

TESTING HYPOTHESES IN BEHAVIORAL ECOLOGY

GLOSSARY

link to [glossary](http://www.zoo.ufl.edu/be/pages/Glossary.html) by Dr. Jane Brockman: <http://www.zoo.ufl.edu/be/pages/Glossary.html>

comparative approach- examine similarities and differences among several entities, to develop hypotheses about evolutionary history; this may be applied to the variation between species that have evolved in isolation from each other, or different populations of a given species, each population influenced by a different environment; the hypothesis is that different gene pools will converge to be more similar after natural selection in similar environments, and conversely, similar gene pools will diverge such that the proportions of genotypes differ in different environments; when several species in a taxonomic lineage display a similar trait, it is hypothesized to be the "ancestral form" of the trait, and when the trait differs among species in a taxonomic group, it is hypothesized to be a divergent "derived" form of the trait.

optimality approach- prediction of which genotypes will increase or decrease in a population, based on a model of costs and benefits; for functional hypotheses, costs and benefits are theoretically in terms of fitness units; fitness is the relative contribution that a genotype makes to the gene pool, relative to other genotypes in the population; this approach is based on linear equations and the assumption that the environment is not varying, thus the optimal solution of costs and benefits may be predicted; one subset of optimality models are expressed in terms of "game theory", which involves computer simulation of the "decisions" of genotypes as "strategies", allowing predictions of which genotypes are likely to "win" (increase) or "lose" (decrease) relative to the moves played by other genotypes in the population.