



- **PRINCIPLES OF ECOLOGY**
 - **BIOLOGY 215 (10317)**
 - **Sept 2024**
 - **Instructor: Dr. T. E. Reimchen**
 - **reimchen@uvic.ca**
 - **Senior Lab Instructor: Connor Nelson**
 - **connorjnelson@uvic.ca**
 - **Lectures MR: 0830-0950**

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Anders, Apollo 8, 1968



Course Outline

Ecological genetics –genetic variability, natural selection, evolution, geological timetable

Behavioral ecology- optimal foraging, territoriality, sex & mating systems, group living, life histories

Population ecology- movement, estimating population size, life tables, mortality and survivorship curves, population growth and population regulation

Ecological interactions- competition, niche, predation, defenses

Community ecology- succession, trophic levels, keystone species, nutrient cycling

Major ecological communities- estuaries, intertidal, kelp forests, pelagic, deep sea, coral reefs, lakes, tundra, taiga, temperate forests, grasslands, deserts, tropical forests

Global biodiversity- latitude, elevation, ocean depth causes: evapotranspiration, spatial heterogeneity, geological history, complexity, stability

Island biogeography – island size, distance, species turnover, equilibrium & tripartite theory

Conservation Ecology

Human impact on ecosystems – population growth, habitat loss, fragmentation, atmospheric pollutants, global warming, marine and freshwater pollution, overhunting, overfishing, introduced species, extinctions

History of conservation, ecological footprint, IUCN categories, protected areas, SLOSS, minimum viable population (MVP), minimum viable area(MVA), critical habitats, endemic species, park design, restoration, de-extinction, re-wilding, role models

Course Goals: Students are expected to understand basic ecological principles, their application, how humans have transformed the planet and how to fix what is broken.

- **Lecture Text: Ecology- Concepts and Application**
- **-purchase suggested but not required**
- **Authors: Molles and Laursen 2020- 5th edition (Canadian Edition)**
- **-E-version available from bookstore (cost ~\$64)**

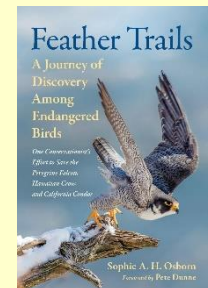


Additional readings to supplement lecture topics: examples- New Scientist, Conservation Biology, Ecology, Trends in Ecology and Evolution, Web of Science, Google Scholar, Google, Chat GPT (with caution)

- **-pdfs covering most lecture content and video of the lecture will be posted on BrightSpaces website in the late afternoon on each lecture day**
- **-access to 215 website restricted to registered students with a UVic email account.**
- **-lecture pdfs and videos limited to personal use and not for redistribution**
- **Electronic Lab Manual/Modules- available on Biol 215 BrightSpaces**

Interesting Documentaries – David Attenborough, Planet Earth I&II, Blue Planet I&II, etc

.new book relevant to Conservation Ecology





-British
-weekly-
published every
Wednesday

Volume 632
Issue 8027,
29 August
2024

Online- Uvic Library

-US
-weekly-
published every
Thursday



Research Highlight

20 Aug 2024

Why record wildfires scorched Canada last year

Snows melted earlier than usual because of climate change, fuelling the unprecedented blazes.

Each of these periodicals are online from Uvic library



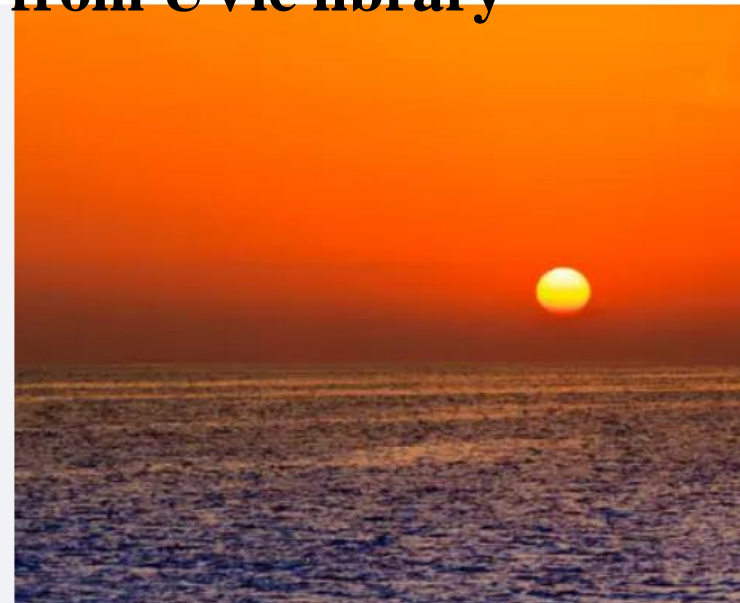
Environment

The crisis in our oceans shows how quickly climate chaos can strike

A rapid rise in global sea temperatures is causing havoc across the world. It is a compelling reminder that the impacts of climate change will arrive in sudden, catastrophic bursts

