and canary rockfish? NOAA Fisheries Cooperative Research Grant, 2014-2016. $125,240.

I.C. Kaplan, S. Busch, E. Fulton, J. Leonard, A.J. Hermann, **C. Harvey**, T.E. Essington, and P. McElhany. Vulnerability assessment of California Current food webs and economics to ocean acidification. Regional Ecosystem Prediction Program, Center for Sponsored Coastal Ocean Research, National Ocean Service, NOAA, 2013-2015. $374,000.

S.M. Sogard, J.C. Field, and **C.J. Harvey**. An evaluation of the significance of climate forcing on time-varying growth and fecundity of rockfish in the California Current. FATE (Fisheries and the Environment) Program, NOAA Fisheries Office of Science and Technology, 2009-2010. $129,305.

C.J. Harvey and K.S. Andrews. Movement patterns of Puget Sound jellyfish: are abiotic factors related to jellyfish distribution? Northwest Fisheries Science Center internal grant, 2010-2011. $24,100.

P.S. Levin, I.C. Kaplan, **C.J. Harvey**, E.A. Fulton, and A.D.M. Smith. Development of decision support tools for the California Current and adjacent waters. The Gordon & Betty Moore Foundation and the David and Lucile Packard Foundation, 2007-2009. $1.06 million.

C.J. Harvey, P.S. Levin, M. Ruckelshaus, T. Wainwright, T.E. Essington, R. Hilborn, A. Punt, C. Walters, V. Christensen, S. Martell. A critical evaluation of Ecopath with Ecosim as a tool to identify optimal policies in fisheries decision analysis. NOAA Fisheries, 2004-2005. $90,000.

P.S. Levin, **C.J. Harvey**, M.E. Clarke, A.D.M. Smith, E.A. Fulton, and T.E. Essington. A spatially-explicit ecosystem model to examine the effects of fisheries management alternatives in the Northern California Current. NOAA Fisheries, 2004-2005. $100,000.

P.S. Levin, **C.J. Harvey**, and M.P. Ebener. Using stable isotopes to assess potential sea lamprey damage to Lake Superior fishes. Great Lakes Fishery Commission, 2002-2007. $44,170.

B.E. Feist and **C.J. Harvey**. Towards an understanding of the influence of non-indigenous smooth cordgrass (*Spartina alterniflora*) on food web dynamics in Pacific Northwest estuaries. Northwest Fisheries Science Center internal grant, 2002-2003. $29,000.

Manuscripts in review:

1. Thompson, A.R., **C.J. Harvey,** W.J. Sydeman, C. Barceló, S.J. Bograd, R.D. Brodeur, J. Fiechter, J.C. Field, N. Garfield, T.P. Good, E.L. Hazen, M.E. Hunsicker, M.G. Jacox, A. Leising, S.R. Melin, J.A. Santora, I.D. Schroeder, J.A. Thayer, B.K. Wells, and G.D. Williams. Ecological indicators of the status and trends of the pelagic forage community in the California Current large marine ecosystem, 1998-2016. Ecological Indicators (in review).
2. Williams, G.D., **C.J. Harvey**, J.C.P. Reum, K.S. Andrews, and P.S. Levin. Trophic ecology and movement patterns of sixgill sharks in Puget Sound: a stable isotope analysis. Marine Ecology Progress Series (in review).

Peer-reviewed publications:

1. Fulton, E.A., A.E. Punt, C.M. Dichmont, **C.J. Harvey**, and R. Gorton. Ecosystems say good management pays off. Fish and Fisheries (in press). doi:10.1111/faf.12324
2. Shelton, A.O., **C.J. Harvey**, J.F. Samhouri, K.S. Andrews, B.E. Feist, K.E. Frick, N. Tolimieri, G.D. Williams, L.D. Antrim, and H.D. Berry. 2018. From the predictable to the unexpected: kelp forest and benthic invertebrate community dynamics following decades of sea otter expansion. Oecologia 188:1105-1119.
3. Hodgson, E.E., I.C. Kaplan, K. Marshall, J.L. Leonard, T.E. Essington, D.S. Busch, E.A. Fulton, **C.J. Harvey**, A.J. Hermann, and P. McElhany. 2018. Spatially variable ocean acidification and its consequences in the California Current: interactions between oceanography, food webs, and fishing communities. Ecological Modelling 383:106-117.
4. Andrews, K.S., K.M. Nichols, A. Elz, N. Tolimieri, **C.J. Harvey**, R. Pacunski, D. Lowry, K.L. Yamanaka, and D.M. Tonnes. 2018. Cooperative research sheds light on the listing status of threatened and endangered rockfish species. Conservation Genetics 19:865-878. doi: 10.1007/s10592-018-1060-0.
5. Samhouri, J.F., K.S. Andrews, G. Fay, E.L. Hazen, **C.J. Harvey**, S. Hennessey, K. Holsman, M.E. Hunsicker, S.I. Large, K.N. Marshall, A.C. Stier, J.C. Tam, and S.G. Zador. 2017.

