



UvA-DARE (Digital Academic Repository)

On the interplay of life-history and population dynamics: emergent consequences of individual variability and specialization

van Kooten, T.

[Link to publication](#)

Citation for published version (APA):

van Kooten, T. (2004). *On the interplay of life-history and population dynamics: emergent consequences of individual variability and specialization.*

General rights

It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

Disclaimer/Complaints regulations

If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: <https://uba.uva.nl/en/contact>, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.

Bibliography

- J. H. Addicott. Mutualistic interactions in population and community processes. In P. W. Price, C. N. Slobodchikoff, and W. S. Gaud, editors, *A new ecology: novel approaches to interactive systems*, pages 437–455. Wiley, New York, USA, 1984.
- R.A. Armstrong and R. McGehee. Competitive exclusion. *American Naturalist*, 115(2):151–170, 1980.
- W. D. Atkinson and B. Shorrocks. Competition on a divided and ephemeral resource: A simulation model. *Journal of Animal Ecology*, 50: 461–471, 1981.
- R. W. Baird and L. M. Dill. Ecological and social determinants of group size in transient killer whales. *Behavioral Ecology*, 7(4):408–416, 1996.
- L. W. Barnhouse. The role of models in ecological risk assessment - a 1990s perspective. *Environ. Toxicol. Chem.*, 11(12):1751–1760, 1992.
- F. W. H. Beamish. Apparent specific dynamic action of largemouth bass, *Micropterus salmoides*. *Journal of the Fisheries Research Board of Canada*, 31:75–87, 1974.
- P. A. Bednekoff and S. L. Lima. Re-examining safety in numbers: interactions between risk dilution and collective detection depend upon predator targeting behaviour. *Proceedings of the Royal Society of London B: Biological Sciences*, 265(1409):2021–2026, 1998.
- M. Begon, J. L. Harper, and C. R. Townsend. *Ecology*. Blackwell Scientific Publications, Cambridge, Massachusetts, U.S.A., second edition, 1990.
- M. D. Bertness and R. Callaway. Positive interactions in communities. *Trends in Ecology and Evolution*, 9(5):191–193, 1994.
- B. C. R. Bertram. Vigilance and group size in ostriches. *Animal Behaviour*, 28:278–286, 1980.
- D. J. Booth. Juvenile groups in a coral-reef damselfish - density-dependent effects on individual fitness and population demography. *Ecology*, 76(1):91–106, 1995.
- D. H. Boucher. The idea of mutualism, past and future. In D. H. Boucher, editor, *The biology of mutualism: Ecology and evolution*, pages 1–27. Oxford University Press, Oxford, UK, 1985.
- D. S. Boukal and L. Berec. Single-species models of the Allee effect: Extinction boundaries, sex ratios and mate encounters. *Journal of Theoretical Biology*, 218(3):375–394, 2002.
- C. J. Briggs. Competition among parasitoid species on a stage-structured host and its effect on host suppression. *American Naturalist*, 141(3):372–397, 1993.
- C. J. Briggs, S. M. Sait, M. Begon, D. J. Thompson, and H. C. J. Godfray. What causes generation cycles in populations of stored-product moths? *Journal of Animal Ecology*, 69(2): 352–366, 2000.
- J. F. Bruno, J. J. Stachowicz, and M. D. Bertness. Inclusion of facilitation into ecological theory. *Trends in Ecology and Evolution*, 18(3):119–125, 2003.
- P. Byström, L. Persson, and E. Wahlström. Competing predators and prey: Juvenile bottlenecks in whole-lake experiments. *Ecology*, 79(6):2153–2167, 1998.
- W. A. III Calder. *Size, Function and Life-History*. Harvard University Press, Cambridge, MA, 1984.
- T. Caraco. Time budgeting and group size: a test of theory. *Ecology*, 60:618–627, 1979a.
- T. Caraco. Time budgeting and group size: a theory. *Ecology*, 60:611–617, 1979b.
- H. Caswell. *Matrix Population Models: Construction, Analysis, and Interpretation*. Sinauer Associates, Sunderland, Massachusetts, U.S.A., 1989.

