

## References

---

- Adams, D. C. and Anthony, C. D. (1996). Using randomization techniques to analyse behavioural data. *Animal Behaviour* 51, 733–738.
- Andersson, M. (1982). Female choice selects for extreme tail length in a widowbird. *Nature* 299, 818–820.
- Andersson, M. (1994). *Sexual Selection*. Princeton: Princeton University Press.
- Andersson, M. and Simmons, L. W. (2006). Sexual selection and mate choice. *Trends in Ecology and Evolution* 21, 296–302.
- Arkes, H. R. and Ayton, P. (1999). The sunk cost and Concorde effects: are humans less rational than lower animals? *Psychological Bulletin* 125, 591–600.
- Arnold, S. J. (1992). Constraints on phenotypic evolution. *American Naturalist* 140, S85–S108.
- Arnqvist, G. (2006). Sensory exploitation and sexual conflict. *Philosophical Transactions of the Royal Society of London, Series B* 361, 375–386.
- Arnqvist, G. and Rowe, L. (2005). *Sexual Conflict*. Princeton: Princeton University Press.
- Aspi, J., Jäkäläniemi, A., Tuomi, J. and Siikamäki, P. (2003). Multilevel phenotypic selection on morphological characters in a metapopulation of *Silene tatarica*. *Evolution* 57, 509–517.
- Axelrod, R. and Hamilton, W. D. (1981). The evolution of cooperation. *Science* 211, 1390–1396.
- Bakker, T. C. M. (1999). The study of intersexual selection using quantitative genetics. *Behaviour* 136, 1237–1265.
- Baskett, M. L., Levin, S. A., Gaines, S. D. and Dushoff, J. (2005). Marine reserve design and the evolution of size at maturation in harvested fish. *Ecological Applications* 15, 882–901.
- Bednekoff, P. A. and Houston, A. I. (1994). Avian daily foraging patterns: effects of digestive constraints and variability. *Evolutionary Ecology* 8, 36–52.
- Benton, T. G. and Grant, A. (1999). Optimal reproductive effort in stochastic, density-dependent environments. *Evolution* 53, 677–688.
- Benton, T. G., Plaistow, S. J. and Coulson, T. N. (2006). Complex population dynamics and complex causation: devils, details and demography. *Proceedings of the Royal Society of London, Series B* 273, 1173–1181.

- Berg, F., Gustafson, U. and Andersson, L. (2006). The uncoupling protein 1 gene (UCP1) is disrupted in the pig lineage: a genetic explanation for poor thermoregulation in piglets. *PLoS Genetics* 2, 1178–1181.
- Björklund, M. (2004). Constancy of the G matrix in ecological time. *Evolution* 58, 1157–1164.
- Blows, M. W. and Hoffmann, A. A. (2005). A reassessment of genetic limits to evolutionary change. *Ecology* 86, 1371–1384.
- Boake, C. R. B. (1994). *Quantitative Genetic Studies of Behavioral Evolution*. Chicago: Chicago University Press.
- Borges, J. L. (1975). *A Universal History of Infamy*. London: Penguin Books.
- Bowler, D. E. and Benton, T. G. (2005). Causes and consequences of animal dispersal strategies: relating individual behaviour to spatial dynamics. *Biological Reviews* 80, 205–225.
- Brandt, L. S. E. and Greenfield, M. D. (2004). Condition-dependent traits and the capture of genetic variance in male advertisement song. *Journal of Evolutionary Biology* 17, 821–828.
- Brodin, A. (2000). Why do hoarding birds gain fat in winter in the wrong way? Suggestions from a dynamic model. *Behavioral Ecology* 11, 27–39.
- Brodin, A. (2007). Theoretical models of adaptive energy management in small wintering birds. *Philosophical Transactions of the Royal Society London, Series B*, in press.
- Brommer, J. E. (2000). The evolution of fitness in life-history theory. *Biological Reviews* 75, 377–404.
- Brommer, J. E., Merilä, J. and Kokko, H. (2002). Reproductive timing and individual fitness. *Ecology Letters* 5, 802–810.
- Brommer, J. E., Gustafsson, L., Pietiäinen, H. and Merilä, J. (2004). Single-generation estimates of individual fitness as proxies for long-term genetic contribution. *American Naturalist* 163, 505–517.
- Bruce, M. J., Herberstein, M. E. and Elgar, M. A. (2001). Signalling conflict between prey and predator attraction. *Journal of Evolutionary Biology* 14, 786–794.
- Bulmer, M. (1994). *Theoretical Evolutionary Ecology*. Sunderland: Sinauer.
- Butlin, R. K. and Tregenza, T. (2005). The way the world might be. *Journal of Evolutionary Biology* 18, 1205–1208.
- Camerer, C. F. (2003). *Behavioral Game Theory: Experiments in Strategic Interaction*. Princeton: Princeton University Press.
- Candolin, U. (1999). The relationship between signal quality and physical condition: is sexual signalling honest in the three-spined stickleback? *Animal Behaviour* 58, 1261–1267.
- Candolin, U. (2000). Increased signalling effort when survival prospects decrease: male–male competition ensures honesty. *Animal Behaviour* 60, 417–422.
- Case, T. J. (2000). *An Illustrated Guide to Theoretical Ecology*. Oxford: Oxford University Press.
- Chapman, T., Arnqvist, G., Bangham, J. and Rowe, L. (2003). Sexual conflict. *Trends in Ecology and Evolution* 18, 41–47.
- Charlesworth, B. (1990). Optimization models, quantitative genetics and mutation. *Evolution* 44, 520–538.