Leader

Free



- All lectures and labs are in person
- **There will be 5 minute break halfway through each lecture devoted to a question and answer session concerning any issues from the previous or current lecture.**
Students are responsible for checking their own records and registration status and should review the UVic Student Code of Conduct.

Course marking scheme

Lecture mid-term examinations – multiple choice questions

(35 minutes -last half of lecture period)

Oct 7 (12.5% of course grade)

Nov 04 (12.5% of course grade)

Final Lecture examination (35% of course grade) ...includes all lectures following second midterm as well as general ecological principles from the entire course.



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DATE (WEEK OF)	LAB #	LAB CONTENT
September 3-6		No labs
September 9-13	1	Ecological Sampling: Herbivory and Garry Oak Ecosystems
September 16-20	2	Morphological Variation: Ecological Adaptations of <i>Nucella lamellosa</i>
September 23-27	3	Predator/Prey: Orb-Weaving Spiders Quadrat Sampling, Transect Sampling
September 30 – October 4	4	Online lab – Modeling Suitable Habitat for a Species of Conservation Concern: An Introduction to Spatial Analysis with QGIS (self-directed lab exercise) No in-person labs – University closed on Monday September 30 for National Day for Truth and Reconciliation
October 7-11		LAB MIDTERM EXAM Covers material from labs 1 – 4
October 14-18		No in-person labs – University closed on Monday October 14 for Thanksgiving
October 21-25	5	Mark and Recapture: <i>Hemigrapsus</i> sp.
October 28 – November 1	6	Island Biogeography: Beetles and Forest Patches
November 4-8	7	Exploring Principles of Community Diversity: Soil Litter/Edge Part 1
November 11-15		No labs – University closed November 11-13 for Reading Break
November 18-22	8	Soil Litter/Edge, Diversity Indices Part 2
November 25-29		LAB FINAL EXAM This exam is cumulative.

Assessment	Value
Lab midterm exam	15%
Lab final exam	18%
Lab assignment (from lab 4)	7%
Total laboratory mark	40% of course grade

Note: Details of the laboratory exams and lab assignment will be covered by your TA in the lab.
The laboratory final exam is cumulative.

Evolutionary and Ecological Studies in Reimchen's Lab



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1: Brief canoe sequence of Drizzle Lake ([video](#))

2: Underwater video of nesting male stickleback and curious Common Loons in dystrophic (red-shifted) waters ([video](#)). see [Reimchen 1989](#) and [Marques et al. 2017](#).



Lab Members



Adaptive Radiation &
Functional Morphology



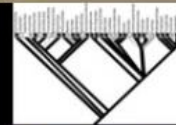
Haida Gwaii
Lake Biophysicals



Loon Research



Salmon Forest
Project



Molecular Studies



Publications



Diving photos

Important Dates and Issues

Sept 04: First day of classes

Sept 17: last day for 100% reduction of tuition fees for standard first term and full year courses.

50% of tuition fees will be assessed for courses dropped after this date

Sept 20: Last day for adding courses that begin in the first term

Sept 30: Last day for paying first term fees without penalty

University closed (National Day for Truth and Reconciliation)

Oct 07: First lecture mid-term exam (35 minutes during lecture period)

Oct 08: Last day for 50% reduction of tuition fees. 100% of tuition fees will be assessed for courses dropped after this date

Oct 14: University closed (Thanksgiving Day)

Oct 31: Last day for withdrawing from first term courses without penalty of failure

Nov 04: Second mid-term exam (35 minutes during lecture period)

Nov 11: University Closed (Remembrance Day)

Nov 11-13: Reading Break

Dec 04: Last day of classes

Dec 07: Examinations begin for all faculties

We acknowledge and respect the Ləkʷəŋən (Songhees and Esquimalt) Peoples on whose territory the university stands, and the Ləkʷəŋən and W̱SÁNEĆ Peoples whose historical relationships with the land continue to this day.

Learn lots, study and enjoy the course