- H. Caswell. *Matrix Population Models: Construction, Analysis, and Interpretation*. Sinauer Associates, Sunderland MA, Sunderland MA, USA, second edition edition, 2001.
- H. Caswell and A. Meredith John. From the individual to the population in demographic models. In D.L. DeAngelis and L.J. Gross, editors, *Individual-Based Models and Approaches in Ecology*, chapter 3, pages 36–61. Chapman & Hall, New York, U.S.A., 1992.
- H. Caswell, R. M. Nisbet, A. M. de Roos, and S. Tuljapurkar. Structured population models: Many methods, a few basic concepts. In H. Caswell and S. Tuljapurkar, editors, *Structured-Population Models in Marine, Terrestrial, and Freshwater Systems*, volume 18 of *Population and Community Biology*, chapter 1, pages 3–17. Chapman & Hall, New York, U.S.A., 1997.
- L. Cazzador. Analysis of oscillations in yeast continuous cultures by a new simplified model. *Bulletin of Mathematical Biology*, 53(5):685–700, 1991.
- P. Chesson. Environmental variation and the coexistence of species. In J. Diamond and T. J. Case, editors, *Community ecology*, pages 240–256. Harper & Row, New York, 1986.
- P. Chesson. A need for niches. *Trends in Ecology and Evolution*, 6(1):26–28, 1991.
- P. Chesson. General theory of competitive coexistence in spatially-varying environments. *Theoretical Population Biology*, 58(3):211–237, 2000a.
- P. Chesson. Mechanisms of maintenance of species diversity. *Annual Review of Ecology and Systematics*, 31:343–, 2000b.
- D. Claessen. *Dwarfs and Giants, the dynamic interplay of size-dependent cannibalism and competition*. PhD thesis, University of Amsterdam, Amsterdam, The Netherlands, 2002.
- D. Claessen, A.M. DeRoos, and L. Persson. Dwarfs and giants: cannibalism and competition in size-structured populations. *American Naturalist*, 155(2):219–237, 2000.
- D. Claessen, C. Van Oss, A. M. de Roos, and L. Persson. The impact of size-dependent predation on population dynamics and individual life history. *Ecology*, 83(6):1660–1675, 2002.
- F. Courchamp, T. Clutton-Brock, and B. Grenfell. Inverse density dependence and the Allee effect. *Trends in Ecology and Evolution*, 14(10):405–410, 1999.
- A. M. De Roos, E. McCauley, and W. G. Wilson. Mobility versus density limited predator-prey dynamics on different spatial scales. *Proceedings of the Royal Society of London B: Biological Sciences*, 246:117–122, 1991.
- A. M. De Roos and L. Persson. Physiologically structured models - from versatile technique to ecological theory. *Oikos*, 94(1):51–71, 2001.
- A. M. De Roos and L. Persson. Size-dependent life-history traits promote catastrophic collapses of top predators. *Proceedings of the National Academy of Sciences of the USA*, 99(20):12907–12912, 2002.
- A. M. de Roos and L. Persson. Competition in size-structured populations: mechanisms inducing cohort formation and population cycles. *Theoretical Population Biology*, 63(1):1–16, 2003.
- A. M. De Roos, L. Persson, and E. McCauley. The influence of size-dependent life-history traits on the structure and dynamics of populations and communities. *Ecology Letters*, 6:473–487, 2003a.
- A.M. De Roos, L. Persson, and H.R. Thieme. Emergent allee effects in top predators feeding on structured prey populations. *Proceedings of the Royal Society of London B: Biological Sciences*, 270(1515):611–618, 2003b.
- D. L. DeAngelis, D. C. Cox, and C. C. Coutant. Cannibalism and size dispersal in young-of-the-year largemouth bass: experiments and model. *Ecological Modelling*, 8:133–148, 1979.
- D. L. DeAngelis, K. A. Rose, L. B. Crowder, E. A. Marschall, and D. Lika. Fish cohort dynamics - application of complementary modeling approaches. *American Naturalist*, 142(4):604–622, 1993.
- D.L. DeAngelis and K.A. Rose. Which individual-based approach is most appropriate for a given problem. In D.L. DeAngelis and L.J. Gross, editors, *Individual-Based Models and Approaches in Ecology*, chapter 4, pages 67–87. Chapman & Hall, New York, U.S.A., 1992.