- Christiansen, F. B. (1999). *Population Genetics of Multiple Loci*. Chichester, UK: John Wiley.
- Claessen, D., de Roos, A. M. and Persson, L. (2004). Population dynamic theory of size-dependent cannibalism. *Proceedings of the Royal Society of London, Series B* 271, 333–340.
- Clark, C. W. and Ekman, J. (1995). Dominant and subordinate fattening strategies: a dynamic game. *Oikos* 72, 205–212.
- Clark, C. W. and Mangel, M. (2000). *Dynamic State Variable Models in Ecology: Methods and Applications*. Oxford: Oxford University Press.
- Clark, C. W. and Yoshimura, J. (1993a). Behavioral responses to variations in population size: a stochastic evolutionary game. *Behavioral Ecology* 4, 282–288.
- Clark, C. W. and Yoshimura, J. (1993b). Optimization and ESS analysis for populations in stochastic environments. In *Lecture Notes in Biomathematics 98: Adaptation in Stochastic Environments*, eds. J. Yoshimura and C. W. Clark, pp. 122–131. Berlin: Springer-Verlag.
- Clobert, J., Danchin, E., Dhondt, A. A. and Nichols, J. D. (eds.) (2001). *Dispersal*. Oxford: Oxford University Press.
- Comins, H. N., Hamilton, W. D. and May, R. M. (1980). Evolutionarily stable dispersal strategies. *Journal of Theoretical Biology* 82, 205–230.
- Coppock, T. and Both, C. (2002). Predicting life-cycle adaptation of migratory birds to global climate change. *Ardea* 90, 369–378.
- Cotton, S., Fowler, K. and Pomiankowski, A. (2004). Condition-dependence of sexual ornament size and variation in the stalk-eyed fly *Cyrtodiopsis dalmanni* (Diptera: Diopsidae). *Evolution* 58, 1038–1046.
- Courchamp, F., Clutton-Brock, T. and Grenfell, B. (1999). Inverse density dependence and the Allee effect. *Trends in Ecology and Evolution* 10, 405–410.
- Creel, S. R. (1990a). How to measure indirect fitness. *Proceedings of the Royal Society of London, Series B* 241, 229–231.
- Creel, S. R. (1990b). The future components of inclusive fitness: accounting for interactions between members of overlapping generations. *Animal Behaviour* 40, 127–134.
- Crudginton, H. S. and Siva-Jothy, M. T. (2000). Genital damage, kicking and early death: the battle of the sexes takes a sinister turn in the bean weevil. *Nature* 407, 855–856.
- Curio, E. (1987). Animal decision-making and the concorde fallacy. *Trends in Ecology and Evolution* 2, 148–152.
- Dawkins, R. (1976). *The Selfish Gene*. Oxford: Oxford University Press.
- Day, T. and Taylor, P. D. (1997). Hamilton's rule meets the Hamiltonian: kin selection on dynamic characters. *Proceedings of the Royal Society of London, Series B* 264, 639–644.
- DeAngelis, D. L. and Mooij, W. M. (2005). Individual-based modeling of ecological and evolutionary processes. *Annual Reviews of Ecology, Evolution and Systematics* 36, 147–168.
- DeWitt, T. J., Sih, A. and Wilson, D. S. (1998). Costs and limits of phenotypic plasticity. *Trends in Ecology and Evolution* 13, 77–81.

- Dieckmann, U. (1997). Can adaptive dynamics invade? *Trends in Ecology and Evolution* 12, 128–131.
- Dieckmann, U. and Metz, J. A. J. (2006). Surprising evolutionary predictions from enhanced ecological realism. *Theoretical Population Biology* 69, 263–281.
- Doherty, P. F. Jr, Sorci, G., Royle, J. A. et al. (2003). Sexual selection affects local extinction and turnover in bird communities. *Proceedings of the National Academy of Sciences USA* 100, 5858–5862.
- Dubois, F., Wajnberg, É. and Cézilly, F. (2004). Optimal divorce and re-mating strategies for monogamous female birds: a simulation model. *Behavioral Ecology and Sociobiology* 56, 228–236.
- Dugatkin, L. A. (1997). *Cooperation Among Animals*. Oxford: Oxford University Press.
- Dugatkin, L. A. and Earley, R. L. (2003). Group fusion: the impact of winner, loser, and bystander effects on hierarchy formation in large groups. *Behavioral Ecology* 14, 367–373.
- Dugatkin, L. A. and Reeve, H. K. (eds.) (1998). *Game Theory and Animal Behavior*. Oxford: Oxford University Press.
- Eadie, J. M. and Fryxell, J. M. (1992). Density dependence, frequency dependence, and alternative nesting strategies in goldeneyes. *American Naturalist* 140, 621–641.
- Edvardsson, M. and Tregenza, T. (2005). Why do male *Callosobruchus maculatus* harm their mates? *Behavioral Ecology* 16, 788–793.
- Ehrlich, P. R. and Hanski, I. (eds.) (2004). *On the Wings of Checkerspots: A Model System for Population Biology*. Oxford: Oxford University Press.
- Enquist, M. and Arak, A. (1998). Neural representation and the evolution of signal form. In *Cognitive Ecology*, ed. R. Dukas, pp. 21–87. Chicago: University of Chicago Press.
- Ens, B. J., Weissing, F. J. and Drent, R. H. (1995). The despotic distribution and deferred maturity: two sides of the same coin. *American Naturalist* 146, 625–650.
- Ernande, B. and Dieckmann, U. (2004). The evolution of phenotypic plasticity in spatially structured environments: implications of intraspecific competition, plasticity costs and environmental characteristics. *Journal of Evolutionary Biology* 17, 613–628.
- Eshel, I. (1982). Evolutionarily stable strategies and viability selection in Mendelian populations. *Theoretical Population Biology* 22, 204–217.
- Eshel, I. and Feldman, M. W. (2001). Optimality and evolutionary stability under short-term and long-term selection. In *Adaptationism and Optimality*, eds. S. H. Orzack and E. Sober, pp. 161–190. Cambridge: Cambridge University Press.
- Falconer, D. S. and Mackay, T. F. C. (1996). *Introduction to Quantitative Genetics*. 4th edn. Harlow: Longman.
- Falster, D. S. and Westoby, M. (2003). Plant height and evolutionary games. *Trends in Ecology and Evolution* 18, 337–343.
- Ferrer, M., Otalora, F. and Garca-Ruiz, J. M. (2004). Density-dependent age of first reproduction as a buffer affecting persistence of small populations. *Ecological Applications* 14, 616–624.

