

L3 Ecologie & Biodiversité
Ecology & Biodiversity
Code ENS-PSL Pegasus : UNBIO1-010

Responsable du cours :

Primary instructor: Dr. Regis Ferriere (he/his), regis.ferriere@bio.ens.psl.eu

Co-instructor: Marion Richardot (she/her), these.marionrichardot@gmail.com

Autre(s) enseignante(s) / enseignant(s) :

Dr. Benoît Perez Lamarque (benoit.perez@ens.psl.eu)

Dr. Jean-François Le Galliard (galliard@bio.ens.psl.eu)

Dr. François Mallard (francois.mallard@bio.ens.psl.eu)

Dr. Marc-André Selosse ([selosse@mnhn.fr](mailto:sellosse@mnhn.fr))

Descriptif du cours :

The "Ecology and Biodiversity" module introduces undergraduate students to the basic concepts and different approaches of ecological research. The course covers population ecology and conservation biology, community and ecosystem ecology, biodiversity, and ecological interactions. The topics are covered in the form of traditional lectures and illustrated with numerous examples. Practical methods are taught in the complementary course Experimental Ecology usually offered in the Spring semester.

External students can attend and credit the class by prior arrangement with the primary instructor. Please see contact information below. External students with attendance confirmed by primary instructor should register at <https://www.enseignement.biologie.ens.fr/?article207> at least one week before the start date of the class.

Maximum class size is 50 students.

The class is taught in French with resources (slides, hand-outs, readings) in English.

Course material and announcements will be posted on Moodle.

Key references used in lectures will be listed and posted on Moodle.

Objectifs pédagogiques et compétences développées :

- Understand the origin and development of ideas in ecology, and connect this progress with major scientific advances from the 19th century to the current days.
- Define and relate the concepts of population, community, ecosystem.
- Identify relevant systems and scales to address ecological questions.
- Form hypotheses to explain ecological patterns, from populations to communities to ecosystems.
- Develop quantitative thinking about ecological systems and processes.
- Design experimental protocols and modeling frameworks to test predictions derived from ecological hypotheses.
- Mobilize diverse sources of data (organisms samples, molecular data, environmental data) to address ecological questions pertaining to population dynamics, community assembly and diversity, and ecosystem function.
- Map cutting-edge research questions in ecology and relate them to fundamental knowledge about populations, communities, ecosystems.
- Relate fundamental properties of ecological systems to human-valued environmental processes.
- Translate practical ecological problems (such as the conservation of ecosystem services) in terms that are amenable to rigorous ecological research.

Contenu détaillé du cours :

Classes scheduled on Mondays 9-am-12pm

at ENS, Department of Biology, 46 rue d'Ulm, room 316.

First day of class: September 15, 2025 *** this class will start at 10am.

Last day of class: January 5, 2026

Exam: January 12, 2026

Date	Thème	Intervenant(e.s)	Références
1^{ère} partie : Bases			
15/9	Enjeux et frontières de l'écologie	R. Ferrière	
22/9	Ecologie des populations	R. Ferrière	Rockwood 2015
6/10	Introduction aux méthodes & statistiques	J.F. Le Galliard	Henderson 2003, Bolker 2007
13/10	Travaux Dirigés	M. Richardot	
2^{ème} partie : Biodiversité et conservation			
20/10	Introduction à la biodiversité	J.F. Le Galliard	Mittelbach et McGill 2019
27/10	Biogéographie et évolution de la biodiversité	B. Pérez-Lamarque	Mittelbach et McGill 2019
3/11	Ecologie de la conservation	R. Ferrière/M. Richardot	
10/11	(Pas de cours.)		
3^{ème} partie : Interactions et fonctionnement des systèmes écologiques			
17/11	Biodiversité et fonctionnement des écosystèmes	F. Mallard	Mittelbach et McGill 2019
1/12	Interactions écologiques 1	M.A. Selosse	Selosse 2000
8/12	Interactions écologiques 2	M.A. Selosse	Selosse 2000
15/12	Interactions écologiques 3	M.A. Selosse	Selosse 2000
4^{ème} partie : Applications & évaluation			
5/1	Travaux Dirigés	J.F. Le Galliard, F. Mallard	
12/1	Examen 10h-12h ou après-midi	M. Richardot	

Langue d'enseignement :

The class is taught in French with resources (slides, hand-outs, readings) in English.

Type de cours :

Lecture-based and two sessions of *Travaux Dirigés*.

Modalités d'évaluation :

Evaluation is based on a **final exam, scheduled on January 12, 2026, from 10am to 12pm**. Please contact the primary instructor if you need special accommodation.

Année et prérequis:

Licence L3.

The course assumes familiarity with basic ecological concepts of the preparatory classes' curriculum. Students who were not exposed to basic ecology are required to attend the *Introduction to Ecology* crash course. Contact instructor Regis Ferriere at regis.ferriere@ens.psl.eu for registration to the *Introduction to Ecology* class.

Semestre :

Semestre 1

Lectures obligatoires :

Short articles or excerpts may be provided for reading and discussion in class.

Lectures recommandées :

No specific textbook is assigned to the class. However, the following texts provide useful resources for different parts of the class:

- Bolker 2007: *Ecological models and data in R*. Princeton University Press.
- Henderson 2003: *Practical Methods in Ecology*. Blackwell Publishing.
- Mittelbach & McGill 2019: *Community Ecology*. Oxford University Press.
- Rockwood 2015: *Introduction to Population Ecology*. Wiley Blackwell.
- Selosse 2000: *La Symbiose. Structures et Fonctions, Rôle Ecologique et Evolutif*. Vuibert.