BIO 365 ecological networks

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co-teachers: S. Bhandary, L. Cosmo, K. Gawecka, E. Knop, F. Pedraza, M. Román

Course plan

24FS BIO365 Ecological Networks

From	To		Thursday March 14	Friday March 15	Tuesday March 19	Wednesday March 20	Thursday March 21	Friday March 22	Tuesday March 26	Wednesday March 27	Thursday March 28	Tuesday April 9	Wednesday April 10	Thursday April 11	Friday April 12
10:15	12:00	LECTURE	Outline and Introduction	The role of species in networks		Topological patterns in ecological networks	Null models	Network robustness		Models of ecological dynamics	Genetic networks		Spatial networks	Coevolution	Open time
	Speaker		Vindigni	Cosmo		Cosmo	Pedraza	Vindigni		Bhandary	Roman		Gawecka	Cosmo	
12:00	13:00		Lunch	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch
	Instructor(s)	EXERCISE	Vindigni	Roman	Knop Grognuz	Bhandary Vindigni	Pedraza	Vindigni	Gawecka Vindigni	Bhandary	Roman	Gawecka Vindigni	Gawecka	Cosmo	Vindigni
13:00	17:00		Toolkit for network analysis	Species-level metrics	Sampling an ecological network	Network-level metrics	Null models	Measuring network robustness	Distribute papers students' short talks	Models of ecological dynamics	Analyzing genetic networks	Students' short talks	Comparing networks in space	Models of evolution	Single-choice exam

Course grading

- Practical sessions (RStudio, report, and short-talks): up to 3 points

- Single-choice test sessions: up to 2 points

Guidelines for students short talks

Rules

- groups of **2(3) people**

- **8 minutes** each talk

- **All** group members must be presenting

- upload slides on **OLAT** by **11 AM** on 9th April

Presentation guidelines

- **Motivation:** Introduce the context and the questions addressed by this study

- **Methods:** Identify the tools used and relate them with concepts discussed during the course

- **Discussion:** Highlight the main results; evaluate the strengths and limitations of the approach

- **Perspective:** Propose a further analysis of the data or a future development of the study

Group and paper preferences (if you wish!)

Fill the spreadsheet: https://docs.google.com/spreadsheets/d/1G7ifT1dMIpdFU_V-1UhujoLasp7YWMc9cjq39rRHAPk/edit?invite=CK3Nu5IL#gid=0

Albert_2013_EcoLett - Assessing the robustness of networks of spatial genetic variation

Bastolla_2009_Nature - The architecture of mutualistic networks minimizes competition and increases biodiversity

Dunne_2002_EcoLett - Network structure and biodiversity loss in food webs robustness increases with connectance

Fortuna_2010_JAnimEcol - Nestedness versus modularity in ecological networks two sides of the same coin

Knop_2017_Nature - Artificial light at night as a new threat to pollination

Sole_2001_ProcB - Complexity and fragility in ecological

Stouffer_2011_PNAS - Compartmentalization increases food-web persistence

Thebault_2010_Science - Stability of ecological communities and the architecture of mutualistic and trophic networks

Wande-Li_2022_NatureComm - Plant-frugivore network simplification under habitat fragmentation leaves a small core of interacting generalists