



QUANTITATIVE & SYSTEMS BIOLOGY COLLOQUIUM: Getting rid of species: implications of a truly evolutionary view of biodiversity

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Abstract:

It is all too common, even among biologists, to take a typological view of species and simply assume that species are the way biodiversity comes packaged, period. On the contrary, as explained most compellingly by Charles Darwin, the species level is an arbitrary human construct. What really matters are lineages splitting from each other, and sometimes coming back together again, at many nested levels in the tree of life. There is nothing special about the particular level called species. There are important lineages below the traditional species level, and above that level as well, which have important roles in ecology and evolution. Thus the situation is richer and more interesting than Mayr or Hutchinson ever imagined. Studies of evolutionary and ecological processes need to take into account clades at multiple, nested levels, not just the level formerly known as species. A revolution in many areas of study, including diversification (formerly known as "speciation"), niche evolution, biogeography, and coevolution, will follow once a rigid focus on the species level is replaced by a multi-level view. This truism has obvious implications for conservation biology as well. Biodiversity can't be assessed or evaluated looking only at the arbitrary species level, nor can its future be predicted. Instead we need to examine the whole tree of life. A new quantitative approach called spatial phylogenetics will be introduced in this talk which places the tree of life on maps to assess the distribution of biodiversity, dig into its causes, and develop conservation priorities. For more on these topics, see the speaker's new book: "What, if Anything, are Species?" to be available soon with open access: <https://www.routledge.com/What-if-anything-are-species/Mishler/p/book/9781498714549>

Bio:

Brent D. Mishler is Director of the University and Jepson Herbaria and Professor in the Department of Integrative Biology at the University of California, Berkeley, where he teaches about island biology, biodiversity, evolution, and phylogenetic analysis. A native southern Californian, he attended California State Polytechnic University, Pomona, where he received his B.S. degree in 1975 and his M.S. in 1978. He then received his Ph.D. from Harvard University in 1984, and was on the faculty at Duke University for nine years before moving to UC Berkeley. His research interests are in the ecology and evolutionary biology of bryophytes (mosses and liverworts), as well as the theory of phylogenetic systematics. He has been heavily involved in developing electronic resources to present taxonomic and distributional information about plants to the public, with applications to conservation concerns. He has most recently been involved in developing new "spatial phylogenetic" tools for studying biodiversity and endemism using large-scale phylogenies and collection data in a geographic and statistical framework.



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Date:

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Time:

2:30 PM-3:45 PM

Link:

<https://ucmerced.zoom.us/j/81032526428?pwd=RTVyc1lnT2hmYnpmbkdMeTdlbzJOQT09>