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Ökologie und Evolutionsbiologie

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Born in 1982 in Washington, DC  
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### ARBEITSVORHABEN

## Koevolution durch indirekte Wechselwirkungen

Biotic interactions - such as predation, parasitism, competition, and mutualism - play a critical role in shaping the diversity of life. These interactions affect species' population sizes and distributions, as well as selection on a wide spectrum of behavioral and physical traits. Research on the ecology of biotic interactions has traditionally focused, for simplicity, on isolated pairs of species. Similarly, studies of reciprocal evolution between traits of interacting species, i.e., coevolution, tend to be limited to pairs of directly interacting traits. However, in reality, pairs of species are embedded in larger ecosystems, forming complex networks of direct and indirect interactions. These indirect interactions have the potential to drive coevolution through a number of currently overlooked mechanisms, including 1) indirect trait interactions between directly interacting species mediated by population densities or correlated traits, 2) indirect interactions between species mediated through the biotic environment, and 3) indirect interactions between species mediated through the abiotic environment. Although more subtle than direct coevolution between interacting traits, such indirect coevolution can have an important role in generating patterns of species abundance, species coexistence, and trait diversification. Additionally, accounting for indirect interactions in coevolutionary studies may provide insight into how native communities with a long coevolutionary history respond to disruption caused by habitat loss, climate change, and species invasions. My aim is to review the potential mechanisms of indirect coevolution and, through this synthesis, to suggest improved methods for modeling coevolution and for identifying different forms of coevolution in nature.

### Recommended Reading

Jones, E. I., J. L. Bronstein and R. Ferrière (2012). "The fundamental role of competition in the ecology and evolution of mutualisms." *Annals of the New York Academy of Sciences* 1256, The Year in Evolutionary Biology: 66-88. DOI: 10.1111/j.1749-6632.2012.06552.x

Jones, E. I. and R. Gomulkiewicz (2012). "Biotic interactions, rapid evolution and the establishment of introduced species." *The American Naturalist* 179: E28-E36. DOI: 10.1086/663678.

Jones, E. I., R. Ferrière and J. L. Bronstein (2009). "Eco-evolutionary dynamics of mutualists and exploiters." *The American Naturalist* 174: 780-794. DOI: 10.1086/647971

Jones, Emily I. (Oxford, 2017)

Synthesizing perspectives on the evolution of cooperation within and between species

<https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=1017835756>

Jones, Emily I. (Oxford, 2015)

Cheaters must prosper : reconciling theoretical and empirical perspectives on cheating in mutualism

<https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=1042049777>

Jones, Emily I. (Washington, DC, 2013)

Revisiting Darwin's conundrum reveals a twist on the relationship between phylogenetic distance and invasibility

<https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=1726536092>