Defining ecosystem-based thresholds for human activities and environmental drivers in the California Current. Ecosphere 8(6):e01860. doi:10.1002/ecs2.1860.

6. **Harvey, C.J.**, C.R. Kelble and F.B. Schwing. 2017. Implementing "the IEA": using integrated ecosystem assessment frameworks, programs, and applications in support of operationalizing ecosystem-based management. ICES Journal of Marine Science 74: 398-405. doi:10.1093/icesjms/fsw201.
7. Marshall, K.N., I.C. Kaplan, E.E. Hodgson, A. Hermann, S. Busch, P. McElhany, T.E. Essington, **C.J. Harvey**, and E.A. Fulton. 2017. Future effects of ocean acidification on the California Current food web and fisheries: forecasts from an ecosystem model. Global Change Biology 23:1525-1539. doi: 10.1111/gcb.13594.
8. Bednaršek, N., T. Klinger, **C.J. Harvey**, S. Weisberg, R.M. McCabe, R.A. Feely, J. Newton and N. Tolimieri. 2017. New ocean, new needs: application of pteropod shell dissolution as a biological indicator for marine resource management. Ecological Indicators 76:240-244.
9. **Harvey, C.J.**, J.C.P. Reum, M.R. Poe, G.D. Williams, and S.J. Kim. 2016. Using conceptual models and qualitative network models to advance integrative assessments of marine ecosystems. Coastal Management 44: 486-503.
10. Levin, P.S., S.J. Breslow, **C.J. Harvey**, K.C. Norman, M.R. Poe, G.D. Williams, and M. Plummer. 2016. Conceptualization of the integrated socio-ecological systems of the California Current: an examination of interdisciplinary science supporting ecosystem-based management. Coastal Management 44: 397-408.
11. Bednaršek, N., **C.J. Harvey**, I.C. Kaplan, R.A. Feely, and J. Mozina. 2016. Pteropods on the edge: cumulative effects of ocean acidification, warming, and deoxygenation. Progress in Oceanography 145: 1-24. doi:10.1016/j.pocean.2016.04.002.
12. Reum, J.C.P., S.R. Alin, **C.J. Harvey**, N. Bednaršek, W. Evans, R.A. Feely, B. Hales, N. Lucey, J.T. Mathis, P. McElhany, J. Newton, and C.L. Sabine. 2016. Interpretation and design of ocean acidification experiments in upwelling systems in the context of carbonate chemistry covariation with temperature and oxygen. ICES Journal of Marine Science 73: 582-595. doi: 10.1093/icesjms/fsu231.
13. Ferriss, B.E., J.C.P. Reum, P.S. McDonald, D. Farrell, and **C.J. Harvey**. 2016. Evaluating trophic and non-trophic effects of shellfish aquaculture in a coastal estuarine food web. ICES Journal of Marine Science 73: 429-440.
14. Levin, P.S., G.D. Williams, A.P. Rehr, K.C. Norman, and **C.J. Harvey**. 2015. Developing conservation targets for social-ecological systems. Ecology and Society 20(4):6.
15. Reum, J.C.P., P.S. McDonald, B.E. Ferriss, D. Farrell, **C.J. Harvey**, and P.S. Levin. 2015. Qualitative network models in support of ecosystem approaches to bivalve aquaculture. ICES Journal of Marine Science 72: 2278-2288. doi: 10.1093/icesjms/fsv119.
16. Reum, J.C.P., B.E. Ferriss, P.S. McDonald, **C.J. Harvey**, J. Ruesink, T. Klinger, and P.S. Levin. 2015. Evaluating community impacts of ocean acidification using qualitative network models. Marine Ecology Progress Series 536: 11-24. doi: 10.3354/meps11417

17. Beyer, S.G., S.M. Sogard, **C.J. Harvey**, and J.C. Field. 2015. Variability in rockfish (*Sebastes* spp.) fecundity: species contrasts, maternal size effects, and spatial differences. Environmental Biology of Fishes 98: 81-100.

18. **Harvey, C.J.** 2014. Mediation functions in Ecopath with Ecosim: handle with care. Canadian Journal of Fisheries and Aquatic Sciences 71: 1020-1029.

19. Warren, D.R., **C.J. Harvey**, M.M. McClure, and B. Sanderson. 2014. Use of an ecosystem-based model to evaluate conservation strategies for juvenile Chinook salmon in headwater streams. North American Journal of Fisheries Management 34: 839-852.

20. Carey, M.P., P.S. Levin, H. Townsend, T.J. Minello, G.R. Sutton, T. Francis, **C.J. Harvey**, J.E. Toft, K.K. Arkema, J.L. Burke, C.-K. Kim, A. Guerry, M. Plummer, G. Spiridonov, and M. Ruckelshaus. 2014. Characterizing coastal food webs with qualitative links to bridge the gap between theory and practice of ecosystem-based management. ICES Journal of Marine Science 71: 713-724.

