

15 References

- Ainsworth, C.H. and U.R. Sumaila. 2005. Intergenerational valuation of fisheries resources can justify long-term conservation: a case study in Atlantic cod (*Gadus morhua*). *Canadian Journal of Fisheries and Aquatic Sciences*, 62, 1104-1110.
- Allen, K. R. 1971. Relation between production and biomass. *J. Fish. Res. Board Can.*, 128:1573-1581.
- Baird, D., and Ulanowicz, R. E. 1989. The seasonal dynamics of the Chesapeake Bay ecosystem. *Ecological Monographs*, 59(4):329-364.
- Beattie, A., 2001. A new model for evaluating the optimal size, placement, and configuration of marine protected areas. M.Sc, University of British Columbia, Vancouver.
- Beattie, A., Sumaila, U.R., Christensen, V. and Pauly, D., 2002. A model for the bioeconomic evaluation of marine protected area size and placement in the North Sea. *Natural Resource Modeling*, 15:413-437.
- Beverton, R. J. H., and Holt, S. J., 1957. *On the Dynamics of Exploited Fish Populations*. Chapman and Hall, Facsimile reprint 1993, London. 533 pp.
- Brey, T. 1999. A collection of empirical relations for use in ecological modelling. *Naga*. Manila, 22(3):24-28.
- Browder, J. A., 1993. A pilot model of the Gulf of Mexico continental shelf. In: *Trophic Models of Aquatic Ecosystems*. pp. 279-284, Ed. by V. Christensen and D. Pauly, ICLARM Conference Proceedings No. 26, 390 p.,
- Caddy, J. F. 1975. Spatial model for an exploited shellfish population, and its application to the Georges Bank scallop fishery. *J. Fish. Res. Board. Canada*, 132:1305-1328.
- Calder, W. A. I., 1984. Size, function and life history. In: *Harvard University Press*, Cambridge. 431 p.
- Christensen, V. 1995a. Ecosystem maturity - towards quantification. *Ecological Modelling*, 77(1):3-32.
- Christensen, V. 1995b. A model of trophic interactions in the North Sea in 1981, the Year of the Stomach. *Dana*, 11(1):1-28.
- Christensen, V. 1998. Fishery-induced changes in a marine ecosystem: insight from models of the Gulf of Thailand. *Journal Of Fish Biology*, 53:128-142.
- Christensen, V., and Pauly, D. 1992. Ecopath II - a software for balancing steady-state ecosystem models and calculating network characteristics. *Ecological Modelling*, 61(3-4):169-185.
- Christensen, V., and Pauly, D., 1993a. Flow characteristics of aquatic ecosystems. In: *Trophic Models of Aquatic Ecosystems*. pp. 338-352, Ed. by V. Christensen and D. Pauly, ICLARM Conference Proceedings 26, Manila
- Christensen, V., and Pauly, D., eds., 1993b. *Trophic Models of Aquatic Ecosystems*. ICLARM Conference Proceedings 26, Manila, 390 pp.
- Christensen, V., and Walters, C. J. 2004. Ecopath with Ecosim: methods, capabilities and limitations. *Ecological Modelling*, 172(2-4):109-139.
- Christensen V. and Walters C.J. 2004b. Trade-offs in ecosystem-scale optimization of fisheries management policies. *Bulletin of Marine Science* 74:549-562.
- Cushing, D. H., 1975. *Marine ecology and fisheries*. In: *Cambridge University Press*, Cambridge, 278 p.
- Dalsgaard, J. P. T., Lightfoot, C., and Christensen, V. 1995. Towards quantification of ecological sustainability in farming systems analysis. *Ecological Engineering*, 4(3):181-189.
- Deriso, R. B. 1980. Harvesting strategies and parameter estimation for an age-structured model. *Can. J. Fish. Aquat. Sci.*, 37:268-282.
- Ernest, S. K. M., and Brown, J. H. 2001. Delayed Compensation for Missing Keystone Species by Colonization. *Science*, 292(5514):101-104.
- Finn, J. T. 1976. Measures of ecosystem structure and function derived from analysis of flows. *J. Theor. Biol.*, 56:363-380.
- Froese, R., and Pauly, D., eds., 2000. *FishBase 2000: Concepts, design and data sources*. ICLARM, Los Baños, Philippines, 346 pp.
