

## Term Information

Effective Term Spring 2023

## General Information

Course Bulletin Listing/Subject Area Plant Pathology  
Fiscal Unit/Academic Org Plant Pathology - D1178  
College/Academic Group Food, Agric & Environ Science  
Level/Career Undergraduate  
Course Number/Catalog 4321  
Course Title Managing biological invasions for forest sustainability  
Transcript Abbreviation Biol Invas Forest  
Course Description Explores the causes and consequences of, and management options for, biological invasions of forest environments by pathogens and insect pests that lead to widespread tree mortality. These invasions contribute to ecosystem degradation, with ecological and socio-economic impacts and implications for the sustainability of forest ecosystems, industries, and the beings that depend on them.  
Semester Credit Hours/Units Fixed: 3

## Offering Information

Length Of Course 14 Week, 12 Week, 8 Week  
Flexibly Scheduled Course Never  
Does any section of this course have a distance education component? No  
Grading Basis Letter Grade  
Repeatable No  
Course Components Lecture  
Grade Roster Component Lecture  
Credit Available by Exam No  
Admission Condition Course No  
Off Campus Never  
Campus of Offering Columbus, Lima, Mansfield, Marion, Newark, Wooster

## Prerequisites and Exclusions

Prerequisites/Corequisites None.  
Exclusions  
Electronically Enforced No

## Cross-Listings

Cross-Listings None.

## Subject/CIP Code

Subject/CIP Code 26.0305  
Subsidy Level Baccalaureate Course  
Intended Rank Sophomore, Junior, Senior

## Requirement/Elective Designation

Sustainability

The course is an elective (for this or other units) or is a service course for other units

## Course Details

### Course goals or learning objectives/outcomes

- 1C (C=Course Goal): Understand the causes (drivers) and consequences (impacts) of biological invasions of forest environments by pathogens and insect pests (PIPs).
- 1C 1.1: Describe the major drivers and impacts of PIP invasions.
- 1C 1.2: Explain in detail the options for management of PIP invasions.

### Content Topic List

- Forests and sustainability; human and ecological dependence on healthy forests
  - Overview of major groups of forest pathogens and insect pests (PIPs)
  - Drivers of biological invasions; impacts (ecological degradation, implications for climate change, etc.); interventions & management; scientific and policy approaches
  - Alien PIPs: Emerald ash borer
  - Alien PIPs: Ash dieback
  - Alien PIPs: Sirex woodwasp
  - Alien PIPs: Rapid Ohia death
  - Autoctonus PIPs: Mountain pine beetle
  - Autoctonus PIPs: Oak wilt
  - Autoctonus PIPs: Heterobasidion annosum
- Yes

### Sought Concurrence

## Attachments

- EEOB Concurrence PLNTPTH 4321.pdf  
*(Concurrence. Owner: Lewandowski, Monica Misako)*
- SENR Concurrence PLNTPTH 4321.pdf  
*(Concurrence. Owner: Lewandowski, Monica Misako)*
- AEDE Concurrence PLNTPTH 4321.pdf  
*(Concurrence. Owner: Lewandowski, Monica Misako)*
- Entomology Concurrence PLNTPTH 4321.pdf  
*(Concurrence. Owner: Lewandowski, Monica Misako)*
- PLNTPTH 4321 syllabus\_Rev10132022.docx  
*(Syllabus. Owner: Lewandowski, Monica Misako)*
- PLNTPTH 4321 GE Sustainability Form\_Rev10132022.pdf  
*(Other Supporting Documentation. Owner: Lewandowski, Monica Misako)*
- Opinion \_ Invasive Insects and Diseases Are Killing Our Forests - The New York Times.pdf  
*(Other Supporting Documentation. Owner: Lewandowski, Monica Misako)*
- PLNTPTH 4321 Response to ASC Theme Comm 10.19.22.docx  
*(Other Supporting Documentation. Owner: Lewandowski, Monica Misako)*

**Comments**

- Latest revised syllabus and AEDE concurrence added on 4/7/2022. Syllabus revision uploaded 4/15/2022; 4/25/2022.  
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Revisions, syllabus, and response to ASC Theme Committee uploaded 10/19/2022 (by Lewandowski, Monica Misako on 10/19/2022 12:03 PM)
- Please see Panel feedback e-mail sent 08/30/22. (by Cody, Emily Kathryn on 08/30/2022 05:02 PM)
- Additional revision as per email message 28 April 2022  
  
Revise as per COAA via email message 20 April 2022  
  
Revise as per email message 12 April 2022 (by Osborne, Jeanne Marie on 04/28/2022 01:57 PM)
- Revision requested (by Benitez Ponce, Maria Soledad on 04/07/2022 11:20 AM)

**Workflow Information**

Status	User(s)	Date/Time	Step
Submitted	Lewandowski, Monica Misako	03/29/2022 02:08 PM	Submitted for Approval
Revision Requested	Benitez Ponce, Maria Soledad	04/07/2022 11:20 AM	Unit Approval
Submitted	Lewandowski, Monica Misako	04/07/2022 05:57 PM	Submitted for Approval
Approved	Benitez Ponce, Maria Soledad	04/08/2022 10:01 AM	Unit Approval
Revision Requested	Osborne, Jeanne Marie	04/12/2022 04:52 PM	College Approval
Submitted	Lewandowski, Monica Misako	04/14/2022 06:23 PM	Submitted for Approval
Approved	Benitez Ponce, Maria Soledad	04/15/2022 09:48 AM	Unit Approval
Revision Requested	Osborne, Jeanne Marie	04/20/2022 12:57 PM	College Approval
Submitted	Lewandowski, Monica Misako	04/25/2022 01:27 PM	Submitted for Approval
Approved	Benitez Ponce, Maria Soledad	04/25/2022 01:46 PM	Unit Approval
Revision Requested	Osborne, Jeanne Marie	04/28/2022 01:57 PM	College Approval
Submitted	Lewandowski, Monica Misako	05/16/2022 03:44 PM	Submitted for Approval
Approved	Benitez Ponce, Maria Soledad	05/16/2022 04:04 PM	Unit Approval
Approved	Osborne, Jeanne Marie	05/18/2022 01:57 PM	College Approval
Revision Requested	Cody, Emily Kathryn	08/30/2022 05:02 PM	ASCCAO Approval
Submitted	Lewandowski, Monica Misako	10/19/2022 12:04 PM	Submitted for Approval
Approved	Roth, Mitchell	10/19/2022 12:59 PM	Unit Approval
Approved	Osborne, Jeanne Marie	10/20/2022 11:17 AM	College Approval
Pending Approval	Cody, Emily Kathryn Jenkins, Mary Ellen Bigler Hanlin, Deborah Kay Hilty, Michael Vankeerbergen, Bernadette Chantal Steele, Rachel Lea	10/20/2022 11:17 AM	ASCCAO Approval

Dear ASCC Themes Panel and Sustainability Theme Advisory Group,

Thank you for the feedback you have provided for the GE Theme: Sustainability course proposal for PLNTPH 4321. We very much appreciate the time and insight provided, and especially the appreciation of the potential for this course to integrate well with the Sustainability theme. Though the course was always planned to demonstrate the importance of healthy and resilient forests to the sustainability of our world, we have incorporated the reviewing faculty's input to increase the visibility of the connections between the impacts of invasive and destructive species, the health of our forest environments, and the overall implications for sustainability. We hope these connections are now more explicit through modifications to the title, course topics, and readings.