21. Busch, D.S., **C.J. Harvey**, and P. McElhany. 2013. Potential impacts of ocean acidification on the Puget Sound food web. ICES Journal of Marine Science 70: 823-833.

22. Plummer, M.L., **C.J. Harvey**, L. Anderson, A.D. Guerry, and M.H. Ruckelshaus. 2013. The role of eelgrass in marine community interactions and ecosystem services: results from ecosystem-scale food web models. Ecosystems 16: 237-251.

23. Andrews, K.S., and **C.J. Harvey**. 2013. Ecosystem-level consequences of movement: seasonal variation in the predatory impact of a top predator. Marine Ecology Progress Series 473: 247-260.

24. **Harvey, C.J.**, T.P. Good, and S.F. Pearson. 2012. Top-down influence of resident and overwintering bald eagles (*Haliaeetus leucocephalus*) in a model marine ecosystem. Canadian Journal of Zoology 90: 903-914.

25. **Harvey, C.J.**, P.E. Moriarty, and E.P. Salathé. 2012. Modeling climate change impacts on overwintering bald eagles. Ecology and Evolution 2: 501-514.

26. **Harvey, C.J.**, G.D. Williams, and P.S. Levin. 2012. Food web structure and trophic control in central Puget Sound. Estuaries and Coasts 35: 821-838.

27. Link, J.S., T.F. Ihde, **C.J. Harvey**, S.K. Gaichas, J.C. Field, J.K.T. Brodziak, H.M. Townsend, and R.M. Peterman. 2012. Dealing with uncertainty in ecosystem models: the paradox of use for living resource management. Progress in Oceanography 102: 102-114.

28. Moriarty, P.E., K.S. Andrews, **C.J. Harvey**, and M. Kawase. 2012. Vertical and horizontal movement patterns of scyphozoan jellyfish in a fjord-like estuary. Marine Ecology Progress Series 455: 1-12.

29. **Harvey, C.J.**, J.C. Field, S.G. Beyer, and S.M. Sogard. 2011. Modeling growth and reproduction of chilipepper rockfish under variable environmental conditions. Fisheries Research 109: 187-200.

30. King, J.R., V.N. Agostini, **C.J. Harvey**, G.A. McFarlane, M.G.G. Foreman, J.E. Overland, E. DiLorenzo, N.A. Bond, and K.Y. Aydin. 2011. Climate forcing and the California Current ecosystem. ICES Journal of Marine Science 68: 1199-1216.

31. Andrews, K.S., N. Tolimieri, G.D. Williams, J.F. Samhouri, **C.J. Harvey**, and P.S. Levin. 2011. Comparison of fine-scale acoustic monitoring systems using home range size of a demersal fish. Marine Biology 158: 2377-2387.

32. Francis, T.B., P.S. Levin, and **C.J. Harvey**. 2011. The perils and promise of futures analysis in marine ecosystem-based management. Marine Policy 35: 675-681.

33. Schmidt, S.N., **C.J. Harvey**, and M.J. Vander Zanden. 2011. Historical and contemporary trophic niche partitioning among Laurentian Great Lakes coregonines. Ecological Applications 21:888-896.

34. Samhouri, J.F., P.S. Levin, and **C.J. Harvey**. 2009. Quantitative evaluation of marine ecosystem indicator performance using food web models. Ecosystems 12: 1283-1298.

35. **Harvey, C.J.** 2009. Effects of temperature change on demersal fishes in the California Current: a bioenergetics approach. Canadian Journal of Fisheries and Aquatic Sciences 66: 1449-1461.

36. Andrews, K.S., G.D. Williams, D. Farrar, N. Tolimieri, **C.J. Harvey**, G. Bargmann, and P.S. Levin. 2009. Diel activity patterns of sixgill sharks, Hexanchus griseus: the ups and downs of an apex predator. Animal Behaviour 78:525-536.

37. **Harvey, C.J.**, M.P. Ebener and C.A. White. 2008. Spatial and ontogenetic variability of sea lamprey diets in Lake Superior. Journal of Great Lakes Research 34: 434-449.

38. **Harvey, C.J.**, K. Gross, V.H. Simon, and J. Hastie. 2008. How interactions with Pacific hake affect the rebuilding times of overfished rockfish. Marine Ecology Progress Series 365: 165-176.

39. Scheuerell, M.D., J.W. Moore, D.E. Schindler, and **C.J. Harvey**. 2007. Varying effects of anadromous sockeye salmon on the trophic ecology of two species of resident salmonids in southwest Alaska. Freshwater Biology 52: 1944-1956.

