

Alternate Community Ecology

Community ecology is the study of organism and how they interact. It has a rich theoretical basis, a tradition of experimentation and observation and applied implications for the biological world around us. In this class we will integrate theory and evidence to see what it takes build and maintain communities from the ground up.

Subject	Topics	Reading
1] What is a community?	Definitions Measurements and Patterns of Diversity Species-Area relationships	Velland 1990 Mittelbach Ch. 2
2] Niche Theory	Tradeoffs Character displacement Adaptive radiation	Mich paper Losos 2010
3] Basic population models I	Exponential Discrete Stochasticity	Gotelli Ch. 1
4] Basic population models II	Logistic Carrying capacity Time lags	Gotelli Ch. 2
5] Life History	Life history theory Fecundity schedules Life history evolution	Stearns Gotelli p.50-62 paper()
6] Population genetics	Gene flow Locale adaptation Fragmentation and Bottlenecking	LandGen exerpt paper()
7] Metapopulation	Migration Metapopulation model Model modifications	Gotelli Ch. 4 Dingle 2007
8] Competition Models	Lokta-Volterra Tilman's R^* Isoclines	Gotelli p.100-114 Mittelbach p.132-136
9] Predation Models	Lokta-Volterra Functional response variation Isoclines	Gotelli p.126-140 Mittelbach p. 85-91
10] Interactions in natural systems	Competition Predation	Goldberg 1992 Sih 1985 Chase 2002
11] Mutualisms	Facilitation Context dependency Case studies	Mittelbach Ch. 9 Janzen 1966
12]Eco-evo feedback	Red queen pollinator syndrome	Benton 2009 Fenster 2004
13]Interaction networks I	Type of Networks Describing interactions Measuring interaction strength	Mittelbach 198-205 Mittelbach 214-222
14]Interaction networks II	Controls Cascades Case study	Mittelbach Ch. 11 Beschta 2003 Beschta 2016
15]Indirrect effects	Interaction chain indirrect effects interaction modification indirrect effects	Morin Ch.8 Amo 2014
16] Disturbance	Scale Types IDH	Connell 1978 Wilkinson 1999 Fox 2013, Sheil 2013
17] Succession	Clements and Gleason Modeling Case study	Gleason 1939 Gotelli 180-190 del Moral 2014
18] Coexisitance	Niche partitioning Storage effect Fugative species	Silvertown 2004 Mittelbach p. 289-297 Mittlebach p. 260-263
19] Community Assembly	Metacommunities Historical Contingency Island Biogeography	Leibold 2004 Fukami 2015
20] Alternate Stable States	Theory Novel Ecosystems	Mittelbach 304-313
21] Quaternary Biogeography	refugia migration Why are NA and China so similar?	Gavin 2014 Tiffney 1985
22] Community complexity and function	Stability Function	Tillman 1999 Mori 2018
23] Invasive species	Framework Invasion Invaisability	Sax 2007 Richardson 2006 Schlaepfer 2011
24] Applications	Restoration Assisted Migration Rewilding	Mclaughlan 2007 Donlan2005