# Literature Cited

Ainsworth, C.H. I.C. Kaplan, P.S. Levin, R. Cudney-Bueno, E.A. Fulton, M. Mangel, P. Turk-Boyer, J. Torre, A. Pares-Sierra and H. Morzaria Luna. 2010. Atlantis model development for the Northern Gulf of California. *NOAA Technical Memorandum* NMFS-NWFSC-110, 313 p.

Beamish, R. J., D. J. Noakes, G. A. McFarlane, W. Pinnix, R. Sweeting, and J. King. 2000. Trends in coho marine survival in relation to the regime concept. *Fisheries Oceanography* 9:114–119.

Beamish, R.J., R.M. Sweeting, K.L. Lange, D.J. Noakes, D. Preikshot, and C.M. Neville. 2010. Early marine survival of coho salmon in the Strait of Georgia declines to very low levels. *Marine and Coastal Fisheries: Dynamics, Management, and Ecosystem Science* 2: 424-439.

Beckman, B. R. 2011. Perspectives on concordant and discordant relations between insulin-like growth factor 1 (IGF1) and growth in fishes. *General and Comparative Endocrinology*, 170(2):233-252.

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

Christensen, V. and C.J. Walters. 2004. Ecopath with Ecosim: methods, capabilities and limitations. *Ecological Modelling* 172:109-139.

DeAngelis, D.L. and J.C. Waterhouse. 1987. Equilibrium and nonequilibrium concepts in ecological models. *Ecological Monographs* 57: 1:21.

Debertin, A.J., J.R. Irvine, C.A. Holt, G. Oka, and M. Trudel. 2017. Marine growth patterns of southern British Columbia chum salmon explained by interactions between density-dependent competition and changing climate*. Can. J. of Fish. and Aqua. Sci.* In Press

Dunne, J. A., R.J. Williams, and N.D. Martinez. 2002a. Network structure and biodiversity loss in food webs: robustness increases with connectance. *Ecol. Lett.* 5: 558–567.

Dunne, J.A., R. J. Williams, & N.D. Martinez. 2002b. Food-web structure and network theory: the role of connectance and size. *Proceedings of the National Academy of Sciences of the United States of America*. 99(20): 12917

Fulton, E.A., J.S. Link, I.C. Kaplan, M. Savina-Rolland, P. Johnson, C.H. Ainsworth, et al. 2011. Lessons in modelling and management of marine ecosystems: The Atlantis experience. *Fish Fisheries*, 12:171–188.

Harvey, C.J., Williams, G.D. & Levin, P.S. 2012. Food web structure and trophic control in central Puget Sound*. Estuaries and Coasts* 35: 821. doi:10.1007/s12237-012-9483-1

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, DOI: 10.1080/08920753.2016.1208881

Hook, S., Gallagher, E. and G. Batley. 2014. The Role of Biomarkers in the Assessment of Aquatic Ecosystem Health. *Integrated Environmental Assessment and Monitoring*. 10(3):327-41.

Holmes, E.E. 2001. Estimating risks in declining populations with poor data. *Proceedings of the National Academy of Sciences of the United States of America.* 98: 5072-5077.

Irvine, J.R. and G.T. Ruggerone. 2016. Provisional estimates of numbers and biomass for natural-origin and hatchery-origin pink, chum, and sockeye salmon in the North Pacific, 1952-2015. NPAFC Doc. 1660. 45 pp. Fisheries and Oceans Canada, Pacific Biological Station and Natural Resources Consultants, Inc. (Available at http://www.npafc.org).

Ives, A.R. and S.R. Carpenter. 2007. Stability and Diversity of Ecosystems. *Nature*. 317: 58-62.

~~Kaje, J. 1999. Kaje System: A conceptual modeling tool for interdisciplinary research. Univ. of Washington Applied Physics Lab.~~

Levins, R. 1974. The qualitative analysis of partially specified systems*. Annals of the New York Academy of Sciences* 231: 123−138.

Liu, J., T. Dietz, S.R. Carpenter, C. Folke, M. Alberti, C.L. Redman, S.H. Schneider, E. Ostrom, A.N. Pell, J. Lubchenco, W.W. Taylor, Z. Ouyang, P. Deadman, T. Kratz, and W. Provencher. 2007. Coupled human and natural systems. *AMBIO*. 236: 639–649.

May, R. M. 1974. Stability and Complexity in Model Ecosystems. *Monographs in Population Biology* 6 Princeton University Press, Princeton, New Jersey.

Melbourne-Thomas, J., S. Wotherspoon, B. Raymond, and A. Constable. 2012. Comprehensive evaluation of model uncertainty in qualitative network analyses. *Ecological Monographs*, 82(4): 505–519.

Ogden, A.D., J.R. Irvine, K.K. English, S. Grant, K.D. Hyatt, L. Godbout, and C.A. Holt. 2015. Productivity (recruits-per-spawner) data for sockeye, pink, and chum salmon from .British Columbia. *Can. Tech. Rep. Fish. Aquat. Sci.* 3130: vi + 57 p.

Paine, R.T. 1966. Food web complexity and species diversity. *American Naturalist* 100: 65-76.

Pearcy, W. G. 1988. Factors affecting survival of Coho Salmon off Oregon and Washington. Pages 67–73 in W. J. McNeil, editor. *Salmon production, management, and allocation*. Oregon State University Press, Corvallis.

Pimm, S. L., Lawton, J. H. & Cohen, J. E. 1991. Food web patterns and their consequences. *Nature* 350, 669–674.

Preikshot, D.B. 2008. *Public Summary—Computer Modelling of Marine Ecosystems: Applications to Pacific Salmon Management and Research*. Vancouver, BC: Pacific Fisheries Resource Conservation Council.

Puccia, C. J. and R. Levins. 1985. *Qualitative modeling of complex systems: An introduction to loop*

*analysis and time averaging*. Cambridge, MA: Harvard University Press.

R Core Team. 2016. R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna. www.r-project.org

Raymond, B., J. McInnes, J.M. Dambacher, S. Way, and D.M. Bergstrom. 2011 Qualitative modelling of invasive species eradication on subantarctic Macquarie Island. *Journal of Applied Ecology* 48: 181–191.

Raymond, B, J. Melbourne-Thomas, S. Wotherspoon. 2012. QPress: Qualitative Network Analysis.

Reum, J.C.P., B.E. Ferriss, P.S McDonald, D.M. Farrell, C.J. Harvey, T. Klinger, and P.S. Levin. 2015. Evaluating community impacts of ocean acidification using qualitative network models. *Marine Ecology Progress Series* 536: 11-24.

Scheffer, M., S. Carpenter, J.A. Foley, C. Folke and B. Walker. 2001. Catastrophic shifts in ecosystems. *Nature*. 413: 591-596.

Teo, S. L. H., L. W. Botsford, and A. Hastings. 2009. Spatio-temporal covariability in Coho Salmon (*Oncorhynchus kisutch*) survival, from California to southwest Alaska. *Deep Sea Research Part II: Topical Studies in Oceanography* 56:2570–2578.