40. Hansson, S., O. Hjerne, **C.J. Harvey**, J.F. Kitchell, S.P. Cox, and T.E. Essington. 2007. Managing Baltic Sea fisheries under contrasting production and predation regimes—ecosystem model analyses. Ambio 36: 265-271.

41. **Harvey, C.J.**, N. Tolimieri, and P.S. Levin. 2006. Regional changes in size and abundance of rockfish (*Sebastes* spp.) in the northeast Pacific. Ecological Applications 16: 1502-1515.

42. Levin, P.S., E.E. Holmes, K. Piner, and **C.J. Harvey**. 2006. Shifts in a Pacific Ocean fish assemblage: the potential influence of exploitation. Conservation Biology 20: 1181-1190.

43. Ruesink, J.L., B.E. Feist, **C.J. Harvey**, J.S. Hong, A.C. Trimble, and L.M. Wisehart. 2006. Changes in productivity associated with four introduced species: ecosystem transformation of a “pristine” estuary. Marine Ecology Progress Series 311: 203-215.

44. Mason, D.M., T.B. Johnson, **C.J. Harvey**, J.F. Kitchell, S.T. Schram, C.R. Bronte, M.H. Hoff, S.J. Lozano, A.S. Trebitz, D.R. Schreiner, E.C. Lamon, and T.R. Hrabik. 2005. Hydroacoustic estimates of abundance and spatial distribution of pelagic fishes in western Lake Superior. Journal of Great Lakes Research 31: 426-438.

45. **Harvey, C.J.**, and P.M. Kareiva. 2005. The influence of non-indigenous species, native predator management, and community context on juvenile salmon survival in a Columbia River reservoir. Biological Invasions 7: 651-663.

46. **Harvey, C.J.** 2005. Impacts of El Niño events on consumption and egg production of rockfish (Scorpaenidae: *Sebastes*): a bioenergetics approach. Fishery Bulletin 103: 71-83.

47. **Harvey, C.J.**, S.P. Cox, T.E. Essington, S. Hansson, and J.F. Kitchell. 2003. An ecosystem model of food web and fisheries interactions in the Baltic Sea. ICES Journal of Marine Science 60: 939-950.

48. Zabel, R.M., **C.J. Harvey**, S.L. Katz, T.P. Good, and P.S. Levin. 2003. Ecologically sustainable yield. American Scientist 91: 150-157.

49. **Harvey, C.J.**, S.T. Schram, and J.F. Kitchell. 2003. Trophic relationships among lake trout in Lake Superior. Transactions of the American Fisheries Society 132: 219-228.

50. **Harvey, C.J.**, P.C. Hanson, T.E. Essington, P.B. Brown, and J.F. Kitchell. 2002. Using bioenergetics models to predict stable isotope ratios in fishes. Canadian Journal of Fisheries and Aquatic Sciences 59: 115-124.

51. Greenfield, B.K., T.R. Hrabik, **C.J. Harvey**, and S.R. Carpenter. 2001. Predicting mercury levels in yellow perch: use of water chemistry, trophic ecology, and spatial traits. Canadian Journal of Fisheries and Aquatic Sciences 58: 1419-1429.

52. **Harvey, C.J.**, and J.F. Kitchell. 2000. A stable isotope evaluation of food web structure and its spatial heterogeneity in western Lake Superior. Canadian Journal of Fisheries and Aquatic Sciences 57: 1395-1403.

53. Kitchell, J.F., S.P. Cox, **C.J. Harvey**, T.B. Johnson, D.M. Mason, K.K. Schoen, K. Aydin, C. Bronte, M. Ebener, M. Hanson, M. Hoff, S. Schram, D. Schreiner, and C.J. Walters. 2000. Sustainability of the Lake Superior fish community: interactions in a food web context. Ecosystems 3: 545-560.

54. Deegan, L.A., H.E. Golden, **C.J. Harvey**, and B.J. Peterson. 1999. The influence of environmental variability on the growth of age 0 and adult Arctic grayling. Transactions of the American Fisheries Society 128: 1163-1175.

55. **Harvey, C.J.** 1998. Use of sandy beach habitat by *Fundulus majalis*, a surf-zone fish. Marine Ecology Progress Series 164: 307-310.

56. **Harvey, C.J.**, B.J. Peterson, W.B. Bowden, A.E. Hershey, M.C. Miller, L.A. Deegan, and J.C. Finlay. 1998. Biological responses of Oksrukuyik Creek, a tundra stream, to fertilization. Journal of the North American Benthological Society 17: 190-209.

57. Gettel, G.M., L.A. Deegan, and **C.J. Harvey**. 1997. A comparison of whole and thin-sectioned otolith aging methods for Arctic grayling, and a preliminary validation of annuli. Northwest Science 71: 224-232.

58. **Harvey, C.J.**, B.J. Peterson, W.B. Bowden, L.A. Deegan, J.C. Finlay, A.E. Hershey, and M.C. Miller. 1997. Organic matter dynamics in the Kuparuk River, an arctic tundra stream. Journal of the North American Benthological Society 16: 18-23.

