Behavioral ecology


Master in Life Science, ENS
Bio-M2_E11 | Behavioral Ecology
Year and Semester: M2 | S1
Where: ENS, Biology department
Duration: 30 hours
First and last day of class: November 4 to November 8
Hours: 09:00-12:00 | 14:00-17:00
Maximum class size: 15 students

This course is open to external students. Contact: galliard@bio.ens.psl.eu

Coordination

Jean-François Le Galliard (galliard@bio.ens.psl.eu), Département de biologie, CEREEP-Ecotron IleDeFrance et CNRS, UMR 7618, iEES Paris and Jean-Baptiste André (jeanbaptisteandre@gmail.com), Département d'Etudes Cognitives et CNRS, Institut Jean Nicod

Credits

3 ECTS

Keywords

Behavioral ecology | cooperation | sexual selection | habitat choice | ethology | communication | cultural evolution

Course prerequisites

The targeted audience is advanced undergraduates and graduate students in ecology, evolutionary biology, ethology and cognitive science or related fields, with experience and a strong interest in animal behavior. Participants trained in other fields are welcome provided they had exposure to basic notions of ecology and evolutionary biology.

Course objectives and description

Behavioral ecology is a scientific discipline interested in describing patterns of natural variation in animal behavior and understanding proximate and ultimate causal mechanisms of behavioral variation among individuals, populations and species. This discipline is based on the scientific and methodological foundations of ethology, the science of behavior, and uses observation, experimentation and mathematical modeling approaches in evolutionary biology to understand animal behavior, particularly the role of ecological interactions in the expression and evolution of behavior.

Aims and themes: This course will introduce the basic concepts and methods of behavioral ecology (characterization of animal behaviors and ethology, concepts and methods in analysis of animal communication, proximal and ultimate causes of animal behavior, optimization and game theory). This general framework will be applied to the study of different types of animal behaviors such as cooperation and conflict, sexual selection, dispersal and habitat selection, communication and cultural evolution, and global change ecology.

Organization: This is an intense week-long course with lectures and analysis of research articles.

Date		Topic	Instructor	Online/Room
Monday Nov 3	9-12 2-4	Lect. 1. Introduction to behavioral ecology, animal communication and cultural evolution	Jean-François Le Galliard	Room 317
	4-5	Lect. 2. Predator-prey interactions and the landscape of fear	Jean-François Le Galliard	Room Favard
Tuesday Nov 4	9-12	Lect. 3. Sexual conflicts	Jean-François Le Galliard	Room 317
	2-5	Lect. 4. Dispersal, habitat choice and optimal foraging	Jean-François Le Galliard	Room 317
Wednesday Nov 5	9-12	Lect. 5. Animal personalities	Jean-François Le Galliard	Room 316
	2-5	Analysis of research articles	Jean-François Le Galliard	Room 317
Thursday Nov 6	9-12	Lect. 6. Cooperation and conflicts inside families	Jean-Baptiste André	Room xxx
	2-5	Lect. 7. Cooperation and conflicts outside families	Jean-Baptiste André	Room xxx
Friday Nov 7	9-12	Lect. 8. Behavioral thermoregulation	Jean-François Le Galliard	Room 317
	2-5	Exam	Jean-François Le Galliard	Room 317

Assessment

Student evaluation is based on a synthesis and presentation of a research article. Students are expected to organize in pairs and half a day will be devoted to analyzing a research article in preparation for an oral presentation at the end of the week.

Course material

Online presentations, articles, and textbook readings will be made available to enrolled students. Enrolled students are encouraged to check access to course site and course material on Moodle prior to the start of the training week.

Suggested readings

- Danchin, E. G., Giraldeau, L. A., & Cézilly, F. (2008). Behavioural ecology (p. 872). Oxford University Press.
- Davies, N. B., Krebs, J. R., & West, S. A. (2012). An introduction to behavioural ecology. John Wiley & Sons.
- Piersma, T., & Van Gils, J. A. (2011). The flexible phenotype: a body-centred integration of ecology, physiology, and behaviour. Oxford University Press.