- *The reviewing faculty ask that the syllabus establish the theme within the body of the topics and readings early on, taking care to directly underscore the links between Sustainability and the course content. Although the theme ELOs are listed in the schedule in the current proposal, the connections between the theme ELOs and the corresponding content are unclear.*

Notations in course schedule, change in course title, clarity of content topics to define the connection more clearly.

- *The reviewing faculty ask that the course proposal more overtly articulate the links between biological invasion and Sustainability so the connections between the two are integrated throughout the fabric of the course. For example, the reviewing faculty note that the first article in the bibliography from 2011 grounds the course well in the study of biological invasion, but that the general Sustainability framework within these dimensions remains nebulous.*

Two additional readings have been included in the References (Quirion, et al., 2021 and Popkin, 2021), and are included in the first few weeks of the semester so that students gain an appreciation of the 'big picture' relationship between forest sustainability and invasive species. The Popkin article from the NY Times is discussed at the outset of the course to set the stage for the course and promote critical thinking about and discussion of sustainability of forest environments in the context of the threats by invasive species as well as to reflect on the impact of loss of the forests to human society and the natural world.

- *The reviewing faculty ask that the Sustainability theme's presence in assignments also be developed further, directly underscoring where and which aspects of the theme will feature in various activities. For example, the reviewing faculty note that presentations are intended as a means to make the Sustainability link, but it is unclear how this will be accomplished, as the rubric only notes "depth of research" while nothing in the ratings connects to the theme.*

The rubric for the presentation assignment has been developed to make explicit the importance of connecting the research the students complete to sustainability of forest environments with notations in the Depth of Research criterion.

In addition, the concept of 'sustainability' is more visible throughout the course schedule and topics that are covered in the course, as well as in the readings.

- On the bottom of page 8 of the syllabus, the reviewing faculty kindly note that there is a typo regarding the total possible number of quiz points, which should be 180 rather than 165 (per the How Your Grade Is Calculated chart at the top of the same page). **Corrected**
- On page 14 of the syllabus, the reviewing faculty recommend clarifying which students qualify to use the services of CFAES counselor David Wirt, as the course will be taken by students across the university and its various colleges. **Clarified**
- The reviewing faculty request a cover letter that details all changes made in response to this feedback. **This document**

# Managing biological invasions for forest sustainability

## Syllabus

PLNTPTH 4321 Spring 2023

### Course Information

- **Course times and location:**  
**Lectures** Tues Thurs 2:20 p.m. – 3:40 p.m.  
**Location:** 102 Kottman Hall
- **Credit hours:** 3
- **Mode of delivery:** In person

### Instructor

- **Name:** Pierluigi Bonello
- **Email:** Bonello.2@osu.edu
- **Phone Number:** 614-688-5401
- **Office location:** 483C Kottman
- **Office hours:** Thursdays from 10:20 a.m.-11:15 a.m.
- **Preferred means of communication:**
  - My preferred method of communication for questions is **email**.
  - My class-wide communications will be sent through the Announcements tool in Carmen. Please check your [notification preferences](https://go.osu.edu/canvas-notifications) (go.osu.edu/canvas-notifications) to be sure you receive these messages.

### Teaching Assistant

- **Name:** TBD



- **Email:** [lastname.#@osu.edu]

## Course Prerequisites

None.

## Course Description

Forests provide critical ecosystem services, such as mitigating climate change, maintaining healthy air and clean water, and important recreational aesthetics. In this course, students will be learning the causes and consequences of, and management options for, biological invasions of forest environments by pathogens and insect pests (PIPs) that lead to widespread tree mortality. These invasions contribute to ecosystem degradation, with significant ecological and socio-economic impacts and implications for the sustainability of forest ecosystems, related industries, and the beings that depend on them. The focus will be on North American systems, but knowledge gained in this course will allow for the interpretation of similar invasions anywhere in the world. The course is structured in three parts: the first one is geared toward understanding the human dependence and synergies with forest environments, exploring sustainability as it relates to resilient forests and ecological systems, and the major drivers of PIP invasions; the second will be a series of case studies presented by the instructor as well as several outside speakers who are expert in their respective PIP systems; the third will consist of an active, student-led exploration into these topics and their implications for sustainable forests.

## Course Learning Goals & Outcomes

By the end of this course, students should successfully be able to:

- **Learning goal 1C (C = Course-specific):** Understand the causes (drivers) and consequences (impacts) of biological invasions of forest environments by pathogens and insect pests
  - **Learning outcome 1.1C:** Describe the major drivers and impacts of PIP invasions
  - **Learning outcome 1.2C:** Explain in detail the options for management of PIP invasions
- **How Students Meet the Outcomes:** This course fulfills these learning outcomes by requiring students to synthesize material from several disciplines across the natural sciences so that they develop a holistic and integrative perspective on sustainability and sustainable development as it relates to biological invasions of forest environments.
- More specifically, the course introduces basic concepts related to public policy making and how basic aspects of globalization impinge on sustainable business practices as well as the research on, and practice of, sustainable natural resource management. The course is taught from a systems perspective, encouraging students to examine how ecological systems interact. Assessments include a variety of tools, ranging from lecture material to exams and quizzes, and group projects.



# General Education Expected Learning Outcomes

As part of the Sustainability theme of the General Education curriculum, this course is designed to prepare students to be able to do the following:

## Specific Learning Goals and Outcomes of the Sustainability Theme

- **Learning Goal 1S (S = Sustainability Theme)** Successful students will analyze sustainability at a more advanced and in-depth level than in the Foundations component.
  - **Outcome 1.1S:** Engage in critical and logical thinking about the topic or idea of sustainability.
  - **Outcome 1.2S:** Engage in an advanced, in-depth, scholarly exploration of the topic or idea of sustainability.
- **Learning Goal 2S** Successful students will integrate approaches to sustainability by making connections to out-of-classroom experiences with academic knowledge or across disciplines and/or to work they have done in previous classes and that they anticipate doing in the future.
  - **Outcome 2.1S:** Identify, describe and synthesize approaches or experiences as they apply to sustainability.
  - **Outcome 2.2S:** Demonstrate a developing sense of self as a learner through reflection, self-assessment and creative work, building on prior experiences to respond to new and challenging contexts.
- **Learning Goal 3S** Successful students will analyze and explain how social and natural systems function, interact and evolve over time; how human well-being depends on these interactions; how actions have impacts on subsequent generations and societies globally; and how human values, behaviors and institutions impact multifaceted potential solutions across time.
  - **Outcome 3.1S:** Describe elements of the fundamental dependence of humans on Earth and environmental systems, and on the resilience of these systems.
  - **Outcome 3.2S:** Describe, analyze and critique the roles and impacts of human activity and technology on both human society and the natural world, in the past, present and future.
  - **Outcome 3.3S:** Devise informed and meaningful responses to problems and arguments in the area of sustainability based on the interpretation of appropriate evidence and an explicit statement of value.