59. **Harvey, C.J.**, G.T. Ruggerone, and D.E. Rogers. 1997. Migrations of three-spined stickleback, nine-spined stickleback, and pond smelt in the Chignik system, Alaska. Journal of Fish Biology 50: 1133-1137.

Book chapters:

1. Reum, J.C.P., G.D. Williams, and **C.J. Harvey**. 2017. Stable isotope applications for understanding shark ecology in the Northeast Pacific Ocean. In Larson, S.E., and D. Lowry (Eds.) Northeast Pacific Shark Biology, Research, and Conservation. Advances in Marine Biology 77:149-178. Elsevier. 256 p.

2. Guerry, A.D., M.H. Ruckelshaus, M.L. Plummer, and **C.J. Harvey**. 2011. Ecosystem service assessments for marine conservation. Pages 296-322 *in*: P. Kareiva, H. Tallis, T.H. Ricketts, G.C. Daily and S. Polasky, eds. Natural capital: theory and practice of mapping ecosystem services. Oxford University Press. 365 p.

Other publications:

1. **Harvey, C.,** N. Garfield, G. Williams, K. Andrews, C. Barceló, K. Barnas, S. Bograd, R. Brodeur, B. Burke, J. Cope, L. deWitt, J. Field, J. Fisher, C. Greene, T. Good, E. Hazen, D. Holland, M. Jacox, S. Kasperski, S. Kim, A. Leising, S. Melin, C. Morgan, S. Munsch, K. Norman, W.T. Peterson, M. Poe, J. Samhouri, I. Schroeder, W. Sydeman, J. Thayer, A. Thompson, N. Tolimieri, A. Varney, B. Wells, T. Williams, and J. Zamon. 2017. Ecosystem status report of the California Current for 2017: a summary of ecosystem indicators compiled by the California Current Integrated Ecosystem Assessment team (CCIEA). NOAA Tech. Memo. NMFS-NWFSC-139. 52 p.

2. Slater, W.L., G. DePiper, J.M. Gove, **C.J. Harvey**, E.L. Hazen, S.M. Lucey, M. Karnauskas, S.D. Regan, E.C. Siddon, E.M. Yasumiishi, S.G. Zador, M.M. Brady, M.D. Ford, R.B. Griffis, R.L. Shuford, H.M. Townsend, T.D. O'Brien, J.O. Peterson, K.E. Osgood, and J.S. Link. 2017. Challenges, opportunities and future directions to advance NOAA Fisheries ecosystem status reports (ESRs): report of the National ESR Workshop. NOAA Tech. Memo. NMFS-F/SPO-174, 66 p.

3. Townsend, H., K. Aydin, K. Holsman, **C. Harvey**, I. Kaplan, E. Hazen, P. Woodworth-Jefcoats, M. Weijerman, T. Kellison, S. Gaichas, K. Osgood, and J. Link (editors). 2017. Report of the 4th National Ecosystem Modeling Workshop (NEMoW 4): using ecosystem models to evaluate inevitable tradeoffs. NOAA Tech. Memo. NMFS-F/SPO-173. 77 p.

4. **Harvey, C.J.**, and T. Garfield, T. (eds.). 2017. California Current Integrated Ecosystem Assessment (CCIEA) California Current ecosystem status report, 2017. Report to the Pacific Fishery Management Council. Available from: http://www.pcouncil.org/wp-content/uploads/2017/02/F1a_NMFS_Rpt1_2017IEA_Main_Rpt_Final_Mar2017BB.pdf

5. Link, J., K. Larsen, H. Sagar, K. Osgood, M. Ford (eds.), K. Abrams, W. Arnold, K. Aydin, Y. deReynier, J. Bohnsack, R. Brainard, M. Brown, T. Curtis, M. Fogarty, S. Gaichas, R. Gamble, T. Garfield, B. Gerkee, R. Griffis, A. Gutierrez, J. Hare, **C. Harvey**, A. Hollowed, K. Holsman, J. Ianelli, I. Kaplan, T. Lederhouse, P. Levin, K. Long, D. Lipton, S. Lucey, P. Lynch, C. Meaney, R. Methot, I. Ortiz, J. Polovina, A. Risenhoover, R. Shuford, M. Sigler, H. Townsend, G. Tromble, G. Watters, S. Zador, and W. Patrick. 2016. NOAA Fisheries Draft Ecosystem-Based Fisheries Management Road Map.

6. Garfield, T., and **C.J. Harvey** (eds.). 2016. California Current Integrated Ecosystem Assessment (CCIEA) state of the California Current report, 2016. Report to the Pacific Fishery Management Council. Available from http://www.pcouncil.org/wp-content/uploads/2016/02/D1a_NMFS1_2016_IEA_SoCC_FINAL_MAR2016BB.pdf.