- A. M. DeRoos, K. Leonardsson, L. Persson, and G. G. Mittelbach. Ontogenetic niche shifts and flexible behaviour in size-structured populations. *Ecological Modelling*, 72(2):271–292, 2002.
- A.M. DeRoos. *Daphnids on a Train: Development and Application of a New Numerical Method for Physiologically Structured Population Models*. Ph.D. thesis, Leiden University, The Netherlands, 1989.
- A.M. DeRoos, O. Diekmann, and J.A.J. Metz. Studying the dynamics of structured population models: a versatile technique and its application to *Daphnia*. *American Naturalist*, 139(1):123–147, 1992.
- U. Dieckmann, R. Law, and J. A. J. Metz, editors. *The geometry of ecological interactions*. Cambridge university press, Cambridge, UK, 2000.
- S. Diehl and M. Feissel. Effects of enrichment on three-level food chains with omnivory. *American Naturalist*, 155(2):200–218, 2000.
- O. Diekmann, M. Gyllenberg, and J. A. J. Metz. Steady-state analysis of structured population models. *Theoretical Population Biology*, 63(4):309–338, 2003.
- P. J. Diggle. A spatial stochastic model of interplant competition. *Journal of Applied Probability*, 13:662–671, 1976.
- Q. Dong and D. L. DeAngelis. Consequences of cannibalism and competition for food in a smallmouth bass population: an individual-based modeling study. *Transactions of the American Fisheries Society*, 127:174–191, 1998.
- B. Ebenman and L. Persson. Dynamics of age- and size-structured populations—an overview. In B. Ebenman and L. Persson, editors, *Size-Structured Populations: Ecology and Evolution*, pages 3–9. Springer-Verlag, Berlin, Germany, 1988a.
- B. Ebenman and L. Persson, editors. *Size-Structured Populations: Ecology and Evolution*. Springer-Verlag, Berlin, Germany, 1988b.
- L. Edelstein-Keshet. *Mathematical models in Biology*. Random House, New York, U.S.A., 1988.
- E. M. Elliott. The energetics of feeding, metabolism and growth of brown trout (*Salmo trutta* L.) in relation to body weight, water temperature and ration size. *Journal of Animal Ecology*, 45:923–948, 1976.
- D.S. Fretwell and H.L. Lucas. On territorial behaviour and other factors influencing habitat distribution in birds. *Acta Biotheoretica*, 19:16–36, 1970.
- S. D. Gaines and M. D. Bertness. Dispersal of juveniles and variable recruitment in sessile marine species. *Nature*, 360(6404):579–580, 1992.
- G.F. Gause. *The struggle for existence*. Williams & Wilkins Co., Baltimore, USA, 1934.
- L.-A. Giraldeau and D. L. Gillis. Optimal group size can be stable: a reply to sibly. *Animal Behaviour*, 33:666–667, 1985.
- C. E. Goulden, L. L. Henry, and A. J. Tessier. Body size, energy reserves, and competitive ability in three species of cladocera. *Ecology*, 63(6):1780–1789, 1982.
- V. Grimm. Ten years of individual-based modelling in ecology: what have we learned and what could we learn in the future? *Ecological Modelling*, 115(2-3):129–148, 1999.
- W. S. C. Gurney, D. A. J. Middleton, R. M. Nisbet, E. McCauley, W. W. Murdoch, and A. de Roos. Individual energetics and the equilibrium demography of structured populations. *Theoretical Population Biology*, 49(3):344–368, 1996.
- J. Haigh and J. Maynard Smith. Can there be more predators than prey. *Theoretical Population Biology*, 3:295–308, 1972.
- A. Hastings and R. F. Constantino. Cannibalistic egg-larva interactions in *tribolium*: an explanation for the oscillations in population numbers. *American Naturalist*, 130:36–52, 1987.
- R. D. Holt and G. A. Polis. A theoretical framework for intraguild predation. *American Naturalist*, 149(4):745–764, 1997.
- P. R. Hosseini. How localized consumption stabilizes predator-prey systems with finite frequency of mixing. *American Naturalist*, 161:567–585, 2003.