- Funtowicz, S. O., and Ravetz, J. R., 1990. *Uncertainty and Quality in Science for Policy*. Kluwer, Dordrecht.
- Gayaniilo, F. C. J., Sparre, P., and Pauly, D., 1996. The FAO-ICLARM Fish Stock Assessment Tools (FiSAT) User's Guide. In: *FAO Computerized Information Series (Fisheries)* No. 7. FAO, Rome. 126 p.
- Golley, F. B., 1993. *A History of the Ecosystem Concept in Ecology*. In: *Yale University Press*, New Haven.

- Guénette, S., and Diallo, I., 2002. Addenda: Eléments pour la construction de modèles de l'écosystème de la zone économique de Guinée pour les années 1985 et 1998. In: Modèles trophiques des écosystèmes marins nord-ouest africains / Trophic models of northwest African marine ecosystems. Projet SIAP, Module Ecopath, Document Technique N° 3 (SIAP/EP/DT/03). pp. 104-108, Ed. by D. Pauly, J. M. Vakily, and M. L. Palomares, SIAP Project Coordination Unit, Conakry, Guinea
- Hannon, B. 1973. The structure of ecosystems. *J. Theor. Biol.*, 41:535-546.
- Hannon, B., and Joiris, C. 1989. A seasonal analysis of the southern North Sea ecosystem. *Ecology*, 70(6):1916-1934.
- Hilborn, R., and Walters, C. J. 1987. A general model for simulation of stock and fleet dynamics in spatially heterogeneous fisheries. *Canadian Journal Of Fisheries And Aquatic Sciences*, 44(7):1366-1369.
- Hoenig, J. M. 1983. Empirical use of longevity data to estimate mortality rates. *Fish. Bull.*, 82(1):898-903.
- Hurlbert, S. H. 1978. The measurement of niche overlap and some relatives. *Ecology*, 59:67-77.
- Jarre, A., Muck, P., and Pauly, D., 1991a. Two approaches for modelling fish stock interactions in the Peruvian upwelling ecosystem. 171-184 pp.
- Jarre, A., Muck, P., and Pauly, D. 1991b. Two approaches for modelling fish stock interactions in the Peruvian upwelling ecosystem. *ICES mar. Sci. Symp.*, 193:178-184.
- Jarre, A., Palomares, M. L., Soriano, M. L., Sambilay, V. C., Jr., and Pauly, D., 1991c. Some new analytical and comparative methods for estimating the food consumption of fish. 99-108 pp.
- Laska, M. S., and Woottom, J. T. 1998. Theoretical concepts and empirical approaches to measuring interaction strength. *Ecology*, 79:461-476.
- Leontief, W. W., 1951. The Structure of the U.S. Economy. Oxford University Press, New York.
- Libralato, S., Christensen, V., and Pauly, D. 2006. A method for identifying keystone species in food web models. *Ecological Modelling*, 195(3-4):153-171.
- Liermann, M., and Hilborn, R. 1997. Depensation in fish stocks: a hierachic Bayesian meta-analysis. *Canadian Journal Of Fisheries And Aquatic Sciences*, 54:1976-1984.
- Lindeman, R. L. 1942. The trophic-dynamic aspect of ecology. *Ecology*, 23:399-418.
- Loman, J. 1986. Use of overlap indices as competition coefficients: tests with field data. *Ecological Modelling*, 34:231-243.
- MacDonald, J. S., and Green, R. H. 1983. Redundancy of variables used to describe importance of prey species in fish diets. *Can. J. Fish. Aquat. Sci.*, 40:635-637.
- Mackay, A. 1981. The generalized inverse. *Practical Computing* (September), 108-110.
- Magnússon, K. G., 1995. An overview of the multispecies VPA - theory and applications. In: *Reviews in Fish Biology and Fisheries*, 5(2): 195-212.
- Majkowski, J., 1982. Usefulness and applicability of sensitivity analysis in a multispecies approach to fisheries management. In: *Theory and management of tropical fisheries*. ICLARM Conf. Proc. 9. pp. 149-165, Ed. by D. Pauly and G. I. Murphy,
- Martell, S. 1999. Incorporating seasonality into Ecopath. *FishBytes*, 5(6):1-3. Fisheries Centre, UBC.