- Ferrière, R., Dieckmann, U. and Couvet, D. (eds.) (2004a). *Evolutionary Conservation Biology*. Cambridge: Cambridge University Press.
- Ferrière, R., Dieckmann, U. and Couvet, D. (2004b). Introduction. In *Evolutionary Conservation Biology*, eds. R. Ferrière, U. Dieckmann, and D. Couvet, pp. 1–14. Cambridge: Cambridge University Press.
- Fisher, R. A. (1930). *The Genetical Theory of Natural Selection*. Oxford: Oxford University Press.
- Frank, R. (1999). *Luxury Fever*. Princeton: Princeton University Press.
- Frank, S. A. (1998). *Foundations of Social Evolution*. Princeton: Princeton University Press.
- Gandon, S. and Michalakis, Y. (1999). Evolutionarily stable dispersal rate in a metapopulation with extinctions and kin competition. *Journal of Theoretical Biology* 199, 275–290.
- Gardner, A. and West, S. A. (2004). Cooperation and punishment, especially in humans. *American Naturalist* 164, 753–764.
- Gavrilets, S. and Rice, W. R. (2006). Genetic models of homosexuality: generating testable predictions. *Proceedings of the Royal Society of London, Series B* 273, 3031–3038.
- Gavrilets, S., Arnquist, G. and Friberg, U. (2001). The evolution of female mate choice by sexual conflict. *Proceedings of the Royal Society of London, Series B* 268, 531–539.
- Getty, T. (2006). Sexually selected signals are not similar to sports handicaps. *Trends in Ecology and Evolution* 21, 83–88.
- Gill, J. A., Norris, K., Potts, P. M. et al. (2001). The buffer effect and large-scale population regulation in migratory birds. *Nature* 412, 436–438.
- Gillespie, J. H. (1998). *Population Genetics: A Concise Guide*. Baltimore: Johns Hopkins University Press.
- Givnish, T. J. (1982). Adaptive significance of leaf height in forest herbs. *American Naturalist* 120, 353–381.
- Godfray, H. C. J. and Parker, G. A. (1991). Clutch size, fecundity and parent-offspring conflict. *Philosophical Transactions of the Royal Society of London, Series B* 332, 67–80.
- Gomulkiewicz, R. (1998). Game theory, optimization, and quantitative genetics. In *Game Theory and Animal Behavior*, eds. L. A. Dugatkin and H. K. Reeve, pp. 283–303. Oxford: Oxford University Press.
- Gould, S. J. and Lewontin, R. C. (1979). The Spandrels of San Marco and the Panglossian paradigm: a critique of the adaptationist programme. *Proceedings of the Royal Society of London, Series B* 205, 581–598.
- Grimm, V., Berger, U., Bastiansen, F., et al. (2006). A standard protocol for describing individual-based and agent-based models. *Ecological Modelling* 198, 115–126.
- Gyllenberg, M., Parvinen, K. and Dieckmann, U. (2002). Evolutionary suicide and evolution of dispersal in structured metapopulations. *Journal of Mathematical Biology* 45, 79–105.
- Hamilton, W. D. (1964). The genetical evolution of social behaviour, I and II. *Journal of Theoretical Biology* 7, 1–52.