- M. Huston, D. DeAngelis, and W. Post. New computer-models unify ecological theory. *Bio-science*, 38(10):682-691, 1988.
- M. A. Huston and D. L. DeAngelis. Size bimodality in monospecific plant populations: a critical review of potential mechanisms. *American Naturalist*, 129:768-707, 1987.
- G. E. Hutchinson. The paradox of the plankton. *American Naturalist*, 95:137-145, 1961.
- P. Karås and G. Thoreson. An application of a bioenergetics model to Eurasian perch (*Perca fluviatilis* L.). *Journal of Fish Biology*, 41(2): 2170-230, 1992.
- R. E. Kenward. Hawks and doves: factors affecting success and selection in goshawk attacks on wood-pigeons. *Journal of Animal Ecology*, 47: 449-460, 1978.
- M. A. Kirkilionis, O. Diekmann, B. Lissner, M. Nool, B. Sommeijer, and A. M. de Roos. Numerical continuation of equilibria of physiologically structured population models. I. theory. *Mathematical Models & Methods in Applied Sciences*, 11(6):1101-1127, 2001.
- J. F. Kitchell, D. J. Stewart, and D. Weininger. Applications of a bioenergetics model to yellow perch (*Perca flavescens*) and walleye (*Stizostedion vitreum vitreum*). *Journal of the Fisheries Research Board of Canada*, 34: 1922-1935, 1977.
- S. A. L. M. Kooijman. *Dynamic energy and mass budgets in biological systems*. Cambridge University Press, Cambridge, UK, second edition, 2000.
- J. Krause and G. D. Ruxton. *Living in Groups*. Oxford Series in Ecology and Evolution. Oxford University Press, Oxford, U.K., 2002.
- Y. A. Kuznetsov. *Elements of applied bifurcation theory*. Springer Verlag, New York, Second edition, 1998.
- P. H. Leslie. On the use of matrices in certain population mathematics. *Biometrika*, 33:183-212, 1945.
- P. H. Leslie. Some further notes on the use of matrices in population mathematics. *Biometrika*, 33:213-245, 1948.
- O. Lessmark. *Competition between perch (Perca fluviatilis) and roach (Rutilus rutilus) in South Swedish lakes*. Ph.D. thesis, University of Lund, Sweden, 1983.
- R. Levins. Coexistence in a variable environment. *American Naturalist*, 114:765-783, 1979.
- T. Lindström. On the relation fish size - food size. *Reports from the Institute for Freshwater Research Drottningholm*, 36:133-147, 1955.
- J. G. Liu and P. S. Ashton. Individual-based simulation-models for forest succession and management. *For. Ecol. Manage.*, 73(1-3): 157-175, 1995.
- A. Lomnicki. Individual differences between individuals and the natural regulation of their numbers. *Journal of Animal Ecology*, 47:461-475, 1978.
- S. Lundberg and L. Persson. Optimal body size and resource density. *Journal of Theoretical Biology*, 164:163-180, 1993.
- A. E. Magurran and B. H. Seghers. Variation in schooling and aggression amongst guppy (*Poecilia reticulata*) populations in Trinidad. *Behaviour*, 118:214-234, 1991.
- E. McCauley, R. M. Nisbet, A. M. de Roos, W. W. Murdoch, and W. S. C. Gurney. Structured population models of herbivorous zooplankton. *Ecological Monographs*, 66(4):479-501, 1996.
- E. McCauley, W. G. Wilson, and A. M. de Roos. Dynamics of age-structured and spatially structured predator-prey interactions - individual-based models and population-level formulations. *American Naturalist*, 142(3): 412-442, 1993.
- J.A.J. Metz and A.M. DeRoos. The role of physiologically structured population models within a general individual-based modelling perspective. In D.L. DeAngelis and L.J. Gross, editors, *Individual-based Models and Approaches in Ecology*, pages 88-111. Chapman & Hall, New York, U.S.A., 1992.
- J.A.J. Metz, A.M. DeRoos, and F. van den Bosch. Population models incorporating physiological structure: A quick survey of the basic concepts and an application to size-structured population dynamics in waterfleas. In B. Ebenman and L. Persson, editors, *Size-Structured Populations: Ecology and Evolution*, pages 106-126. Springer-Verlag, Berlin, Germany, 1988.

