

Homage to Felsenstein 1981, or why are there so few/many species?

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If there are no constraints on the process of speciation, then the number of species might be expected to match the number of available niches and this number might be indefinitely large. One possible constraint is the opportunity for allopatric divergence. In 1981, Felsenstein used a simple and elegant model to ask if there might also be genetic constraints. He showed that progress towards speciation could be described by the build-up of linkage disequilibrium among divergently selected loci and between these loci and those contributing to other forms of reproductive isolation. Therefore, speciation is opposed by recombination, because it tends to break down linkage disequilibria. Felsenstein then introduced a crucial distinction between “two-allele” models, which are subject to this effect, and “one-allele” models, which are free from the recombination constraint. These fundamentally important insights have been the foundation for both empirical and theoretical studies of speciation ever since.

KEY WORDS: Linkage disequilibrium, one-allele, recombination, reproductive isolation, speciation, two allele.

G. E. Hutchinson called his Presidential Address to the American Society of Naturalists “Homage to Santa Rosalia, or why are



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can Society of Naturalists, "Homage to Santa Rosalia, or why are there so many kinds of animals?" (Hutchinson 1959). He took, as

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