- Hamilton, W. D. and May, R. M. (1977). Dispersal in stable habitats. *Nature* 269, 578–581.
- Hanski, I. (1998). Metapopulation dynamics. *Nature* 396, 41–49.
- Hanski, I. (1999). *Metapopulation Ecology*. Oxford: Oxford University Press.
- Härdling, R. and Kaitala, A. (2005). The evolution of repeated mating under sexual conflict. *Journal of Evolutionary Biology* 18, 106–115.
- Hazel, W. N., Smock, R. and Johnson, M. D. (1990). A polygenic model for the maintenance and evolution of conditional strategies. *Proceedings of the Royal Society of London, Series B* 242, 181–187.
- Hazel, W., Smock, R. and Lively, C. M. (2004). The ecological genetics of conditional strategies. *American Naturalist* 163, 888–900.
- Heino, M. and Hanski, I. (2001). Evolution of migration rate in a spatially realistic metapopulation model. *American Naturalist* 157, 495–511.
- Heinsohn, R., Legge, S. and Barry, S. (1997). Extreme bias in sex allocation in *Ectlectus* parrots. *Proceedings of the Royal Society of London, Series B* 264, 1325–1329.
- Hines, W. G. S. and Turelli, M. (1997). Multilocus evolutionary stable strategy models: additive effects. *Journal of Theoretical Biology* 187, 379–388.
- Hoelzer, G. A. (1989). The good parent process of sexual selection. *Animal Behaviour* 38, 1067–1078.
- Holland, B. and Rice, W. R. (1998). Chase-away selection: antagonistic seduction vs. resistance. *Evolution* 52, 1–7.
- Holt, R. D. and Gomulkiewicz, R. (2004). Conservation implications of niche conservatism and evolution in heterogeneous environments. In *Evolutionary Conservation Biology*, eds. R. Ferrière, U. Dieckmann and D. Couvet, pp. 244–264. Cambridge: Cambridge University Press.
- Holt, R. D., Knight, T. M. and Barfield, M. (2004). Allee effects, immigration, and the evolution of species' niches. *American Naturalist* 163, 253–262.
- Houston, A. I. and McNamara, J. M. (1999). *Models of Adaptive Behaviour: An Approach Based on State*. Cambridge: Cambridge University Press.
- Houston, A. I. and McNamara, J. M. (2005). John Maynard Smith and the importance of consistency in evolutionary game theory. *Biology and Philosophy* 20, 933–950.
- Houston, A. I., Székely, T. and McNamara, J. M. (2005). Conflict between parents over care. *Trends in Ecology and Evolution* 20, 33–38.
- Hunt, J., Brooks, R., Jennions, M. D. et al. (2004). High-quality male field crickets invest heavily in sexual display but die young. *Nature* 432, 1024–1027.
- Iwasa, Y., Pomiankowski, A. and Nee, S. (1991). The evolution of costly mate preferences. II. The 'handicap' principle. *Evolution* 45, 1431–1442.
- Johnstone, R. A. and Keller, L. (2000). How males gain by harming their mates: sexual conflict, seminal toxins, and the cost of mating. *American Naturalist* 156, 368–377.
- Jones, A. G., Arnold, S. J. and Borger, R. (2003). Stability of the G-matrix in a population experiencing pleiotropic mutation, stabilizing selection, and genetic drift. *Evolution* 57, 1747–1760.
- Jones, O. R., Crawley, M. J., Pilkington, J. G. and Pemberton, J. M. (2005). Predictors of early survival in Soay sheep: cohort-, maternal- and

- individual-level variation. *Proceedings of the Royal Society of London, Series B* 272, 2619–2625.
- Jönsson, K. I., Tuomi, J. and Järemo, J. (1998). Pre- and postbreeding costs of parental investment. *Oikos* 83, 424–431.
- Kahneman, D., Krueger, A. B., Schkade, D., Schwarz, N. and Stone, A. A. (2006). Would you be happier if you were richer? A focusing illusion. *Science* 312, 1908–1910.
- Kaitala, A., Kaitala, V. and Lundberg, P. (1993). A theory of partial migration. *American Naturalist* 142, 59–81.
- Kemp, D. J. and Wiklund, C. (2004). Residency effects in animal contests. *Proceedings of the Royal Society of London, Series B* 271, 1707–1711.
- Kingsland, S. E. (1995). *Modeling Nature*, 2nd edn Chicago: University of Chicago Press.
- Kirkpatrick, M. and Barton, N. H. (1997). Evolution of a species' range. *American Naturalist* 150, 1–23.
- Koch, G. W., Sillett, S. C., Jennings, G. M. and Davis, S. D. (2004). The limits to tree height. *Nature* 428, 851–854.
- Koenig, W. D. and Walters, J. R. (1999). Sex-ratio selection with helpers at the nest: the repayment model revisited. *American Naturalist* 153, 124–130.
- Kokko, H. (1997). Evolutionarily stable strategies of age-dependent sexual advertisement. *Behavioral Ecology and Sociobiology* 41, 99–107.
- Kokko, H. and Brooks, R. (2003). Sexy to die for? Sexual selection and the risk of extinction. *Annales Zoologici Fennici* 40, 207–219.
- Kokko, H. and Jennions, M. (2003). It takes two to tango. *Trends in Ecology and Evolution* 18, 103–104.
- Kokko, H. and López-Sepulcre, A. (2006). From individual dispersal to species ranges: perspectives for a changing world. *Science* 313, 789–791.
- Kokko, H. and Lundberg, P. (2001). Dispersal, migration and offspring retention in saturated habitats. *American Naturalist* 157, 188–202.
- Kokko, H. and Rankin, D. J. (2006). Lonely hearts or sex in the city? Density-dependent effects in mating systems. *Philosophical Transactions of the Royal Society of London, Series B* 361, 319–334.
- Kokko, H. and Sutherland, W. J. (1998). Optimal floating and queuing strategies: consequences for density dependence and habitat loss. *American Naturalist* 152, 354–366.
- Kokko, H., Brooks, R., Jennions, M. and Morley, J. (2003). The evolution of mate choice and mating biases. *Proceedings of the Royal Society of London, Series B* 270, 653–664.
- Kokko, H., Harris, M. P. and Wanless, S. (2004). Competition for breeding sites and site-dependent population regulation in a highly colonial seabird, the common guillemot *Uria aalge*. *Journal of Animal Ecology* 73, 367–376.
- Kokko, H., Jennions, M. D. and Brooks, R. (2006a). Unifying and testing models of sexual selection. *Annual Reviews of Ecology, Evolution and Systematics* 37, 43–66.
- Kokko, H., López-Sepulcre, A. and Morrell, L. J. (2006b). From hawks and doves to self-consistent games of territorial behavior. *American Naturalist* 167, 901–912.