- J.A.J. Metz and O. Diekmann, editors. *The Dynamics of Physiologically Structured Populations*, volume 68 of *Lecture Notes in Biomathematics*. Springer-Verlag, Berlin, Germany, 1986.
- A. P. Moller and S. Legendre. Allee effect, sexual selection and demographic stochasticity. *Oikos*, 92(1):27-34, 2001.
- W. W. Murdoch, C. J. Briggs, and R. M. Nisbet. *Consumer-resource dynamics*. Monographs in population biology. Princeton University Press, Princeton/Oxford, 36 edition, 2003.
- W. W. Murdoch, B. E. Kendall, R. M. Nisbet, C. J. Briggs, E. McCauley, and R. Bolser. Single-species models for many-species food webs. *Nature*, 417(6888):541-543, 2002.
- W. W. Murdoch, McCauley, E., R. M. Nisbet, W. S. C. Gurney, and A. M. de Roos. Individual based models: Combining testability and generality. In D.L. DeAngelis and L.J. Gross, editors, *Individual-Based Models and Approaches in Ecology*, chapter 2, pages 18-35. Chapman & Hall, New York, U.S.A., 1992.
- W. W. Murdoch, R. M. Nisbet, E. McCauley, A. M. de Roos, and W. S. C. Gurney. Plankton abundance and dynamics across nutrient levels: Tests of hypotheses. *Ecology*, 79(4):1339-1356, 1998.
- R. A. Myers, N. J. Barrowman, J. A. Hutchings, and A. A. Rosenberg. Population-dynamics of exploited fish stocks at low population- levels. *Science*, 269(5227):1106-1108, 1995.
- R. M. Nisbet. Delay-differential equations for structured populations. In *Structured-Population Models in Marine, Terrestrial, and Freshwater Systems*, volume 18 of *Population and Community Biology*, pages 89-118. Chapman & Hall, New York, U.S.A., 1997.
- L. Oksanen, S.D. Fretwell, J. Arruda, and P. Niemela. Exploitation ecosystems in gradients of primary productivity. *American Naturalist*, 118(2):240-261, 1981.
- S. W. Pacala and J. A. Silander. Neighborhood models of plant population dynamics. I. Single species models of annuals. *American Naturalist*, 125:385-411, 1985.
- A. Papoulis. *Probability, random variables and stochastic processes*. McGraw - Hill Book Company, New York, U.S.A., 1965.
- S. J. Parulekar, G. B. Semones, M. J. Rolf, J. C. Lievense, and H. C. Lim. Induction and elimination of oscillations in continuous cultures of *saccharomyces cerevisiae*. *Biotechnology and Bioengineering*, 28:700-710, 1986.
- J. R. Pawlik. Chemical ecology of the settlement of benthic marine-invertebrates. *Oceanography and Marine Biology*, 30:273-335, 1992.
- L. Persson. Asymmetrical competition: are larger animals competitively superior? *American Naturalist*, 126:261-266, 1985.
- L. Persson. The effects of resource availability and distribution on size class interactions in perch, *Perca fluviatilis*. *Oikos*, 48(2):148-160, 1987.
- L. Persson. Asymmetries in competitive and predatory interactions in fish populations. In B. Ebenman and L. Persson, editors, *Size-Structured Populations: Ecology and Evolution*, pages 203-218. Springer-Verlag, Berlin, Germany, 1988.
- L. Persson, A.M. De Roos, D. Claessen, P. Byström, J. Lövgren, S. Sjögren, R. Svanbäck, E. Wahlström, and E. Westman. Gigantic cannibals driving a whole-lake trophic cascade. *Proceedings of the National Academy of Sciences of the USA*, 100: 4035-4039, 2003.
- L. Persson and L. A. Greenberg. Optimal foraging and habitat shift in perch, *Perca fluviatilis* in a resource gradient. *Ecology*, 71(5):1699-1713, 1990.
- L. Persson, K. Leonardsson, A.M. DeRoos, M. Gyllenberg, and B. Christensen. Ontogenetic scaling of foraging rates and the dynamics of a size-structured consumer-resource model. *Theoretical Population Biology*, 54: 270-293, 1998.
- R. H. Peters. *The Ecological Implications of Body Size*. Cambridge University Press, Cambridge, MA, 1983.
- G. A. Polis. Complex trophic interactions in deserts: an empirical critique to food web theory. *American Naturalist*, 138:123-155, 1991.