**PLNTPH 4321 meets the learning goals and outcomes for the Sustainability Theme by:**



- Exploring and analyzing major groups of forest pathogens and insect pests as well as the major biological, physical, and social drivers of biological invasions, and their ecological and societal impacts.
- Exploring and analyzing the concept of biological invasions as the result of a public good social dilemma, specifically the trade-off between global commerce (e.g. free-trade agreements) and environmental protection. Students will explore issues such as "the prisoner dilemma" which leads to selfish behavior by special interests and nations at the expense of global environmental integrity.
- Encouraging students to devise solutions to the issue of biological invasions ranging from the biological - prevention, early detection and rapid response, mitigation and restoration, to the regulatory - role of agencies and private stakeholders, to the political - need for collective action at the global level by way of mutually beneficial policy formulation, implementation, and enforcement.



# How This Course Works

**Mode of delivery:** This course is in-person. We have required lecture sessions each week on Tuesdays – Thursdays from 2:20-3:40 p.m. The remainder of your work will take place in Carmen throughout the week.

**Pace of online activities:** This course is divided into **weekly modules** that are released one week ahead of time. Students are expected to keep pace with weekly deadlines but may schedule their efforts freely within that time frame.

**Credit hours and work expectations:** This is a 3 credit-hour course. According to [Ohio State bylaws on instruction](https://www.ohio.edu/bylaws-on-instruction) ([go.osu.edu/credithours](https://www.ohio.edu/bylaws-on-instruction)), students should expect around 3 hours per week of time spent on direct instruction (instructor content and Carmen activities, for example) in addition to 6 hours of homework (reading and assignment preparation, for example) to receive a grade of [C] average.

**Attendance and participation requirements:** Research shows regular participation is one of the highest predictors of success. With that in mind, I have the following expectations for everyone's participation:

- **Live sessions (In person): required**  
All live, scheduled lectures for the course are required. I will post recordings of synchronous sessions for those who cannot attend in case of emergency. If you have a situation that might cause you to miss an entire week of class, discuss it with me as *soon as possible*.
- Logging in: AT LEAST ONCE PER WEEK
- Be sure you are logging in to the course in Carmen each week, including weeks with holidays or weeks with minimal online course activity. (During most weeks you will probably log in many times.) If you have a situation that might cause you to miss an entire week of class, discuss it with me as soon as possible.
- **Office hours: optional**  
All of my office hours are optional.



# Course Materials, Fees and Technologies

## Required

- None required. Supplemental reading materials in electronic format will be provided or will be available on the internet (following appropriate fair use regulations). Most course content will be available on Carmen ([carmen.osu.edu](http://carmen.osu.edu)).

## Recommended/optional; all available in OSU libraries

- To be posted in Carmen.

## Fees and/or Additional Requirements

- None

## Required Equipment

- Computer: current Mac (MacOs) or PC (Windows 10) with high-speed internet connection
- Webcam: built-in or external webcam, fully installed and tested
- Microphone: built-in laptop or tablet mic or external microphone, fully installed and tested
- Other: a mobile device (smartphone or tablet) to use for BuckeyePass authentication

## Required Software

**Microsoft Office 365:** All Ohio State students are now eligible for free Microsoft Office 365. Visit the [installing Office 365](http://go.osu.edu/office365help) ([go.osu.edu/office365help](http://go.osu.edu/office365help)) help article for full instructions.

## Carmen (CarmenCanvas) Access

You will need to use [BuckeyePass](http://buckeyepass.osu.edu) ([buckeyepass.osu.edu](http://buckeyepass.osu.edu)) multi-factor authentication to access your courses in Carmen. To ensure that you are able to connect to Carmen at all times, it is recommended that you do each of the following:

- Register multiple devices in case something happens to your primary device. Visit the [BuckeyePass - Adding a Device](http://go.osu.edu/add-device) ([go.osu.edu/add-device](http://go.osu.edu/add-device)) help article for step-by-step instructions.
- Request passcodes to keep as a backup authentication option. When you see the Duo login screen on your computer, click **Enter a Passcode** and then click the **Text me new codes** button that appears. This will text you ten passcodes, good for 365 days, that can each be used once.



- [Install the Duo Mobile application](https://go.osu.edu/install-duo) (go.osu.edu/install-duo) on all of your registered devices for the ability to generate one-time codes in the event that you lose cell, data, or Wi-Fi service.

If none of these options will meet the needs of your situation, you can contact the IT Service Desk at [614-688-4357 \(HELP\)](tel:614-688-4357) and IT support staff will work out a solution with you.

## Technology Skills Needed for This Course

- Basic computer and web-browsing skills
- [Navigating CarmenCanvas](https://go.osu.edu/canvasstudent) (go.osu.edu/canvasstudent)
- [CarmenZoom virtual meetings](https://go.osu.edu/zoom-meetings) (go.osu.edu/zoom-meetings)
- [Recording a slide presentation with audio narration and recording, editing and uploading video](https://go.osu.edu/video-assignment-guide) (go.osu.edu/video-assignment-guide)

## Technology Support

For help with your password, university email, Carmen, or any other technology issues, questions or requests, contact the IT Service Desk, which offers 24-hour support, seven days a week.

- **Self Service and Chat:** [go.osu.edu/it](https://go.osu.edu/it)
- **Phone:** [614-688-4357 \(HELP\)](tel:614-688-4357)
- **Email:** [servicedesk@osu.edu](mailto:servicedesk@osu.edu)



# Grading and Faculty Response

## How Your Grade is Calculated

Assignment Category	Points
Weekly quizzes (12 x 15 pts each)	180
Exams (2 x 100 pts each)	200
Group project (each member is graded equally)	100
Final exam	100
<b>Total</b>	<b>580</b>

See [Course Schedule](#) for due dates.

## Descriptions of Major Course Assignments

### Quizzes

#### **Learning Outcomes:**

- Learning outcomes 1.1C, 1.2C, 3.1S, 3.2S, 3.3S.

**Description:** This course uses weekly quizzes interspersed with the exams and the final exam to encourage you to keep up with the content throughout the semester. Quizzes will open on Tuesdays after class at 4:10PM and will be administered via Carmen. Each quiz will have a time limit in which to complete them but this may vary depending on the length of the quiz.

#### **How to submit this assignment:**

These assignments will be administered online via Carmen and will have a time limit in which to complete them.

#### **When to submit this assignment:**

Students will have four days to submit the Carmen quiz, by Friday at 11:59 p.m. on the weeks when it is due (see course schedule).

#### **How you are evaluated:**

Points: 180 (12 15-point quizzes)

**Academic integrity and collaboration:** Quizzes must be completed on your own, without any external help or communication and without assistance from books, notes, internet searching, etc. Any misconduct will be reported as stated in the course policies. If you're unsure about the expectations for a particular situation, please ask ahead of time.

## Exams

### Learning Objectives:

- Learning outcomes 1.1C, 1.2C, 1.1S, 1.2S, 2.1S, 2.2S, 3.1S, 3.2S, 3.3S.