- McAllister, M. K., Pikitch, E. K., Punt, A. E., and Hilborn, R. 1994. A Bayesian approach to stock assessment and harvest decisions using the sampling/importance resampling algorithm. *Canadian Journal Of Fisheries And Aquatic Sciences*, 51(12):2673-2687.
- Mendelsohn, R., 1989. Reanalysis of recruitment estimates of the Peruvian anchoveta in relation to other population parameters and the surrounding environment. In: *The Peruvian Upwelling Ecosystem: Dynamics and Interactions*. pp. 364-385, Ed. by D. Pauly, P. Muck, J. Mendo, and I. Tsukayama, ICLARM Conference Proceedings 18,
- Moriarty, D. J. W., and Pullin, R. S. V., eds., 1987. Detritus and microbial ecology in aquaculture. ICLARM Conference Proceedings 14, 420 p.
- Myers, R. A., Barrowman, N. J., Hutchings, J. A., and Rosenberg, A. A. 1995. Population dynamics of exploited fish stocks at low population levels. *Science*, 269(5227):1106-1108.
- Naeem, S., and Li, S. 1997. Biodiversity enhances ecosystem reliability. *Nature*, 390(6659):507-509.
- Nash, J. C., 1979. Compact Numerical Methods for Computers: Linear Algebra and Functional Minimization. Adam Hilger Ltd, Bristol.

- Nee, S. 1990. Community construction. *Trends Ecol. Evol.*, 5(10):337-339.
- Ney, J. J. 1990. Trophic economics in fisheries: assessment of demand-supply relationships between predators and prey. *Rev. Aquat. Sci.*, 2(1):55-81.
- Odum, E. P. 1969. The strategy of ecosystem development. *Science*, 164:262-270.
- Odum, E. P., 1971. *Fundamentals of Ecology*. W.B. Saunders Co, Philadelphia. 574 pp.
- Odum, H. T. 1988. Self-organization, transformity and information. *Science*, 242:1132-1139.
- Odum, W. E., and Heald, E. J., 1975. The detritus-based food web of an estuarine mangrove community. In: *Estuarine research*. pp. 265-286, Ed. by L. E. Cronin, Academic Press, New York, Vol. 1.
- Okey, T. A., Banks, S., Born, A. F., Bustamante, R. H., Calvopiña, M., Edgar, G. J., Espinoza, E., Fariña, J. M., Garske, L. E., Reck, G. K., Salazar, S., Shepherd, S., Toral-Granda, V., and Wallem, P. 2004. A trophic model of a Galápagos subtidal rocky reef for evaluating fisheries and conservation strategies. *Ecological Modelling*, 172:383-401.
- Okey, T. A., and Pauly, D., 1998. A trophic mass-balance model of Alaska's Prince William Sound ecosystem, for the post-spill period 1994-1996. Report, Fisheries Centre research reports. Vancouver BC [Fish. Cent. Res. Rep.], 1998, vol. 6, no. 4, 155 pp.
- Okey, T. A., and Pauly, D., eds., 1999. Trophic mass-balance model of Alaska's Prince William Sound ecosystem for the post-spill period 1994-1996. Fisheries Centre University of British Columbia, Vancouver, B.C., Canada, xii, 138 p.: p., col. ill., maps (some col.), 128 cm. pp.
- Paine, R. T. 1969. A note on trophic complexity and community stability. *American Naturalist*, 103:91-93.
- Paine, R. T. 1992. Food-web analysis through field measurement of per capita interaction strength. *Nature*, 355(6355):73-75.
- Paine, R. T. 2002. Trophic Control of Production in a Rocky Intertidal Community. *Science*, 296(5568):736-739.
- Palomares, M. L. D., and Pauly, D. 1989. A multiple regression model for predicting the food consumption of marine fish populations. *Aust. J. Mar. Freshwat. Res.*, 40:259-273.
- Palomares, M. L. D., and Pauly, D. 1998. Predicting food consumption of fish populations as functions of mortality, food type, morphometrics, temperature and salinity. *Marine & Freshwater Research*, 49(5):447-453.
- Pauly, D. 1980. On the interrelationships between natural mortality, growth parameters, and mean environmental temperature in 175 fish stocks. *J. Cons. int. Explor. Mer*, 39:175-192.
- Pauly, D., 1984. Fish population dynamics in tropical waters: A manual for use with programmable calculators. ICLARM, MANILA (PHILIPPINES).