7. Garfield, T., and **C.J. Harvey** (eds.). 2015. California Current Integrated Ecosystem Assessment (CCIEA) state of the California Current report, 2015. Report to the Pacific Fishery Management Council. Available from http://www.pcouncil.org/wp-content/uploads/E1b_NMFS_Rpt2_MAR2015BB.pdf.

8. Andrews, K.S., J.M. Coyle, and **C.J. Harvey**. 2015. Ecological indicators for Washington State's outer coastal waters. Report to the Washington Department of Natural Resources. Available from http://www.msp.wa.gov/wp-content/uploads/2015/03/NWFSC_EcosystemIndicatorReport.pdf

9. **Harvey, C.J.**, N. Garfield, E.L. Hazen and G.D. Williams (eds.). 2014. The California Current Integrated Ecosystem Assessment: Phase III Report. Available from http://www.noaa.gov/iea/CCIEA-Report/index.

10. **Harvey, C.J.**, and N. Garfield. 2014. Introduction. In: **Harvey, C.J.**, N. Garfield, E.L. Hazen and G.D. Williams (eds.). The California Current Integrated Ecosystem Assessment: Phase III Report. Available from http://www.noaa.gov/iea/CCIEA-Report/index.

11. Townsend, H.M., **C. Harvey**, K.Y. Aydin, R. Gamble, A. Grüss, P.S. Levin, J.S. Link, K.E. Osgood, J. Polovina, M.J. Schirripa, and B. Wells (eds.). 2014. Report of the 3rd National Ecosystem Modeling Workshop (NEMoW 3): mingling models for marine resource management—multiple model inference. NOAA Tech. Memo., NMFS-F/SPO-149, 93 p.

12. Andrews, K.S., **C.J. Harvey**, and P.S. Levin. 2013. Conceptual models and indicator selection process for Washington State's marine spatial planning process. Report to the Washington Department of Ecology. 120 p.

13. Levin, P.S., A. James, J. Kershner, S. O'Neill, T. Francis, J. Samhouri, **C. Harvey**, M.T. Brett, and D. Schindler. 2011. Understanding future and desired system states. Pages 6-144 *in*: Puget Sound Science Update, April 2011 version. Puget Sound Partnership, Tacoma, WA. www.psp.wa.gov/scienceupdate.php.

14. **Harvey, C.J.**, K.K. Bartz, J.R. Davies, T.B. Francis, T.P. Good, A.D. Guerry, M.B. Hanson, K.K. Holsman, J. Miller, M. Plummer, J.C.P. Reum, L.D. Rhodes, C.A. Rice, J.F. Samhouri, G.D. Williams, N.J. Yoder, P.S. Levin and M.H. Ruckelshaus. 2010. A mass-balance model for evaluating food web structure and community-scale indicators in the central basin of Puget Sound. NOAA Tech. Memo., NMFS-NWFSC-106, 180 p.

15. Link, J.S., T.F. Ihde, H.M. Townsend, K.E. Osgood, M.J. Schirripa, D.R. Kobayashi, S. Gaichas, J.C. Field, P.S. Levin, K.Y. Aydin and **C.J. Harvey** (eds). Report of the 2nd National Ecosystem Modeling Workshop (NEMoW II): Bridging the credibility gap—dealing with uncertainty in ecosystem models. NOAA Tech Memo NMFS-F/SPO-102. 72 p.

16. Horne, P., I.C. Kaplan, K. Marshall, P.S. Levin, **C.J. Harvey**, A.J. Hermann and E.A. Fulton. 2010. Central California Atlantis Model: design and parameterization of a spatially explicit ecosystem model of the California Current. NOAA Tech Memo NMFS-NWFSC-104. 140 p.

17. Brand, E.J., I.C. Kaplan, **C J. Harvey**, P.S. Levin, E.A. Fulton, A.J. Hermann, and J.C. Field. 2007. A spatially explicit ecosystem model of the California Current's food web and oceanography. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-NWFSC-84.
18. **Harvey, C.J.**, S.P. Cox, and J.F. Kitchell. 2007. The Lake Superior food web. pp. 99-103 in: M.P. Ebener (ed.), The state of Lake Superior in 2000. Great Lakes Fishery Commission Special Publication 07-02.
19. **Harvey, C.J.** 2003. Invasive species impacts. In: McGraw-Hill 2003 Yearbook of Science & Technology.
20. **Harvey, C.J.** 2001. A stable isotope analysis of food web structure in Lake Superior. Ph.D. dissertation. University of Wisconsin-Madison, Madison, WI.
21. **Harvey, C.J.** 1994. Upstream migration of fishes in Black River, Chignik Lakes, Alaska. M.S. thesis. University of Washington, Seattle, WA.