**Description:** This course incorporates two Exams: Exam 1 covers material presented since the first class period; Exam 2 covers material presented in the lectures between Exam 1 and Exam 2. The exams will be administered via Carmen and will have a time limit in which to complete them.

### How to submit this assignment:

On days that Exams are administered, students will not be expected to come to the classroom - Exams will be administered online via Carmen during the scheduled course time. The exam will open at the start time of the course and students will have 110 minutes to complete the exam once they have started.

### When to submit this assignment:

Please see the course schedule for exam dates. Students will complete the exam during the scheduled course time. Exams will open at exactly the assigned course start time, and students will have 110 minutes to complete the exam once they have started.

### **How you are evaluated:**

Points: 200 points (two, 100-point exams)

**Academic integrity and collaboration:** You must complete the exams by yourself, without any external help or communication and without assistance from books, notes, internet searching, etc. Any misconduct will be reported as stated in the course policies.

## Group Presentation

### Learning Objectives:

- Learning outcomes 1.1C, 1.2C, 1.1S, 1.2S, 2.1S, 2.2S, 3.1S, 3.2S, 3.3S.

**Description:** Everyone is required to participate in a group research project on a topic not presented in class and selected from a list provided by the instructor, the result of which will be shared with the whole class by way of a PowerPoint presentation. This research will be in the form of peer reviewed literature, factsheets, and other credible resources. Please check with the instructor if you are uncertain if a source is credible. Carmen will be used to assign randomized groups for this project. Groups will need to email the instructor with their selected topic for approval, but any topic not covered in the course is permitted. Examples of such



topics include different PIPs (e.g., laurel wilt), specific drivers of invasions (e.g., analysis of global trade route frequencies and volumes; economic incentives/disincentives), implications for sustainability, climate, peoples, and/or ecologies, and examination of existing or proposed responses and interventions. The group presentation file will be submitted to Carmen ahead of the presentation, by a due date specified in the course schedule. Only one submission is needed per group. More information can be found on the Carmen Course Group Presentation assignment page.

**How to submit this assignment:**

Via Carmen.

**When to submit this assignment:**

By the due date specified in the course schedule.

**How you are evaluated:**

Points: 100. Each group will receive a grade, which will be the individual grade for each student in that group. Example: group of 5 students; project graded 89; each of those 5 students will earn an 89 for the project.

Rubric:

Criteria	Ratings			Points
	Unsatisfactory	Good	Excellent	
<b>Depth of research on topic</b>	27 pts Group demonstrates superficial understanding of a specific biological invasion system with minimal reliance on primary literature; impacts/connection to sustainability are absent or superficial	36 pts Group demonstrates it has conducted some research of primary literature to support their thesis; impacts/connection to sustainability are identified	45 pts Group demonstrates strong knowledge of a specific biological invasion system that is well supported by the primary literature; impacts/connection to sustainability are well defined and supported	45
<b>Clarity of presentation</b>	12 pts Presentation is poorly structured with a lack of focus	16 pts Presentation is somewhat structured and focused with a central message	20 pts Presentation is well structured and focused, coherent, with a very clear central message	20

<b>Evidence of group effort</b>	21 pts Evidence that the presentation was largely the work of 20-30% of a group	28 pts Evidence that the presentation was largely the work of 40-70% of a group	35 pts Evidence that the effort in researching the topic and preparing the talk was evenly distributed within the group	35
<b>Total</b>				100

**Academic integrity and collaboration:** The project and presentation should reflect the group's original work; the group is not allowed to submit work from other courses for credit in this course. Any time the group presents a factual statement, they should cite a reference using APA format or following the guidelines of a reputable scientific journal (examples provided in paper rubric); MLA format is not appropriate for scientific writing. The group is encouraged to ask a trusted person to review their presentation before they turn it in, but no one else should revise or rewrite their work.

## Final exam

### Learning Objectives:

- Learning outcomes 1.1C, 1.2C.

**Description:** This course includes a final exam which covers material between Exam 2 and the end of the course. The exam will be administered via Carmen during the posted exam period for the course and will have a time limit in which to complete it.

### How to submit this assignment:

On the day of the final exam, students will not be expected to come to the classroom - the final exam will be administered online via Carmen during the scheduled university final exam time.

### When to submit this assignment:

Please see the course schedule for the scheduled final exam date. Exams will open at exactly the time scheduled by the university for this course, and students will have 110 minutes to complete the exam once they have started.

### How you are evaluated:

Points: 100

**Academic integrity and collaboration:** You must complete the final exam by yourself, without any external help or communication. This exam is closed book and closed note. Any misconduct will be reported as stated in the course policies.



## Late assignments and deadlines

Since quiz answers will be posted at the beginning of each week for the previous week's quiz, deadlines will not be extended for any quizzes after the answers have been posted. Late submissions of other types will be marked down by 10% of the original assignment value per day in the absence of extenuating circumstances (e.g. death in the family, serious illness, emergency). If an extenuating circumstance prevents you from completing an assignment, quiz, exam on time or from participating in the group project, please reach out to me ASAP, preferably before the deadline, to request an accommodation. Thus, in the absence of timely communication regarding an extenuating circumstance, the 10% daily penalty will apply. Please refer to Carmen for due dates.

## Instructor Feedback and Response Time

I am providing the following list to give you an idea of our intended availability throughout the course. (Remember that you can call **614-688-4357(HELP)** at any time if you have a technical problem.)

- **Grading and feedback:** For quizzes, exams, and assignments, you can generally expect feedback within **7 days**.
- **Email:** I will do my best to reply to emails within **24 hours on days when class is in session at the university**.

## Grading Scale

92.5–100: A  
 88.5–92.4: A-  
 86.5–88.4: B+  
 82.5–86.4: B  
 78.5–82.4: B-  
 76.5–78.4: C+  
 72.5–76.4: C  
 68.5–72.4: C-  
 66.5–68.4: D+  
 62.5–66.4: D  
 Below 62.5: E



# Other Course Policies

## Discussion and Communication Guidelines

The following are my expectations for how we should communicate as a class. Above all, please remember to be respectful and thoughtful.

- **Writing style:** While there is no need to participate in class discussions as if you were writing a research paper, you should remember to write using good grammar, spelling, and punctuation. A more conversational tone is fine for non-academic topics.
- **Tone and civility:** Let's maintain a supportive learning community where everyone feels safe and where people can disagree amicably. Remember that sarcasm doesn't always come across online. I will provide specific guidance for discussions on controversial or personal topics.
- **Citing your sources:** When we have academic discussions, please cite your sources to back up what you say. For the textbook or other course materials, list at least the title and page numbers. For online sources, include a link.
- **Backing up your work:** Consider composing your academic posts in a word processor, where you can save your work, and then copying into the Carmen discussion.

# University Policies

## Academic Integrity Policy

See [Descriptions of Major Course Assignments](#) for specific guidelines about collaboration and academic integrity in the context of this online class.

