

# BIOLOGICAL INVASIONS IN MARINE ENVIRONMENTS SYLLABUS

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## WEEK 1

### Saturday

AM Introduction and Review of Syllabus and Readings

**Lecture: Introduction to Biological Invasions**

Ecological and Evolutionary Biogeography

- The Origin and History of Community Assemblages: Additions, Deletions, and Population Changes
- Biological Invasions (The Additions): Concepts and Definitions
- (Range Expansions, Native Species, and Introductions)
- The Concept of Cryptogenesis
- Biogeographic Theory: The Concept of Cosmopolitanism
- Questions and Discussion

Break

**Lecture: Mechanisms of Dispersal: With and Without Humans**

- Assembling Communities: Non-human vs. Human-Mediated Dispersal
- The Mechanisms of Human-Mediated Dispersal
- Cryptovehicism
- Questions and Discussion

12:00 Lunch

PM **Minilecture:**  
**"New in these parts, Pilgrim?"** (--- John Wayne, *Big Sky Country*, 1955, Warner Brothers Movies)  
Divide into three separate Work Groups to address the question:  
*"What criteria could be used to distinguish a native from an introduced species?"*

Group Discussion: Assembling a Set of Testable Criteria for the Recognition of Introduced and Native Species

**Lecture: Inoculations and the Timing of Invasions:  
What are Some of the Processes that May Mediate Establishment?**

### Sunday

AM **Field Work: Patterns of Invasions: Fouling Community Transect of the Coos Bay Estuary**

12:00 LUNCH

PM **Laboratory:** Semi-Quantitative (Ranking) Analysis of the Fouling Samples, with an Emphasis on the Introduced and Cryptogenic Species  
Group Discussion of Data

**Lecture: The Ecology of Invasions I:**

Topics: **Altered States of Nature: The Regional and Global Impacts of Marine Invasions**

\* Recognized Invasions: Some Examples

\* Unrecognized Invasions: Some Examples  
Questions and Group Discussion

## WEEK 2 Saturday

AM **Field Work: Ecology of Invasions:**

- \* **Seagrass Invasion**
- \* **European Shore Crab Invasion**
- \* **Intertidal Snail (Gastropod) Invasion**
- \* **Intertidal Bivalve (Clam and Oyster) Invasions**

12:00 Lunch

PM Presentation of Field Contemplation Results: "*Zostera* vs. *Scirpus*" Experimental Designs

**Lecture: The Ecology of Invasions II:  
Resistance and Susceptibility in Invasion Ecology -- Global and Regional Patterns,  
including the Comparative Geography of Invasions**  
Questions and Group Discussion

## Sunday

AM **Lecture: Pre-Invasion Control:**

**The Social Ecology, Economic Ecology, and Political Ecology of Preventing,  
Modifying, and/or Controlling Accidental and Intentional Introductions -- or,  
Why Should We Care?**

Questions and Discussion

**Minilecture: Post-Invasion Control: A Review of The Challenges**

Divide into three Work Groups and begin to address the question:

*"What are the pros and cons of applying biological control for invading species in the ocean?"*

12:00 Lunch

PM Group Presentations

**Lecture: What's Next?: The Ghost of Christmas Future:**

Topics:-- **Predicting Future Invasions**  
-- **Genetically Modified Organisms (Transgenics)**

A Quiz