- Kölliker, M., Brodie, E. D. and Moore, A. J. (2005). The coadaptation of parental supply and offspring demand. *American Naturalist* 166, 506–516.
- Kotiaho, J. S. (2007). The stability of genetic variance–covariance matrix in the presence of selection. *Journal of Evolutionary Biology* 20, 28–29.
- Kotiaho, J., Alatalo, R. V., Mappes, J., Parri, S. and Rivero, A. (1998). Male mating success and risk of predation in a wolf spider: a balance between sexual and natural selection? *Journal of Animal Ecology* 67, 287–291.
- Kotiaho, J. S., Simmons, L. W. and Tomkins, J. L. (2001). Towards a resolution of the lek paradox. *Nature* 410, 684–686.
- Krams, I. (2002). Mass-dependent take-off ability in wintering great tits (*Parus major*): comparison of top-ranked adult males and subordinate juvenile females. *Behavioral Ecology and Sociobiology* 51, 345–349.
- Kriska, G., Horvath, G. and Andrikovics, S. (1998). Why do mayflies lay their eggs en masse on dry asphalt roads? Water-imitating polarized light reflected from asphalt attracts *Ephemeroptera*. *Journal of Experimental Biology* 201, 2273–2286.
- Kullberg, C., Fransson, T. and Jakobsson, S. (1996). Impaired predator evasion in fat blackcaps (*Sylvia atricapilla*). *Proceedings of the Royal Society of London, Series B* 263, 1671–1675.
- Kun, Á., Boza, G. and Scheuring, I. (2006). Asynchronous snowdrift game with synergistic effect as a model of cooperation. *Behavioral Ecology* 17, 633–641.
- Laland, K. N., Odling-Smee, F. J. and Feldman, M. W. (1996). The evolutionary consequences of niche construction: a theoretical investigation using two-locus theory. *Journal of Evolutionary Biology* 9, 293–316.
- Lande, R. (1982). A quantitative genetic theory of life history evolution. *Ecology* 63, 607–615.
- Lehmann, L. and Keller, L. (2006). The evolution of cooperation and altruism: a general framework and a classification of models. *Journal of Evolutionary Biology* 19, 1365–1376.
- Lessells, C. M. (2005). Why are males bad for females? Models for the evolution of damaging male mating behavior. *American Naturalist* 165, S46–S63.
- Lessells, C. M. (2006). The evolutionary outcome of sexual conflict. *Philosophical Transactions of the Royal Society of London, Series B* 361, 301–317.
- Levins, R. (1966). The strategy of model building in population biology. *American Scientist* 54, 421–431.
- Lima, S. and Dill, L. M. (1990). Behavioral decisions made under the risk of predation: a review and prospects. *Canadian Journal of Zoology* 68, 619–640.
- Lind, J., Fransson, T., Jakobsson, S. and Kullberg, C. (1999). Reduced take-off ability in robins (*Erithacus rubecula*) due to migratory fuel load. *Behavioral Ecology and Sociobiology* 46, 65–70.
- Lion, S., van Baalen, M. and Wilson, W. G. (2006). The evolution of parasite manipulation of host dispersal. *Proceedings of the Royal Society of London, Series B* 273, 1063–1071.
- Lively, C. M. (1986a). Competition, comparative life histories, and maintenance of shell dimorphism in a barnacle. *Ecology* 67, 858–864.