## Ohio State's Academic Integrity Policy

Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University and the Committee on Academic Misconduct (COAM) expect that all students have read and understand the university's [Code of Student Conduct](http://studentconduct.osu.edu) (studentconduct.osu.edu), and that all students will complete all academic and scholarly assignments with fairness and honesty. Students must recognize that failure to follow the rules and guidelines established in the university's *Code of Student Conduct* and this syllabus may constitute "Academic Misconduct."

The Ohio State University's *Code of Student Conduct* (Section 3335-23-04) defines academic misconduct as: "Any activity that tends to compromise the academic integrity of the university or subvert the educational process." Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another

student, and possession of unauthorized materials during an examination. Ignorance of the university's *Code of Student Conduct* is never considered an excuse for academic misconduct, so I recommend that you review the *Code of Student Conduct* and, specifically, the sections dealing with academic misconduct.

**If I suspect that a student has committed academic misconduct in this course, I am obligated by university rules to report my suspicions to the Committee on Academic Misconduct.** If COAM determines that you have violated the university's Code of Student Conduct (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the university. If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact me.

Other sources of information on academic misconduct (integrity) to which you can refer include:

- [Committee on Academic Misconduct](http://go.osu.edu/coam) (go.osu.edu/coam)
- [Ten Suggestions for Preserving Academic Integrity](http://go.osu.edu/ten-suggestions) (go.osu.edu/ten-suggestions)
- [Eight Cardinal Rules of Academic Integrity](http://go.osu.edu/cardinal-rules) (go.osu.edu/cardinal-rules)

## Counseling and Consultation Services/Mental Health:

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing.

If you or someone you know are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life's Counseling and Consultation Service (CCS) by visiting [ccs.osu.edu](http://ccs.osu.edu) or calling 614-292-5766. CCS is located on the 4th floor of the Younkin Success Center and 10th floor of Lincoln Tower. You can reach an on-call counselor when CCS is closed at 614-292-5766 and 24 hour emergency help is also available 24/7 by dialing 988 to reach the Suicide and Crisis Lifeline.

For students in the College of Food, Agricultural, and Environmental Sciences, David Wirt, [wirt.9@osu.edu](mailto:wirt.9@osu.edu), is the CFAES embedded mental health counselor on the Columbus campus. To contact David, please call 614-292-5766. Students should mention their affiliation with CFAES if interested in speaking directly with David.

## Safe and Healthy Buckeyes:

Health and safety requirements: All students, faculty and staff are required to comply with and stay up to date on all university safety and health guidance (<https://safeandhealthy.osu.edu>). Non-compliance will result in a warning first, and disciplinary actions will be taken for repeated offenses.

## Zoom or video/audio recordings

Students are not permitted to record or broadcast this class to others without the knowledge and permission of the instructor.

## Copyright for Instructional Materials

The materials used in connection with this course may be subject to copyright protection and are only for the use of students officially enrolled in the course for the educational purposes associated with the course. Copyright law must be considered before copying, retaining, or disseminating materials outside of the course.

## Creating an Environment Free from Harassment, Discrimination, and Sexual Misconduct

The Ohio State University is committed to building and maintaining a community to reflect diversity and to improve opportunities for all. All Buckeyes have the right to be free from harassment, discrimination, and sexual misconduct. Ohio State does not discriminate on the basis of age, ancestry, color, disability, ethnicity, gender, gender identity or expression, genetic information, HIV/AIDS status, military status, national origin, pregnancy (childbirth, false pregnancy, termination of pregnancy, or recovery therefrom), race, religion, sex, sexual orientation, or protected veteran status, or any other bases under the law, in its activities, academic programs, admission, and employment. Members of the university community also have the right to be free from all forms of sexual misconduct: sexual harassment, sexual assault, relationship violence, stalking, and sexual exploitation.

To report harassment, discrimination, sexual misconduct, or retaliation and/or seek confidential and non-confidential resources and supportive measures, contact the Office of Institutional Equity:

1. Online reporting form at [equity.osu.edu](https://equity.osu.edu),
2. Call 614-247-5838 or TTY 614-688-8605,
3. Or Email [equity@osu.edu](mailto:equity@osu.edu)

The university is committed to stopping sexual misconduct, preventing its recurrence, eliminating any hostile environment, and remedying its discriminatory effects. All university employees have reporting responsibilities to the Office of Institutional Equity to ensure the university can take appropriate action:

- All university employees, except those exempted by legal privilege of confidentiality or expressly identified as a confidential reporter, have an obligation to report incidents of sexual assault immediately.
- The following employees have an obligation to report all other forms of sexual misconduct as soon as practicable but at most within five workdays of becoming aware of such information: 1. Any human resource professional (HRP); 2. Anyone who supervises faculty, staff, students, or volunteers; 3. Chair/director; and 4. Faculty member."

## Diversity Statement

The Ohio State University affirms the importance and value of diversity of people and ideas. We believe in creating equitable research opportunities for all students and to providing programs and curricula that allow our students to understand critical societal challenges from diverse perspectives and aspire to use research to promote sustainable solutions for all. We are committed to maintaining an inclusive community that recognizes and values the inherent worth and dignity of every person; fosters sensitivity, understanding, and mutual respect among all members; and encourages each individual to strive to reach their own potential. The Ohio State University does not discriminate on the basis of age, ancestry, color, disability, gender identity or expression, genetic information, HIV/AIDS status, military status, national origin, race, religion, sex, gender, sexual orientation, pregnancy, protected veteran status, or any other bases under the law, in its activities, academic programs, admission, and employment.

To learn more about diversity, equity, and inclusion and for opportunities to get involved, please visit:

- <https://odi.osu.edu/>
- <https://odi.osu.edu/racial-justice-resources>
- <https://odi.osu.edu/focus-on-racial-justice>
- <http://mcc.osu.edu/>

In addition, this course adheres to **The Principles of Community** adopted by the College of Food, Agricultural, and Environmental Sciences. These principles are located on the Carmen site for this course; and can also be found at <https://go.osu.edu/principlesofcommunity>. For additional information on Diversity, Equity, and Inclusion in CFAES, contact the CFAES Office for Diversity, Equity, and Inclusion (<https://equityandinclusion.cfaes.ohio-state.edu/>). If you have been a victim of or a witness to a bias incident, you can report it online and anonymously (if you choose) at <https://studentlife.osu.edu/bias/report-a-bias-incident.aspx>.

## Land Acknowledgement Statement

We would like to acknowledge the land that The Ohio State University occupies is the ancestral and contemporary lands of the Shawnee, Potawatomi, Delaware, Miami, Peoria, Seneca, Wyandotte, Ojibwe and Cherokee peoples. The university resides on land ceded in the 1795 Treaty of Greenville and the forced removal of tribes through the Indian Removal Act of 1830. We honor the resiliency of these tribal nations and recognize the historical contexts that have and continue to affect the Indigenous peoples of this land.

# Accessibility Accommodations for Students with Disabilities

## Requesting Accommodations

The university strives to make all learning experiences as accessible as possible. In light of the current pandemic, students seeking to request COVID-related accommodations may do so through the university's request process, managed by Student Life Disability Services. If you anticipate or experience academic barriers based on your disability (including mental health, chronic, or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. SLDS contact information: [slds@osu.edu](mailto:slds@osu.edu); 614-292-3307; [slds.osu.edu](http://slds.osu.edu); 098 Baker Hall, 113 W. 12th Avenue.