- Pauly, D. 1986. A simple method for estimating the food consumption of fish populations from growth data of food conversion experiments. *U.S. Fish. Bull.*, 84(4):827-840.
- Pauly, D., 1989. Food consumption by tropical and temperate marine fishes: some generalizations. In: *J. Fish Biol. (Suppl. A)*, pp. 11-20.
- Pauly, D., and Christensen, V., 1993. Stratified models of large marine ecosystems: a general approach and an application to the South China Sea. In: *Large marine ecosystems: stress, mitigation and sustainability*. AAAS Press, Washington, DC. pp. 148-174, Ed. by K. Sherman, L. M. Alexander, and B. D. Gold,
- Pauly, D., and Christensen, V. 1995. Primary production required to sustain global fisheries. *Nature*, 374(6519):255-257 [Erratum in *Nature*, 376: 279].
- Pauly, D., Christensen, V., Dalsgaard, J., Froese, R., and Torres, F., Jr. 1998a. Fishing down marine food webs. *Science*, 279(5352):860-863.
- Pauly, D., Christensen, V., and Walters, C. 2000. Ecopath, Ecosim, and Ecospace as tools for evaluating ecosystem impact of fisheries. *ICES Journal of Marine Science*, 57(3):697-706.
- Pauly, D., Moreau, J., and Abad, N. 1995. Comparison of age-structured and length-converted catch curves of brown trout *Salmo trutta* in two French rivers. *Fisheries Research*, 22:197-204.
- Pauly, D., Pitcher, T., and Preikshot, D., eds., 1998b. Back to the future: Reconstructing the Strait of Georgia ecosystem. *Fisheries Centre Research Reports*, 6(5), 103 pp.
- Pauly, D., Soriano-Bartz, M., and Palomares, M. L., 1993a. Improved construction, parametrization and interpretation of steady-state ecosystem models. In: *Trophic models of aquatic ecosystems*. ICLARM Conference Proceedings No. 26. pp. 1-13, Ed. by V. Christensen and D. Pauly,

- Pauly, D., Soriano-Bartz, M. L., and Palomares, M. L. D., 1993b. Improved construction, parametrization and interpretation of steady-state ecosystem models. ICLARM, MANILA (PHILIPPINES). 1-13 pp.
- Pianka, E. R. 1973. The structure of lizard communities. *Ann. Rev. Ecol. Syst.*, 14:53-74.
- Piraino, S., Fanelli, G., and Boero, F. 2002. Variability of species' roles in marine communities: change of paradigms for conservation priorities. *Marine Biology*, 140:1067-1074.
- Polovina, J. J. 1984a. Model of a coral reef ecosystems I. The ECOPATH model and its application to French Frigate Shoals. *Coral Reefs*, 3(1):1-11.
- Polovina, J. J. 1984b. An overview of the ECOPATH model. *Fishbyte*, 2(2):5-7.
- Polovina, J. J., and Marten, G. G., 1982. A comparative study of fish yields from various tropical ecosystems. In: Theory and management of tropical fisheries. ICLARM Conference Proceedings. 9. pp. 255-286, Ed. by D. Pauly and G. I. Murphy,
- Power, M. E., Tilman, D., Estes, J. A., Menge, B. A., Bond, W. J., Mills, L. S., Daily, G., Castilla, J. C., Lubchenco, J., and Paine, R. T. 1996. Challenges in the quest for keystones. *Bioscience*, 46(8):609-620.
- Ricker, W. E., 1968. Food from the sea. In: Resources and man. A study and recommendations. pp. 87-108, Ed. by C. o. Resources and Man, W.H. Freeman and Company, San Francisco
- Robson, D. S., and Chapman, D. G. 1961. Catch curves and mortality rates. *Trans. Amer. Fish. Soc.*, 90(2):181-189.
- Schnute, J. 1987. A general fishery model for a size-structured fish population. *Can. J. Fish. Aquat. Sci.*, 44:924-940.
- Shannon, L. J., Christensen, V., and Walters, C. 2004. Modelling stock dynamics in the southern Benguela ecosystem over the last twenty five years. *African Journal of Marine Science*, 26:179-196.
- Sheldon, R. W., Prahask, A., and Sutcliffe Jr., W. H. 1972. The size distribution of particles in the ocean. *Limnology and Oceanography*, 17:327-340.