- Lively, C. M. (1986b). Predator-induced shell dimorphism in the acorn barnacle *Chthamalus anisopoma*. *Evolution* 40, 232–242.
- Łomnicki, A. (1999). Individual-based models and the individual-based approach to population ecology. *Ecological Modelling* 115, 191–198.
- Lorch, P. D., Proulx, S., Rowe, L. and Day, T. (2003). Condition-dependent sexual selection can accelerate adaptation. *Evolutionary Ecology Research* 5, 867–881.
- Lynch, M. and Walsh, B. (1998). *Genetics and Analysis of Quantitative Traits*. Sunderland: Sinauer.
- Mackintosh, N. J. (1974). *The Psychology of Animal Learning*. London: Academic Press.
- Macleod, R., Gosler, A. G. and Cresswell, W. (2005). Diurnal mass gain strategies and perceived predation risk in the great tit *Parus major*. *Journal of Animal Ecology* 74, 956–964.
- Mangel, M. (2006). *The Theoretical Biologist's Toolbox*. Cambridge: Cambridge University Press.
- Mangel, M., Rosenheim, J. A. and Adler, F. R. (1994). Clutch size, offspring performance, and intergenerational fitness. *Behavioral Ecology* 5, 412–417.
- Marrow, P., Johnstone, R. A. and Hurst, L. D. (1996). Riding the evolutionary streetcar: where population genetics and game theory meet. *Trends in Ecology and Evolution* 11, 445–446.
- Matthews, L. M. (2003). Tests of the male-guarding hypothesis for social monogamy: male snapping shrimps prefer to associate with high-value females. *Behavioral Ecology* 14, 63–67.
- Maynard Smith, J. (1977). Parental investment: a prospective analysis. *Animal Behaviour* 25, 1–9.
- Maynard Smith, J. (1982). *Evolution and the Theory of Games*. Cambridge: Cambridge University Press.
- McCarthy, M. A. (1997). Competition and dispersal from multiple nests. *Ecology* 78, 873–883.
- McElreath, R. and Boyd, R. (2007). *Mathematical Models of Social Evolution: A Guide for the Perplexed*. Chicago: Chicago University Press.
- McNamara, J. M. (1997). Optimal life histories for structured populations in fluctuating environments. *Theoretical Population Biology* 51, 94–108.
- McNamara, J. M. (1998). Phenotypic plasticity in fluctuating environments: consequences of the lack of individual optimization. *Behavioral Ecology* 9, 642–648.
- McNamara, J. M. and Houston, A. I. (1986). The common currency for behavioural decisions. *American Naturalist* 127, 358–378.
- McNamara, J. M., Webb, J. N. and Collins, E. J. (1995). Dynamic optimization in fluctuating environments. *Proceedings of the Royal Society of London, Series B* 261, 279–284.
- McNamara, J. M., Welham, R. K. and Houston, A. I. (1998). The timing of migration within the context of an annual routine. *Journal of Avian Biology* 29, 416–423.
- McNamara, J. M., Houston, A. I. and Collins, E. J. (2001). Optimality models in behavioral biology. *SIAM Review* 43, 413–466.

- Mead, L. S. and Arnold, S. J. (2004). Quantitative genetic models of sexual selection. *Trends in Ecology and Evolution* 19, 264–271.
- Mesterton-Gibbons, M. (2000). *An Introduction to Game-theoretic Modelling*, 2nd edn. Rhode Island: American Mathematical Society.
- Meszéna, G., Kisdi, É., Dieckmann, U., Geritz, S. A. H. and Metz, J. A. J. (2001). Evolutionary optimization methods and matrix games in the unified perspective of adaptive dynamics. *Selection* 2, 193–210.
- Metcalfe, N. B. and Ure, S. E. (1995). Diurnal variation in flight performance and hence potential predation risk in small birds. *Proceedings of the Royal Society of London, Series B* 261, 395–400.
- Metz, J. A. J., Nisbet, R. M. and Geritz, S. A. H. (1992). How should we define 'fitness' for general ecological scenarios? *Trends in Ecology and Evolution* 7, 198–202.
- Milon, J. W. (2000). Pastures, fences, tragedies and marine reserves. *Bulletin of Marine Science* 66, 901–916.
- Moore, A. J. and Boake, C. R. B. (1994). Optimality and evolutionary genetics: complementary procedures for evolutionary analysis in behavioural ecology. *Trends in Ecology and Evolution* 9, 69–72.
- Morrow, E. H. and Fricke, C. (2004). Sexual selection and the risk of extinction in mammals. *Proceedings of the Royal Society of London, Series B* 271, 2395–2401.
- Morrow, E. H. and Pitcher, T. E. (2003). Sexual selection and the risk of extinction in birds. *Proceedings of the Royal Society of London, Series B* 270, 1793–1799.
- Moya-Laraño, J., Orta-Ocaña, J. M., Barrientos, J. A., Bach C. and Wise, D. H. (2002). Territoriality in a cannibalistic burrowing wolf spider. *Ecology* 83, 356–361.
- Mueller, L. D. and Rose, M. R. (1996). Evolutionary theory predicts late-life mortality plateaus. *Proceedings of the National Academy of Sciences USA* 93, 15249–15253.
- Mylius, S. D. and Diekmann, O. (1995). On evolutionarily stable life histories, optimization and the need to be specific about density dependence. *Oikos* 74, 218–224.
- Nakajima, M., Matsuda, H. and Hori, M. (2005). A population genetic model for lateral dimorphism frequency in fishes. *Population Ecology* 47, 83–90.
- Neumann, D. R. (1999). Agonistic behavior in harbor seals (*Phoca vitulina*) in relation to the availability of haulout space. *Marine Mammal Science* 15, 507–525.
- Nowak, M. A. and Sigmund, K. (2004). Evolutionary dynamics of biological games. *Science* 303, 793–799.
- Nunney, L. and Campbell, K. A. (1993). Assessing minimum viable population size: demography meets population genetics. *Trends in Ecology and Evolution* 8, 234–239.
- Nussey, D. H., Postma, E., Gienapp, P. and Visser, M. E. (2005). Selection on heritable phenotypic plasticity in a wild bird population. *Science* 310, 304–306.
- Odenbaugh, J. (2005). Idealized, inaccurate but successful: a pragmatic approach to evaluating models in theoretical ecology. *Biology and Philosophy* 20, 231–255.