- G. A. Polis and R. D. Holt. Intraguild predation - the dynamics of complex trophic interactions. *Trends in Ecology and Evolution*, 7 (5):151-154, 1992.
- J. R. Post, M. Sullivan, S. Cox, N. P. Lester, C. J. Walters, E. A. Parkinson, A. J. Paul, L. Jackson, and B. J. Shuter. Canada's recreational fisheries: The invisible collapse? *Fisheries*, 27 (1):6-17, 2002.
- E. Ranta, H. Rita, and K. Lindstrom. Competition versus cooperation - success of individuals foraging alone and in groups. *American Naturalist*, 142(1):42-58, 1993.
- J. A. Rice, J. E. Breck, S. M. Bartell, and J. F. Kitchell. Evaluating the constraints of temperature, activity and consumption on growth of largemouth bass (*Micropterus salmoides*). *Environmental Biology of Fishes*, 9(3-4):263-276, 1983.
- J. A. Rice, T. J. Miller, K. A. Rose, L. B. Crowder, E. A. Marschall, A. S. Trebitz, and D. L. Deangelis. Growth-rate variation and larval survival - inferences from an individual-based size-dependent predation model. *Canadian Journal of Fisheries and Aquatic Science*, 50 (1):133-142, 1993.
- G. Roberts. Why individual vigilance declines as group size increases. *Animal Behaviour*, 51: 1077-1086, 1996.
- F. H. Rodd and D. N. Reznick. Variation in the demography of guppy populations: The importance of predation and life histories. *Ecology*, 78(2):405-418, 1997.
- B. L. Sanderson, T. R. Hrabik, J. J. Magnuson, and D. M. Post. Cyclic dynamics of a yellow perch (*perca flavescens*) population in an oligotrophic lake: evidence for the role of intraspecific interactions. *Canadian Journal of Fisheries and Aquatic Science*, 56(9):1534-1542, 1999.
- M. Scheffer, S. Carpenter, J. A. Foley, C. Folke, and B. Walker. Catastrophic shifts in ecosystems. *Nature*, 413(6856):591-596, 2001.
- O. J. Schmitz. Combining field experiments and individual-based modeling to identify the dynamically relevant organizational scale in a field system. *Oikos*, 89(3):471-484, 2000.
- O. J. Schmitz and G. Booth. Modelling food web complexity: The consequences of individual-based, spatially explicit behavioural ecology on trophic interactions. *Evolutionary Ecology*, 11(4):379-398, 1997.
- T. W. Schoener. Food webs from the small to the large: The Robert H. MacArthur award lecture. *Ecology*, 70(6):1559-1589, 1989.
- K. P. Sebens. The ecology of indeterminate growth in animals. *Annual Review of Ecology and Systematics*, 18:371-407, 1987.
- R. M. Sibly. Optimal group size is unstable. *Animal Behaviour*, 31:947-948, 1983.
- A. Sih, G. Englund, and D. Wooster. Emergent impacts of multiple predators on prey. *Trends in Ecology and Evolution*, 13(9):350-355, 1998.
- D. J. Solomon and A. E. Brafield. The energetics of feeding, metabolism and growth of perch (*Perca fluviatilis* L.). *Journal of Animal Ecology*, 31:699-718, 1972.
- P. A. Stephens and W. J. Sutherland. Consequences of the allee effect for behaviour, ecology and conservation. *Trends in Ecology and Evolution*, 14(10):401-405, 1999.
- W. A. Thompson, I. Vertinsky, and J. R. Krebs. The survival value of flocking in birds: a simulation model. *Journal of Animal Ecology*, 43: 785-820, 1974.
- J. W. Treasurer. Some aspects of the reproductive biology of perch *perca fluviatilis*: Fecundity, maturation and spawning behavior. *Journal of Fish Biology*, 18(6):729-740, 1981.
- J. A. Tyler and K. A. Rose. Individual variability and spatial heterogeneity in fish population models. *Reviews in Fish Biology and Fisheries*, 4(1):91-123, 1994.
- E. H. Van Nes, E. H. R. R. Lammens, and M. Scheffer. piscator, an individual-based model to analyze the dynamics of lake fish communities. *Ecol. Model.*, 152(2-3):261-278, 2002.
- T. VanKooten, A. M. De Roos, and L. Persson. Bistability and Allee effects as emergent properties of stage-specific predation. 2003. Unpublished manuscript.

- T. vanKooten, A. M. De Roos, and L. Persson. Local foraging and limited mobility: Dynamics of a size-structured consumer population. *Ecology*, 2003. In press.
- J. R. Vonesh and C. W. Osenberg. Multi-predator effects across life-history stages: non-additivity of egg- and larval-stage predation in an african treefrog. *Ecology Letters*, 6(6):503-508, 2003.
- J. Weiner, P. Stoll, H. Muller-Landau, and A. Jasentuliyana. The effects of density, spatial pattern, and competitive symmetry on size variation in simulated plant populations. *American Naturalist*, 158(4):438-450, 2001.
- E. E. Werner and S. D. Peacor. A review of trait-mediated indirect interactions in ecological communities. *Ecology*, 84(5):1083-1100, 2003.
- E.E. Werner. Size, scaling, and the evolution of complex life cycles. In B. Ebenman and L. Persson, editors, *Size-Structured Populations: Ecology and Evolution*, pages 60-81. Springer-Verlag, Berlin, Germany, 1988.
- E.E. Werner and J.F. Gilliam. The ontogenetic niche and species interactions in size-structured populations. *Annual Review of Ecology and Systematics*, 15:393-425, 1984.
- J. T. Wootton. The nature and consequences of indirect effects in ecological communities. *Annual Review of Ecology and Systematics*, 25: 443-466, 1994.