- Sheldon, R. W., Sutcliffe Jr., W. H., and Paranjape, M. A. 1977. The structure of the pelagic food chain and the relationship between plankton and fish production. *J. Fish. Res. Board Can.*, 34:2344-2353.
- Skud, B. E., 1975. Revised estimates of halibut abundance and the Thompson-Burkenroad debate. International Pacific Halibut Commission Scientific Report 56,
- Sparre, P. 1991. An introduction to multispecies virtual analysis. *ICES Mar. Sci. Symp.*, 193:12-21.
- Tilman, D. 2000. Causes, consequences and ethics of biodiversity. *Nature*, 405(6783):208-211.
- Ulanowicz, R. E., 1986. Growth and Development: Ecosystem Phenomenology. Springer Verlag (reprinted by iUniverse, 2000), New York. 203 pp.
- Ulanowicz, R. E., 1995. Ecosystem Trophic Foundations: Lindeman Exonerata. In: Chapter 21 p. 549-560 In: B.C. Patten and S.E. Jørgensen (eds.) Complex ecology: the part-whole relation in ecosystems, Englewood Cliffs, Prentice Hall.
- Ulanowicz, R. E., and Norden, J. S. 1990. Symmetrical overhead in flow and networks. *Int. J. Systems Sci.*, 21(2):429-437.
- Ulanowicz, R. E., and Puccia, C. J. 1990. Mixed trophic impacts in ecosystems. *Coenoses*, 5:7-16.
- Vitousek, P. M., Ehrlich, P. R., and Ehrlich, A. H. 1986. Human appropriation of the products of photosynthesis. *Bioscience*, 36:368-373.
- Wackernagel, M., and Rees, W., 1996. Our ecological footprint: reducing the human impact on the Earth. In: New Society Publishers. Gabriela Island. 160 p.
- Walters, C. J. and F. Juanes (1993). Recruitment limitations as a consequence of natural selection for use of restricted feeding habitats and predation risk taking by juvenile fishes. *Can. J. Fish. Aquat. Sci.* 50, 2058(2070).
- Walters, C. J. and J. Korman (1999). Linking recruitment to trophic factors: revisiting the Beverton-Holt recruitment model from a life history and multispecies perspective. *Rev. Fish Biol. Fish.* 9, 187-202.
- Walters, C., and Kitchell, J. F. 2001. Cultivation/depensation effects on juvenile survival and recruitment: implications for the theory of fishing. *Canadian Journal Of Fisheries And Aquatic Sciences*, 58:39-50.
- Walters, C., and Maguire, J. J. 1996. Lessons for stock assessment from the northern cod collapse. *Reviews In Fish Biology And Fisheries*, 6(2):125-137.

- Walters, C., and Parma, A. M. 1996. Fixed exploitation rate strategies for coping with effects of climate change. Canadian Journal Of Fisheries And Aquatic Sciences, 53(1):148-158.
- Walters, C., Christensen, V., and Pauly, D. 1997. Structuring dynamic models of exploited ecosystems from trophic mass-balance assessments. Reviews In Fish Biology And Fisheries, 7(2):139-172.
- Walters, C., Pauly, D., and Christensen, V. 1999. Ecospace: Prediction of mesoscale spatial patterns in trophic relationships of exploited ecosystems, with emphasis on the impacts of marine protected areas. Ecosystems, 2(6):539-554.
- Walters, C., Pauly, D., Christensen, V., and Kitchell, J. F. 2000. Representing density dependent consequences of life history strategies in aquatic ecosystems: EcoSim II. Ecosystems, 3(1):70-83.
- Walters, G. M., Olson, R. J., Francis, R. C., Fiedler, P. C., Polovina, J. J., Reilly, S. B., Aydin, K. Y., Boggs, C. H., Essington, T. E., Walters, C. J., and Kitchell, J. F. 2003. Physical forcing and the dynamics of the pelagic ecosystem in the eastern tropical Pacific: simulations with ENSO-scale and global-warming climate drivers. Canadian Journal Of Fisheries And Aquatic Sciences, 60(9):1161-1175. Christensen V. and Walters C.J. (2004) Trade-offs in ecosystem-scale optimization of fisheries management policies. Bulletin of Marine Science !74:549-562.
- Winberg, G. G., 1956. Rate of metabolism and food requirements of fishes. In: Transl. Fish. Res. Board Can., Translation Series 194. pp. 1-253.