- Olsen, E. M., Heino, M., Lilly, G. R. et al. (2004). Maturation trends indicative of rapid evolution preceded the collapse of northern cod. *Nature* 428, 932–935.
- Orzack, S. H. and Hines, W. G. S. (2005). The evolution of strategy variation: will an ESS evolve? *Evolution* 59, 1183–1193.
- Otto, S. P. and Day, T. (2006). *A Biologist's Guide to Mathematical Modeling*. Princeton: Princeton University Press.
- Page, K. M. and Nowak, M. A. (2002). Unifying evolutionary dynamics. *Journal of Theoretical Biology* 219, 93–98.
- Parker, G. (2006). Sexual conflict over mating and fertilization: an overview. *Philosophical Transactions of the Royal Society of London, Series B* 361, 235–259.
- Parker, G. A. (1979). Sexual selection and sexual conflict. In *Sexual Selection and Reproductive Competition in Insects*, eds. M. S. Blum and N. A. Blum, pp. 123–166. New York: Academic Press.
- Parker, G. A. and Maynard Smith, J. (1990). Optimality theory in evolutionary biology. *Nature* 348, 27–33.
- Parmigiani, S., Torricelli, P. and Lugli, M. (1987). Intermale aggression in *Padogobius martensi* (Guenther) (Pisces: Gobiidae) during the breeding season: effects of size, prior residence, and parental investment. *Monitore Zoologico Italiano* 22, 161–170.
- Parvinen, K. (2004). Adaptive responses to landscape disturbances: theory. In *Evolutionary Conservation Biology*, eds. R. Ferrière, U. Dieckmann and D. Couvet, pp. 265–283. Cambridge: Cambridge University Press.
- Peck, S. L. (2004). Simulation as experiment: a philosophical reassessment for biological modeling. *Trends in Ecology and Evolution* 19, 530–534.
- Pen, I. (2000). Reproductive effort in viscous populations. *Evolution* 54, 293–297.
- Pen, I. and Weissing, F. J. (2000). Towards a unified theory of cooperative breeding: the role of ecology and life history re-examined. *Proceedings of the Royal Society of London, Series B* 267, 2411–2418.
- Penn, D. J. (2003). The evolutionary roots of our environmental problems: toward a Darwinian ecology. *Quarterly Review of Biology* 78, 275–301.
- Peters, A. D. and Lively, C. M. (1999). The Red Queen and fluctuating epistasis: a population genetic analysis of antagonistic coevolution. *American Naturalist* 154, 393–405.
- Piattelli-Palmarini, M. (1994). *Inevitable Illusions: How Mistakes of Reason Rule Our Minds*. Chichester, UK: John Wiley.
- Pigliucci, M. (2005). Evolution of phenotypic plasticity: where are we going now? *Trends in Ecology and Evolution* 20, 481–486.
- Pigliucci, M. (2006). Genetic variance–covariance matrices: a critique of the evolutionary quantitative genetics research program. *Biology and Philosophy* 21, 1–23.
- Pigliucci, M. and Schlichting, C. D. (1997). On the limits of quantitative genetics for the study of phenotypic evolution. *Acta Biotheoretica* 45, 143–160.
- Pravosudov, V. V. and Lucas, J. R. (2001). Daily patterns of energy storage in food-caching birds under variable daily predation risk: a dynamic state variable model. *Behavioral Ecology and Sociobiology* 50, 239–250.

- Queller, D. C. (1997). Why do females care more than males? *Proceedings of the Royal Society of London, Series B* 264, 1555–1557.
- Radwan, J., Unrug, J., Snigórska, K. and Gawronska, K. (2004). Effectiveness of sexual selection in preventing fitness deterioration in bulb mite populations under relaxed natural selection. *Journal of Evolutionary Biology* 17, 94–99.
- Reale, D., Bousses, P. and Chapuis, J. L. (1996). Female-biased mortality induced by male sexual harassment in a feral sheep population. *Canadian Journal of Zoology* 74, 1812–1818.
- Rhen, T. (2000). Sex-limited mutations and the evolution of sexual dimorphism. *Evolution* 54, 37–43.
- Rice, S. H. (2004). *Evolutionary Theory: Mathematical and Conceptual Foundations*. Sunderland: Sinauer.
- Rodenhouse, N. L., Sherry, T. W. and Holmes, R. T. (1997). Site-dependent regulation of population size: a new synthesis. *Ecology* 78, 2025–2042.
- Roff, D. A. (1994). Optimality modeling and quantitative genetics: a comparison of the two approaches. In *Quantitative Genetic Studies of Behavioral Evolution*, ed. C. R. B. Boake, pp. 49–66. Chicago: Chicago University Press.
- Roff, D. A. (1997). *Evolutionary Quantitative Genetics*. New York: Chapman & Hall.
- Roff, D. A. (2000). Trade-offs between growth and reproduction: an analysis of the quantitative genetic evidence. *Journal of Evolutionary Biology* 13, 434–445.
- Ronce, O. and Kirkpatrick, M. (2001). When sources become sinks: migrational meltdown in heterogeneous habitats. *Evolution* 55, 1520–1531.
- Rosales, A. (2005). John Maynard Smith and the natural philosophy of adaptation. *Biology and Philosophy* 20, 1027–1040.
- Roth, T. C. II., Lima, S. L. and Vetter, W. E. (2006). Determinants of predation risk in small wintering birds: the hawk's perspective. *Behavioral Ecology and Sociobiology* 60, 195–204.
- Rousset, F. (2004). *Genetic Structure and Selection in Subdivided Populations*. Princeton: Princeton University Press.
- Rowe, L., Ludwig, D. and Schlüter, D. (1994). Time, condition and the seasonal decline of avian clutch size. *American Naturalist* 143, 698–722.
- Roze, D. and Rousset, F. (2005). Inbreeding depression and the evolution of dispersal rates: a multilocus model. *American Naturalist* 166, 708–721.
- Ryan, M. J. (1998). Sexual selection, receiver biases, and the evolution of sex differences. *Science* 281, 1999–2003.
- Sachs, J. L., Mueller, U. G., Wilcox, T. P. and Bull, J. J. (2004). The evolution of cooperation. *Quarterly Review of Biology* 79, 135–160.
- Sarkar, S. (2005). Maynard Smith, optimization, and evolution. *Biology and Philosophy* 20, 951–966.
- Sasaki, A. and de Jong, G. (1999). Density dependence and unpredictable selection in a heterogeneous environment: compromise and polymorphism in the ESS reaction norm. *Evolution* 53, 1329–1342.
- Schlüting, C. D. and Pigliucci, M. (1998). *Phenotypic Evolution: A Reaction Norm Perspective*. Sunderland: Sinauer.