## Disability Services Contact Information

- Phone: [614-292-3307](tel:614-292-3307)
- Website: [slds.osu.edu](http://slds.osu.edu)
- Email: [slds@osu.edu](mailto:slds@osu.edu)
- In person: [Baker Hall 098, 113 W. 12th Avenue](#)

## Accessibility of Course Technology

This online course requires use of Carmen (Ohio State's learning management system) and other online communication and multimedia

tools. If you need additional services to use these technologies, please request accommodations as early as possible.

- [CarmenCanvas accessibility](https://go.osu.edu/canvas-accessibility) (go.osu.edu/canvas-accessibility)
- Streaming audio and video
- [CarmenZoom accessibility](https://go.osu.edu/zoom-accessibility) (go.osu.edu/zoom-accessibility)





# Tentative Course Schedule for 2023

Refer to the Carmen course for up-to-date due dates

Week	Topics	Graded Quizzes, Exams & Assignments	Ungraded Readings and Learning Activities	Learning Outcomes
<b>1 Jan 9-13</b>	Intro: structure, syllabus, group project; general concepts	Quiz 1: Intro survey	NA	1.1C, 1.2C, 3.2S, 3.3S
	Forests and sustainability; human and ecological dependence on healthy forests		(Popkin, 2021)	
<b>2 Jan 16-20</b>	Overview of major groups of forest pathogens and insect pests (PIPs) – interactions with forest ecosystems and effects on forest sustainability	Quiz 2	NA	1.1C, 1.2C, 3.2S, 3.3S
<b>3 Jan 23-27</b>	Drivers of biological invasions; impacts (ecological degradation, implications for climate change, etc.); interventions & management; scientific and policy approaches	Quiz 3	(Blackburn et al., 2011; Quirion et al., 2021)	1.1C, 1.2C, 3.2S, 3.3S
<b>4 Jan. 30 – Feb. 3</b>		Exam 1	NA	1.1C, 1.2C, 3.2S, 3.3S
<b>Case studies of alien PIPs – interaction with native forest ecosystem and effects on sustainability</b>				
<b>5 Feb 6-10</b>	Alien PIPs: Emerald ash borer	Quiz 4	(Villari et al., 2016)	1.1C, 1.2C, 1.1S, 1.2S, 2.1S, 2.2S, 3.1S, 3.2S, 3.3S
<b>6 Feb 13-17</b>	Alien PIPs: Ash dieback	Quiz 5	(Hultberg et al., 2020)	1.1C, 1.2C, 1.1S, 1.2S, 2.1S, 2.2S, 3.1S, 3.2S, 3.3S
<b>7 Feb 20-24</b>	Alien PIPs: Sirex woodwasp	Quiz 6; Group topic due	(Slippers et al., 2015)	1.1C, 1.2C, 1.1S, 1.2S, 2.1S, 2.2S, 3.1S, 3.2S, 3.3S
<b>8 Feb. 27 - Mar 3</b>	Alien PIPs: Rapid Ohia death	Quiz 7	(Fortini et al., 2019)	1.1C, 1.2C, 1.1S, 1.2S, 2.1S, 2.2S, 3.1S, 3.2S, 3.3S
<b>Case studies of autoctonus PIPs – interaction with native forest ecosystem and effects on sustainability</b>				



9 Mar 6-10	Autoctonus PIPs: Mountain pine beetle	Quiz 8	(Kurz et al., 2008)	1.1C, 1.2C, 1.1S, 1.2S, 3.1S, 2.1S, 2.2S, 3.2S, 3.3S
10 Mar 13-17	<b>NO LECTURES:</b> Spring Break			
11 Mar 20-24	Autoctonus PIPs: Oak wilt	Quiz 9; Group project introduction	(Juzwik et al., 2011)	1.1C, 1.2C, 1.1S, 1.2S, 2.1S, 2.2S, 3.1S, 3.2S, 3.3S
12 Mar. 27-31	Exam 2	Exam 2		1.1C, 1.2C, 1.1S, 1.2S, 2.1S, 2.2S, 3.1S, 3.2S, 3.3S
13 Apr 3-7	Autoctonus PIPs: <i>Heterobasidion annosum</i>	Quiz 10	(Garbelotto and Gonthier, 2013)	1.1C, 1.2C, 1.1S, 1.2S, 2.2S, 2.3S, 3.1S, 3.2S, 3.3S
14 Apr 10-14	Group projects	Quiz 11; Presentations of group projects		1.1C, 1.2C, 1.1S, 1.2S, 2.1S, 2.2S, 3.1S, 3.2S, 3.3S
15 Apr 17-21	Group projects and/or final review	Presentations of group projects Quiz 12: Exit survey		1.1C, 1.2C, 1.1S, 1.2S, 2.1S, 2.2S, 3.1S, 3.2S, 3.3S
Apr. 26 - May 2	<b>Carmen final exam</b>	Final exam		1.1C, 1.2C, 1.1S, 1.2S, 2.1S, 2.2S, 3.1S, 3.2S, 3.3S

## References

- Blackburn, T.M., Pyšek, P., Bacher, S., Carlton, J.T., Duncan, R.P., Jarošík, V., Wilson, J.R.U., and Richardson, D.M. (2011). A proposed unified framework for biological invasions. *Trends in Ecology & Evolution* 26, 333-339.
- Garbelotto, M., and Gonthier, P. (2013). Biology, Epidemiology, and Control of *Heterobasidion* Species Worldwide. *Annual Review of Phytopathology* 51, 39-59.
- Hultberg, T., Sandström, J., Felton, A., Öhman, K., Rönnerberg, J., Witzell, J., and Cleary, M. (2020). Ash dieback risks an extinction cascade. *Biological Conservation* 244, 108516.
- Juzwik, J., Appel, D.N., Macdonald, W.L., and Burks, S. (2011). Challenges and successes in managing oak wilt in the United States. *Plant Disease* 95, 888-900.
- Kurz, W.A., Dymond, C.C., Stinson, G., Rampley, G.J., Neilson, E.T., Carroll, A.L., Ebata, T., and Safranyik, L. (2008). Mountain pine beetle and forest carbon feedback to climate change. *Nature* 452, 987-990.
- Quirion BR, Domke GM, Walters BF, Lovett GM, Fargione JE, Greenwood L, Serbesoff-King K, Randall JM and Fei S (2021) Insect and Disease Disturbances Correlate With Reduced Carbon Sequestration in Forests of the Contiguous United States. *Frontiers in Forests and Global Change*. 4:716582. doi: 10.3389/ffgc.2021.716582
- Popkin, G. (2021, February 6) Invasive insects and diseases are killing our forests. *The New York Times*.
- Villari, C., Herms, D.A., Whitehill, J.G.A., Cipollini, D., and Bonello, P. (2016). Progress and gaps in understanding mechanisms of ash tree resistance to emerald ash borer, a model for wood-boring insects that kill angiosperms. *New Phytologist* 209, 63-79.