Lead-authored presentations at scientific meetings:

1. Harvey, C., C. Greene, C. Rice, J. Brandenberger, and C. Krembs. "Do historic food web shifts confound fishery management goals in Puget Sound?" Coastal & Estuarine Research Federation biennial conference, Portland, OR, November 2015 (invited paper).
2. **Harvey, C.J.**, and J.C.P. Reum. "Can conceptual models and loop analyses advance integrative assessments of marine ecosystems?" American Fisheries Society annual meeting, Portland, OR, Aug. 2015 (invited paper).
3. **Harvey, C.J.**, M.L. Plummer, A.D. Guerry and M.H. Ruckelshaus. "The role of eelgrass in marine community interactions and ecosystem services: results from ecosystem-scale food web models." American Fisheries Society annual meeting, Seattle, WA, Sept. 2011.
4. **Harvey, C.J.**, A.H. Beaudreau, T.B. Francis, A.D. Guerry, P.S. Levin, M.L. Plummer, M.H. Ruckelshaus and J.F. Samhouri. "Applying marine ecosystem models to multi-sector ecosystem management." ASLO-NABS joint annual meeting, Santa Fe, NM, Jun. 2010.
5. **Harvey, C.J.** "Community-level and ecosystem-scale models of Puget Sound as tools for Integrated Ecosystem Assessment." Puget Sound Marine Environmental Modeling Consortium science open house, Seattle, WA, Jun. 2009. (invited paper)
6. **Harvey, C.J.**, and 14 others. "Developing a food web model for the Central Basin of Puget Sound." Puget Sound / Georgia Basin Ecosystem Conference, Seattle, WA, Feb. 2009 (poster).
7. **Harvey, C.J.**, M.P. Ebener, C.K. White, J.M. Fox, C.P. Madenjian, T.E. Essington, J.F. Kitchell, and P.S. Levin. "Using stable isotopes to assess potential sea lamprey damage to Lake Superior fishes." International Congress on the Biology of Fish biannual meeting, Portland, OR, Jul.-Aug. 2008 (invited paper).
8. **Harvey, C.J.** "Using bioenergetics models to estimate responsiveness of California Current groundfish to temperature anomalies." Western Groundfish Conference, Santa Cruz, CA, Feb. 2008 (paper).

9. **Harvey, C.J.**, T.E. Essington, and P.S. Levin. "Trade-offs between yield, ecosystem status, and MPA coverage: a case study developed using Ecospace." American Fisheries Society annual meeting, San Francisco, CA, Sept. 2007 (paper).
10. **Harvey, C.J.** "Using bioenergetics models to estimate sensitivity of California Current groundfish to temperature anomalies." Western Society of Naturalists annual meeting, Redmond, WA, Nov. 2006 (paper).
11. **Harvey, C.J.** "Using bioenergetics models to estimate sensitivity of California Current groundfish to temperature anomalies." PICES annual meeting, Yokohama, Japan, Oct. 2006 (paper).
12. **Harvey, C.J.**, I.C. Kaplan, and P.S. Levin. "Selecting model domains and boundaries in ecosystem modeling of the U.S. West Coast: process determines scale." PICES annual meeting, Yokohama, Japan, Oct. 2006 (paper).
13. **Harvey, C.J.**, M.P. Ebener, C.P. Madenjian, T.E. Essington, and C.K. White. "A regional assessment of sea lamprey diets in Lake Superior, based on stable isotope analysis." International Association of Great Lakes Research annual meeting, Windsor, ON, May 2006 (paper).
14. **Harvey, C.J.**, I.C. Kaplan, E.J. Brand, M.E. Clarke, P.S. Levin, E.A. Fulton, A.D.M. Smith, and A.J. Hermann. "A spatially-explicit ecosystem model to examine the effects of fisheries management alternatives in the California Current." PICES annual meeting, Vladivostok, Russia, Oct. 2005 (paper).
15. **Harvey, C.J.**, K. Gross, V.H. Simon, and V.N. Agostini. "Out of the frying pan, into the fire? Potential trade-offs in managing Pacific rockfish." Ecological Society of America annual meeting, Montreal, QC, Aug. 2005 (paper).
16. **Harvey, C.J.**, I.C. Kaplan, E.A. Fulton, P.S. Levin, A.D.M. Smith, E.J. Brand, T.E. Essington, and M.E. Clarke. "A spatially-explicit ecosystem model to examine the effects of fisheries management alternatives in the California Current." Managing Our Nation's Fisheries II, Washington DC, Mar. 2005 (poster).
17. **Harvey, C.J.**, P.S. Levin, and N. Tolimieri. "Honey, I shrunk the rockfish: evidence of declining rockfish body size, and possible consequences." Western Society of Naturalists annual meeting, Sonoma County, CA, November, 2004 (paper).
18. **Harvey, C.J.**, P.S. Levin, and N. Tolimieri. "Fishing-induced community shifts on the U.S. Pacific continental shelf: implications for recovery of imperiled rockfish. Ecological Society of America annual meeting, Portland, OR, August 2004 (paper).
19. **Harvey, C.J.**, M.P. Ebener, and C.K. White. "A combined bioenergetics-stable isotope approach to assessing ecological and economic damage by sea lamprey in the Great Lakes." American Fisheries Society annual meeting, Madison, WI, August, 2004 (invited paper).
20. **Harvey, C.J.** "Impacts of El Niño events on consumption and egg production of blue rockfish (*Sebastes mystinus*): a bioenergetics approach." Western Society of Naturalists annual meeting, Long Beach, CA, November, 2003 (paper).
21. **Harvey, C.J.**, B.E. Feist, J.L. Ruesink, A. Trimble, and L. McCoy. "Influence of exotic *Spartina alterniflora* on estuarine food webs of the Pacific Northwest. Part I: System-scale