- Servedio, M. R. and Lande, R. (2006). Population genetic models of male and mutual mate choice. *Evolution* 60, 674–685.
- Shine, R., LeMaster, M. P., Moore, I. T., Olsson, M. M. and Mason, R. T. (2001). Bumpus in the snake den: effects of sex, size, and body condition on mortality of red-sided garter snakes. *Evolution* 55, 598–604.
- Shulman, M. J. (1990). Aggression among sea urchins on Caribbean coral reefs. *Journal of Experimental Marine Biology and Ecology* 140, 197–207.
- Shuster, S. M. and Wade, M. J. (2003). *Mating Systems and Strategies*. Princeton: Princeton University Press.
- Stephens, P. A. and Sutherland, W. J. (1999). Consequences of the Allee effect for behaviour, ecology and conservation. *Trends in Ecology and Evolution* 10, 401–405.
- Steppan, S. J., Phillips, P. C. and Houle, D. (2002). Comparative quantitative genetics: evolution of the G matrix. *Trends in Ecology and Evolution* 17, 320–327.
- Svensson, E. I., Abbott, J. and Hårdling, R. (2005). Female polymorphism, frequency dependence, and rapid evolutionary dynamics in natural populations. *American Naturalist* 165, 567–576.
- Tamachi, N. (1987). The evolution of alarm calls: an altruism with nonlinear effect. *Journal of Theoretical Biology* 127, 141–153.
- Tanaka, Y. (1998). Theoretical aspects of extinction by inbreeding depression. *Researches on Population Ecology* 40, 279–286.
- Taylor, P. D. (1996). Inclusive fitness arguments in genetic models of behaviour. *Journal of Mathematical Biology* 34, 654–674.
- Taylor, P. and Frank, S. (1996). How to make a kin selection model. *Journal of Theoretical Biology* 180, 27–37.
- Taylor, P. D., Wild, G. and Gardner, A. (2007). Direct fitness or inclusive fitness: how shall we model kin selection? *Journal of Evolutionary Biology* 20, 301–309.
- Trayhum, P. (1993). Brown adipose tissue: from thermal physiology to bioenergetics. *Journal of Bioscience* 18, 161–173.
- Tregenza, T. (1997). Darwin a better name than Wallace? *Nature* 385, 480.
- van Doorn, G. S., Dieckmann, U. and Weissing, F. J. (2004). Sympatric speciation by sexual selection: a critical reevaluation. *American Naturalist* 163, 709–725.
- Visser, M. E., Both, C. and Lambrechts, M. M. (2004). Global climate change leads to mistimed avian reproduction. *Advances in Ecological Research* 35, 89–110.
- Wade, M. J., Shuster, S. M. and Demuth, J. P. (2003). Sexual selection favors female-biased sex ratios: the balance between the opposing forces of sex-ratio selection and sexual selection. *American Naturalist* 162, 403–414.
- Waxman, D. and Gavrilis, S. (2005). 20 questions on adaptive dynamics. *Journal of Evolutionary Biology* 18, 1139–1154.
- Weber, T. P. and Houston, A. I. (1997). A general model for time-minimising avian migration. *Journal of Theoretical Biology* 185, 447–458.
- Weinig, C., Johnston, J., German, Z. M. and Demink, L. M. (2006). Local and global costs of adaptive plasticity to density in *Arabidopsis thaliana*. *American Naturalist* 167, 826–836.

- Weissing, F. J. (1996). Genetic versus phenotypic models of selection: can genetics be neglected in a long-term perspective? *Journal of Mathematical Biology* 34: 533–555.
- Wenseleers, T. (2006). Modelling social evolution: the relative merits and limitations of a Hamilton's rule-based approach. *Journal of Evolutionary Biology* 19, 1419–1422.
- Wilkins, J. F. and Haig, D. (2003). What good is genomic imprinting: the function of parent-specific gene expression. *Nature Reviews Genetics* 4, 359–368.
- Williams, C. G. (1985). A defence of reductionism in evolutionary biology. *Oxford Surveys in Evolutionary Biology* 2, 1–27.
- Witter, M. S., Cuthill, I. C. and Bonser, R. H. C. (1994). Experimental investigations of mass-dependent predation risk in the European starling, *Sturnus vulgaris*. *Animal Behaviour* 48, 201–222.
- Wolf, J. B. and Wade, M. J. (2001). On the assignment of fitness to parent and offspring: whose fitness is it and when does it matter? *Journal of Evolutionary Biology* 14, 347–356.