# GE THEME COURSES

## Overview

Courses that are accepted into the General Education (GE) Themes must meet two sets of Expected Learning Outcomes (ELOs): those common for all GE Themes and one set specific to the content of the Theme. This form begins with the criteria common to all themes and has expandable sections relating to each specific theme.

A course may be accepted into more than one Theme if the ELOs for each theme are met. Courses seeing approval for multiple Themes will complete a submission document for each theme. Courses seeking approval as a 4-credit, Integrative Practices course need to complete a similar submission form for the chosen practice. It may be helpful to consult your Director of Undergraduate Studies or appropriate support staff person as you develop and submit your course.

Please enter text in the boxes to describe how your class will meet the ELOs of the Theme to which it applies. Please use language that is clear and concise and that colleagues outside of your discipline will be able to follow. You are encouraged to refer specifically to the syllabus submitted for the course, since the reviewers will also have that document. Because this document will be used in the course review and approval process, you should be as specific as possible, listing concrete activities, specific theories, names of scholars, titles of textbooks etc.

## **Course subject & number**

### General Expectations of All Themes

**GOAL 1: Successful students will analyze an important topic or idea at a more advanced and in-depth level than the foundations.**

**Please briefly identify the ways in which this course represents an advanced study of the focal theme.** In this context, “advanced” refers to courses that are e.g., synthetic, rely on research or cutting-edge findings, or deeply engage with the subject matter, among other possibilities. *(50-500 words)*

Course subject & number

**ELO 1.1 Engage in critical and logical thinking about the topic or idea of the theme.** Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. (50-700 words)

**ELO 1.2 Engage in an advanced, in-depth, scholarly exploration of the topic or idea of the theme.** Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. (50-700 words)

A large, empty rectangular box with a thin black border, intended for the student to write their response to the ELOs. It occupies the lower half of the page.

Course subject & number

**GOAL 2: Successful students will integrate approaches to the theme by making connections to out-of-classroom experiences with academic knowledge or across disciplines and/or to work they have done in previous classes and that they anticipate doing in future.**

**ELO 2.1 Identify, describe, and synthesize approaches or experiences as they apply to the theme.**

Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. (50-700 words)

**ELO 2.2 Demonstrate a developing sense of self as a learner through reflection, self-assessment, and creative work, building on prior experiences to respond to new and challenging contexts.** Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met.

(50-700 words)

Course subject & number

## Specific Expectations of Courses in Sustainability

**GOAL 1: Students analyze and explain how social and natural systems function, interact, and evolve over time; how human wellbeing depends on these interactions; how actions have impacts on subsequent generations and societies globally; and how human values, behaviors, and institutions impact multi-faceted, potential solutions across time.**

**1.1 Describe elements of the fundamental dependence of humans on Earth and environmental systems and on the resilience of these systems.** Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. (50-700 words)

Course subject & number

**1.2 Describe, analyze and critique the roles and impacts of human activity and technology on both human society and the natural world, in the past, currently, and in the future.** Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. (50-700 words)

**1.3 Devise informed and meaningful responses to problems and arguments in the area of sustainability based on the interpretation of appropriate evidence and an explicit statement of values.** Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. (50-700 words)

**From:** [Benitez Ponce, Soledad](#)  
**To:** [Lewandowski, Monica](#); [Tate, Dominique N.](#)  
**Cc:** [Bonello, Enrico](#)  
**Subject:** FW: Concurrence request: Biological Invasions of Forest Environments  
**Date:** Tuesday, October 5, 2021 9:27:10 AM  
**Attachments:** [image001.png](#)

---

Hi all,

See below concurrence for the course from EEOB, as well as suggestion to avoid confusion between the courses.

Soledad

---

**From:** "Hamilton, Ian" <[hamilton.598@osu.edu](mailto:hamilton.598@osu.edu)>  
**Date:** Tuesday, October 5, 2021 at 8:55 AM  
**To:** "Benitez Ponce, Soledad" <[benitezponce.1@osu.edu](mailto:benitezponce.1@osu.edu)>  
**Subject:** Re: Concurrence request: Biological Invasions of Forest Environments

Dear Prof Benitez Ponce,

I had the instructor of our invasion ecology course take a look at the syllabus and he saw minimal overlap beyond introductory material. Our course is focused on understanding drivers of invasions in general. He did note that the course description might imply greater overlap than actually exists. We suggest changes to the course description to reduce any student confusion; perhaps changing "understanding the major drivers..." could be changed to "introducing the major drivers..." or some other such wording.

In any case, EEOB concurs with the offering of this course.

Please let me know if you have any questions.

Best regards,  
Ian



**Ian Hamilton**  
Professor

Vice Chair of Undergraduate Studies, EEOB  
[College of Arts & Sciences](#)

Department of Evolution, Ecology and Organismal Biology & Department of Mathematics



390 Aronoff Laboratory, 318 W 12th Ave, Columbus, OH 43210

[hamilton.598@osu.edu](mailto:hamilton.598@osu.edu)

Pronouns: he/him/his

---

**From:** Benitez Ponce, Soledad <benitezponce.1@osu.edu>

**Sent:** Thursday, September 23, 2021 1:48 PM

**Subject:** Concurrence request: Biological Invasions of Forest Environments

Good afternoon,

The Department of Plant Pathology is requesting concurrence for a new course, entitled Biological Invasions of Forest Environments. This newly proposed GE course (Sustainability Theme) will be tailored to undergraduate students as an introduction to sustainability, focused on forest pests and diseases. There is no existing course that covers forest pests and diseases at a GE level; no prerequisites will be required.

Both the proposed course syllabus and the concurrence form are attached to this email.

Please respond by October 7. You can return the attached Concurrence Form or you can simply respond to this e-mail. After this date, concurrence will be assumed.

Let me know if you have specific questions about the course.

Thank you,

Soledad

**M. Soledad Benitez Ponce**

Assistant Professor

Phytobacteriology

**The Ohio State University**

**College of Food, Agricultural, and Environmental Sciences** Department of Plant Pathology and Center for Applied Plant Sciences

Selby Hall 214, 1680 Madison Ave, Wooster, OH 44691

330202-3565 Office

[benitezponce.1@osu.edu](mailto:benitezponce.1@osu.edu) <https://plantpath.osu.edu>

*Buckeyes consider the environment before printing.*



## Ohio State Department Course Review Concurrence Form

The purpose of this form is to provide a simple system of obtaining departmental reactions to proposed new courses, group studies, study tours, workshop requests, and course changes. A letter may be substituted for this form.

Academic units initiating a request which requires such a reaction should complete Section A of this form and send a copy of the form, course request, and syllabus to each of the academic units that might have related interests in the course. Initiating units should allow at least two weeks for responses.

Academic units receiving this form should respond to Section B and return the form to the initiating unit. Overlap of course content and other problems should be resolved by the academic units before forwarding this form and all other accompanying documentation to the Office of Academic Affairs.

