

ES482 Natural History & Ecology Of Biological Invasions

Instructor: Dr. John Volpe

CLE D131 Mon & Thur 1130-1250

JPV Office: 2nd Floor University House 4 (first-time visitors, use a campus map...really)

Email: jpv@uvic.ca

Office Hours: By appointment

Course Materials: There is no text for the course. Readings, videos etc. will all be posted on the CourseSpaces page for this course.

Evaluation:

Participation 35%

Pop Readings Quizzes 20%

Species Project 30%

Final Exam 15%

Important Dates

Sept 7 Classes begin

Oct 9 & 12 Thanksgiving Day No classes this week

Nov 13 – 16 Reading Break No classes this week

Nov 30 Last Class - Final Exam & Species Project Due

Student Participation

Student participation marks will be awarded each class

0 - absent

1 - minimal contribution

2 - substantive contribution, evidence of engagement with readings (expected norm)

3 - very substantive contribution, evidence of engagement with readings and external materials

3.5 - criteria for "3" plus novel synthetic insights

Pop Quizzes

Periodically through the semester we will have an undetermined number of quizzes based solely on the readings. They are short, simple and serve only to confirm you have read and assimilated the assigned materials. Questions may reference past readings.

0 = absent or incorrect | 0.5 unit=simple regurgitation | 1 unit=synthetic knowledge

Student Project

Students will consider how ecological, social and economic interactions define exotic species impacts in (or around) Victoria, BC. Each student will choose a local exotic species, perform field observations and a literature review (inclusive of primary and grey literatures) to describe its taxonomy, local

distribution, natural history, ecological interactions, and its present and anticipated future ecological, social and economic impacts. This information will be compiled in a standardized factsheet that also includes reflections on mitigation and regulation informed by course content and serving collectively as information sources for comparative considerations, e.g., of spread and establishment, interactions and impacts, regulatory applications and outcomes, etc.

Lecture Topics

i) Class Intro / Syllabus review

1. Week of Sept 11

Review of Exotic / Invasive Species of the World, Canada and BC

READING: BC AIS Framework 2004 (pages i-vi and all figures and tables)
BC Invasive Species Strategy (overview)

2. Week of Sept 18

Unanticipated Continuation of Lecture 1...

READING: Sagoff 1999 What's wrong with exotic species?
Maclean's 2017 Canada should embrace invasive species

3. Week of Sept 25

Ghosts of invasions past: Movement of organisms through history

Invasions through deep history

Species ranges (core vs. fringe populations)

READING: Sakai 2001 The population biology of invasive species
Armstrong 2008 Directions in reintroduction biology

4. Week of Oct 2

Parks Canada AIS - Kyle Nelson

READING: Carlton 2017 Tsunami-driven rafting/ Transoceanic species dispersal and implications for marine biogeography
Sylvester 2011 Hull fouling as an invasion vector/ can simple models explain a complex problem

October 9 Thanksgiving Monday Holiday - No Discussion Thursday Oct 12

October 13 Field trip to Sidney Island invasive species recovery project

5. Week of Oct 16

Invasion biology, terms and concepts

READING: Anderson 2014 Biosecurity and vector behavior: Evaluating the potential threat

Parker 1999 Impact: Toward a framework for understanding the ecological effects of invaders

6. Week of Oct 23

Case History: Managing BC Alien Species - the view from the trenches with Martina Beck (BC Aquatic Species Coordinator)

READING: Sax 2000 The paradox of invasion
Naylor 2005 Fugitive salmon: Assessing the risks of escaped fish from net-pen aquaculture

7. Week of Oct 30

Case History: Atlantic salmon in BC

READING: Thomas 2010 Climate, climate change and range boundaries
Clavel 2011 Worldwide decline of specialist species/ toward a global functional homogenization?
Estes 2011 Trophic downgrading of planet Earth

8. Week of Nov 6

Ecological processes of diversity creation and loss (why are species not the same everywhere?)

(Thursday Nov 9 UVic Invasives with Thomas Munson - Victoria Parks, Recreation and Culture)

READING: Hobbs 2009 Novel ecosystems: implications for conservation and restoration
Murcia 2014 A critique of the 'novel ecosystem' concept
Crowley 2017 Conflict in invasive species management

For Thursday's field trip with Thomas Munson

Invasive Species Council of BC: <http://www.bcinvasives.ca/>

Coastal Invasive Species Committee: <http://www.coastalisc.com/>

Capital Region Invasive Species Committee: <http://crispinvasives.ca/>

Nov 13 - 15 Reading Break No class Nov 16

9. Week of Nov 20

Novel Ecosystems and Ecological Restoration

READING: Shea 2002 Community ecology theory as a framework for biological invasions
Holling 2004 From complex regions to complex worlds
Ulanowicz 2004 On the nature of ecodynamics

10. Nov 27

Invasion events and the unified theory of ecological process

**Prior to Class READING: Early 2016 Global threats from invasive alien species in the twenty-first century and national response capacities

Ricciardi 2017 Invasion science: A horizon scan of emerging challenges and opportunities

Nov 30 Final Exam & Species Project Due

UVic Grading Scale (New - Please Read)

An **A+** (90-100), **A** (85-89), or **A-** (80-84) is earned by work which is technically superior, shows mastery of the subject matter, and in the case of an A+ offers original insight and/or goes beyond course expectations. Normally achieved by a **minority** of students.

A **B+** (77-79), **B** (73-76), or **B-** (70-72) is earned by work that indicates a good comprehension of the course material, a good command of the skills needed to work with the course material, and the student's full engagement with the course requirements and activities. A **B+** represents a more complex understanding and/or application of the course material. Normally achieved by the **largest number of students.**

A **C+** (65-69) or **C** (60-64) is earned by work that indicates an adequate comprehension of the course material and the skills needed to work with the course material and that indicates the student has met the basic requirements for completing assigned work and/or participating in class activities.

A **D** (50-59) is earned by work that indicates minimal command of the course materials and/or minimal participation in class activities that is worthy of course credit toward the degree.

F (0-49) is earned by work, which after the completion of course requirements, is inadequate and unworthy of course credit towards the degree. (UVic Calendar)