


2018 Seminar Series: New Frontiers in Systems Engineering

Prof. Jordi Bascompte (University of Zurich) Plant-animal mutualistic networks: the architecture of biodiversity

Abstract: The mutualistic interactions between plants and the animals that pollinate them or disperse their seeds can form complex networks involving dozens or hundreds of species. These networks are highly heterogeneous, nested, and built upon weak and asymmetric links among species. From an ecological point of view, such general architectural patterns maximize the number of coexisting species and increase the range of variability that these mutualistic networks can withstand before one or more species goes extinct. However, because phylogenetically similar species tend to play similar roles in the network, extinction events trigger non-random coextinction cascades. This implies that taxonomic diversity is lost faster than expected if there was no relationship between phylogeny and network structure. From an evolutionary point of view, the indirect effects arising from these network patterns may drive trait coevolution within species-rich assemblages, so that even the most specialized species are more influenced by indirect effects than by their direct partners.

Bio: Jordi Bascompte is Professor of Ecology at the University of Zurich and Director of its Specialized Master on Environmental Sciences. He has been ranked by Thompson Reuters as one of the most highly cited ecologists. Among his distinctions are the European Young Investigator Award (2004), the Ecological Society of America's George Mercer Award (2007), the Spanish National Research Award (2011), and the British Ecological Society's Marsh Book of the Year Award (2016). Recipient of an ERC's Advanced Grant, Jordi has served in the Board of Reviewing Editors of Science and has been the Ideas and Perspectives Editor at Ecology Letters. His research has been featured in some of the top journals including Nature, Science, and PNAS. Among his books are Self-Organization in Complex Ecosystems (with R.V. Solé) and Mutualistic Networks (with P. Jordano), both published by Princeton University Press.

14 February 2018, 11am, RODH 615

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