influence on oyster diets." Estuarine Research Federation annual meeting, Seattle, WA, September, 2003 (paper).

22. **Harvey, C.J.**, S.P. Cox, and J.F. Kitchell. "Caught between the food web and the gill net: can ecologists facilitate sustainable fisheries management?" Ecological Society of America annual meeting, Tucson, AZ, August, 2002 (invited paper).

23. **Harvey, C.J.**, M.P. Ebener, and J.F. Kitchell. "Sea lamprey trophic ecology in Lake Superior: results from stable isotope analysis." International Congress of Fish Biology, Vancouver, BC, June, 2002 (paper).

24. **Harvey, C.J.**, and J.F. Kitchell. "Top-down food web controls: what marine ecologists can learn from freshwater examples." International Council for the Exploration of the Sea Young Scientists' Conference, Gilleleje, Denmark, November, 1999 (invited paper).

25. **Harvey, C.J.**, P.C. Hanson, S. Hansson, and J.F. Kitchell. "A bioenergetics-based model for predicting stable isotope ratios in fishes and invertebrates." Ecological Society of America annual meeting, Spokane, WA, August, 1999 (paper).

26. **Harvey, C.J.**, and J.F. Kitchell. "Food web structure and spatial heterogeneity in western Lake Superior." American Society of Limnology and Oceanography annual meeting, Santa Fe, NM, February, 1999 (paper).

27. **Harvey, C.J.**, and J.F. Kitchell. "Stable isotope analysis of the Lake Superior fish community." First International Conference on Applications of Stable Isotope Techniques to Ecological Studies, Saskatoon, SK, April, 1998 (poster).

28. **Harvey, C.J.**, J.P. McNamara, J.E. Hobbie, and D. Kane. "A chemical and hydrological characterization of fluvial exports from the Kuparuk River basin, arctic Alaska." American Geophysical Union fall meeting, San Francisco, CA, December, 1996 (poster).

29. **Harvey, C.J.**, B.J. Peterson, W.B. Bowden, L.A. Deegan, A.E. Hershey, M.C. Miller, and J.C. Finlay. "Biological responses of Oksrukuyik Creek, Alaska, to fertilization." North American Benthological Society annual meeting, Kalispell, MT, June, 1996 (paper).

30. **Harvey, C.J.**, G.T. Ruggerone, and D.E. Rogers. "Upstream migration of fishes in Black River, Chignik Lakes, Alaska." North American Lake Management Society annual meeting, Seattle, WA, December, 1993 (paper).

Professional service:

Member of NOAA Integrated Ecosystem Assessment national steering committee, 2015-present

Member of the Washington Ocean Acidification Center advisory panel, 2015-present

Member of Puget Sound Ecosystem Monitoring Program (PSEMP) workgroups on Birds & Mammals, Forage Fish and Food Webs, and Ecosystem Modelling, 2012-present

Member of the Salish Sea Marine Survival Project Technical Team, 2011-present

Associate editor, North American Journal of Fisheries Management, 2008-2012

U.S. delegate to Working Group 19 (Ecosystem-Based Management), North Pacific Marine Science Organization (PICES), 2004-2008

Graduate student committees:
Lindsay Correa—MS, School of Marine Affairs, University of Washington, 2010.

Awards and honors:
2012 coauthor of a "featured article" in the Marine Ecology Progress Series (Moriarty et al.)

2007 NWFSC Employee of the Year (Program Staff-Mgt/Scientific/Tech [GS 11-15])

2005 National Marine Fisheries Service Best Scientific Paper Award (Fishery Bulletin 103:71-83)

National Research Council Post-doctoral Associateship, 2001-2002

Wisconsin Alumni Research Fund Graduate Scholar, 1997, University of Wisconsin-Madison

Anna Grant Birge Memorial Scholar, 1997, University of Wisconsin-Madison

Claire Egtvedt Graduate Scholar, 1991-1992, University of Washington

Phi Beta Kappa, 1991, Wake Forest University

George Foster Hankins Scholar, 1987-1991, Wake Forest University