

Laws of Adaptation

Lectures on Long Term Evolution

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References

- Bishop, D.T., Cannings, C., 1978. A generalised war of attrition. *Journal of Theoretical Biology*, **70**: 85-124.
- Bulmer, M.G., 1986. Sex ratio theory in geographically structured populations. *Heredity*, **56**: 69-73.
- Charnov, E.L., 1982. *The Theory of Sex Allocation*. Princeton University Press, Princeton, NJ, USA.
- Charnov, E.L., Krebs, J.R., 1973. On clutch size and fitness. *Ibis*, **116**: 217-219.
- Christiansen, F.B., 1991. On the conditions for evolutionary stability for a continuously varying character. *The American Naturalist*, **138**: 37-50.
- Cohen, D., 1966. Optimizing reproduction in a randomly varying environment. *Journal of Theoretical Biology*, **12**: 119-129.
- Courteau, J., Lessard, S., 2000. Optimal sex ratios in structured populations. *Journal of Theoretical Biology*, **207**: 159-175.
- Eshel, I., 1983. Evolutionary and continuous stability. *Journal of Theoretical Biology*, **103**: 99-111.
- Eshel, I., Feldman, M.W., 1984. Initial increase of new mutants and some continuity properties of ESS in two-locus systems. *The American Naturalist*, **124**: 631-640.
- Eshel, I., Motro, U., 1981. Kin selection and strong evolutionary stability of mutual help. *Theoretical Population Biology*, **19**: 420-433.
- Ewens, W.J., 1979. *Mathematical Population Genetics*. Springer Verlag, Berlin, pp. 40-45 & p. 58.
- Fisher, R.A., 1930. *The Genetical Theory of Natural Selection*. Oxford University Press, London.
- Geritz, S.A.H., Kisdi, E., Meszina, G., Metz, J.A.J., 1998. Evolutionary singular strategies and the adaptive growth and branching of the evolutionary tree. *Evolutionary Ecology*, **12**: 35-57.
- Hamilton, W.D., 1967. Extraordinary sex ratios. *Science*, **156**: 477-488.
- Hori, M., 1993. Frequency-dependent natural selection in the handedness of scale-eating cichlid fish. *Science*, **260**: 216-219.
- Karlin, S., Lessard, S., 1986. *Theoretical Studies on Sex Ratio Evolution*. Princeton University Press, Princeton, NJ, USA:
- Kingman, J.F.C., 1961. A mathematical problem in population genetics. *Proc. Cambridge Phil. Soc.*, **57**: 574-582.
- Lack, D., 1947. The significance of clutch size. *Ibis*, **89**: 302-352.

- Lessard, S., 1984. Evolutionary dynamics in frequency-dependent two-phenotype models. *Theoretical Population Biology*, **25**: 210-234.
- Lieberman, U., 1988. External stability and ESS: criteria for initial increase of new mutant allele. *Journal of Mathematical Biology*, **26**: 477-485.
- Matessi, C., Jayakar, S.D., 1981. Coevolution of species in competition: A theoretical study. *Proc. Natl. Acad. Sci. USA*, **78**: 1081-1084.
- Matessi, C., Eshel, I., 1992. Sex ratio in the social Hymenoptera: A population-genetics study of long-term evolution. *The American Naturalist*, **139**: 276-312.
- Matessi, C., Di Pasquale, C., 1996. Long-term evolution of multilocus traits. *Journal of Mathematical Biology*, **34**: 613-653.
- Matessi, C., Gimelfarb, A., Gavrilets, S., 2001. Long-term buildup of reproductive isolation promoted by disruptive selection: how far does it go? *Selection*, **2**: 41-64.
- Matessi, C., Gimelfarb, A., 2006. Discrete polymorphisms due to disruptive selection on a continuous trait—I: The one locus case. *Theoretical Population Biology*, **69**: 283-295.
- Maynard Smith, J., Price, G. R., 1973. The logic of animal conflict. *Nature*, **246**: 15-18.
- Maynard Smith, J., 1982. *Evolution and the theory of games*. Cambridge University Press, Cambridge, UK.
- Shaw, R.F., Mohler, J.D., 1953. The selective advantage of the sex ratio. *The American Naturalist*, **87**: 337-342.
- Smith, T.B., 1987. Bill size polymorphism and intraspecific niche utilization in an African finch. *Nature*, **329**: 717-719.
- Trivers, R.L., Hare, H., 1976. Haplodiploidy and the evolution of social insects. *Science*, **191**: 249-263.