### A. Information from academic unit *initiating* the request:

Initiating Academic Unit: Department of Plant Pathology Date: 09/23/2021

Registrar's Listing: PLNTPH

Course Number: 4321 Level: U  P  G  Credit Hours: 3

Course Title: Biological invasions of forest environments

Type of Request:  New Course  Group Studies  Workshop  Study Tour  Course Change

Academic Unit with related interests asked to review the request (use a separate form for each unit while requesting concurrences from multiple units):

Date responses are needed: October 7

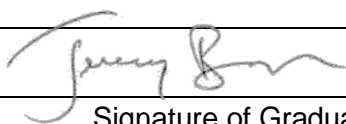
### B. Information from academic units *reviewing* the request:

- The academic unit **supports** the proposal  
 The academic unit **does not support** the proposal.

Please explain:

The academic unit suggests:

Signature of Department Chair



AAC Chair 10.18.21

Signature of Graduate Studies Chair (if applicable)

## Lewandowski, Monica

---

**To:** Benitez Ponce, Soledad  
**Subject:** RE: Concurrence Request 4321 - Biological Invasions of Forest Environments has been submitted for your approval

---

**From:** Roe, Brian <[roe.30@osu.edu](mailto:roe.30@osu.edu)>  
**Date:** Tuesday, April 5, 2022 at 3:37 PM  
**To:** Benitez Ponce, Soledad <[benitezponce.1@osu.edu](mailto:benitezponce.1@osu.edu)>  
**Cc:** Lewandowski, Monica <[lewandowski.52@osu.edu](mailto:lewandowski.52@osu.edu)>  
**Subject:** RE: Concurrence Request 4321 - Biological Invasions of Forest Environments has been submitted for your approval

AEDE provides concurrence – good luck with the course.

Brian

Brian E. Roe  
VanBuren Professor  
Agricultural, Environmental and Development Economics  
Leader, [Ohio State Food Waste Collaborative](#)  
Co-Director, [RECIPES SRS Research Network](#)  
Ohio State University  
Twitter: [Brian\\_Roe\\_30](#)



Did you know that nearly one million pounds of food enters Central Ohio landfills every day? Join [Save More Than Food](#) and [SWACO](#) to cut food waste in half by 2030.

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**From:** Benitez Ponce, Soledad <[benitezponce.1@osu.edu](mailto:benitezponce.1@osu.edu)>  
**Sent:** Tuesday, April 5, 2022 3:13 PM  
**To:** Roe, Brian <[roe.30@osu.edu](mailto:roe.30@osu.edu)>  
**Cc:** Lewandowski, Monica <[lewandowski.52@osu.edu](mailto:lewandowski.52@osu.edu)>  
**Subject:** Concurrence Request 4321 - Biological Invasions of Forest Environments has been submitted for your approval

Dear Brian,

We would like to request concurrence from AEDE for the attached new course (PP 4321 - Biological Invasions of Forest Environ). Attached you will also find the concurrence form.

Please respond within a period of two weeks. After this period, **concurrence** will be assumed.

Let us know if you have any questions.

Thanks,

Soledad

**M. Soledad Benitez Ponce**

Assistant Professor

**The Ohio State University**

**College of Food, Agricultural, and Environmental Sciences** Department of Plant Pathology and Center for Applied Plant Sciences

Selby Hall 214, 1680 Madison Ave, Wooster, OH 44691

330202-3565 Office

[benitezponce.1@osu.edu](mailto:benitezponce.1@osu.edu) <https://plantpath.osu.edu>

*Buckeyes consider the environment before printing*

## Ohio State Department Course Review Concurrence Form

The purpose of this form is to provide a simple system of obtaining departmental reactions to proposed new courses, group studies, study tours, workshop requests, and course changes. A letter may be substituted for this form.

Academic units initiating a request which requires such a reaction should complete Section A of this form and send a copy of the form, course request, and syllabus to each of the academic units that might have related interests in the course. Initiating units should allow at least two weeks for responses.

Academic units receiving this form should respond to Section B and return the form to the initiating unit. Overlap of course content and other problems should be resolved by the academic units before forwarding this form and all other accompanying documentation to the Office of Academic Affairs.

### A. Information from academic unit *initiating* the request:

Initiating Academic Unit: Department of Plant Pathology

Date: 09/23/2021

Registrar's Listing: PLNTPH

Course Number: 4321

Level: U  P  G

Credit Hours: 3

Course Title: Biological invasions of forest environments

Type of Request:  New Course  Group Studies  Workshop  Study Tour  Course Change

Academic Unit with related interests asked to review the request (use a separate form for each unit while requesting concurrences from multiple units):

Date responses are needed: October 7

### B. Information from academic units *reviewing* the request:

- The academic unit **supports** the proposal  
 The academic unit **does not support** the proposal.  
Please explain:

The academic unit suggests:

Entomology recommends that the instructor reaches

out to our new forest entomologist once that person is on board. They will be responsible for a course on forest insect pests and some coordination might be needed.

Signature of Department Chair

Signature of Graduate Studies Chair (if applicable)



# Invasive Insects and Diseases Are Killing Our Forests

America wasn't ready for the pandemic. And it isn't ready for the next contagion to strike our woodlands.

Feb. 6, 2021

**By Gabriel Popkin**

Mr. Popkin is an independent journalist who writes about science and the environment. He has written extensively about threats to trees and forests.

It's not just humans. Trees also suffer plagues.

In the past 120 years, voracious insects and fungi have swept across North America with frightening regularity, laying low the chestnut, the elm, the hemlock and, most recently, the ash. Each of those trees anchored natural ecosystems, and human economies and cultures. And while climate change and wildfires grab the headlines, invasive species have so far proved to be a far greater threat to forest biodiversity in the temperate world.

These plagues have also amplified climate change. Research has found that rotting trees killed in the United States by forest pests release carbon dioxide into the atmosphere at a rate within the same order of magnitude as wildfires.

Much as we were unprepared for the virus that has killed more than 450,000 people in the United States and 2.2 million worldwide, we're not ready for the next tree pandemic either.

Tree plagues differ from human ones in a few important ways. On the plus side (from a tree's perspective), insects and diseases are often specific to a genus, so no plague can hit every tree at once. On the minus side, as Gary Lovett of the Cary Institute of Ecosystem Studies points out, people can stay indoors and get immunized, but trees "have to stand there and take it."

In many ways, however, tree plagues are surprisingly similar to human ones — and these similarities can help us manage both types of threats.

Human and tree plagues move around the globe via travel and trade. Columbus and other European explorers brought smallpox, measles and other viruses to the New World starting in the 15th century, and viruses have been leaping oceans ever since. Columbus's arrival also set in motion an often cataclysmic biological reunification of Asian, European and American flora. People crossing oceans brought not only new pathogens, but also new plants — and their retinues of insects and microbes.

In the millions of years since the continents separated from what had been larger land masses, trees like chestnut and ash had diverged into distinct species that provided sustenance to specialized communities of insects and microorganisms. Trees evolved defensive chemicals — a sort of tree immune system — to keep all this feeding at manageable levels. That's why, for example, white oak trees can sustain more than 500 caterpillar species while retaining enough leaves to feed themselves.

The trans-ocean movement of tree species upended things. Occasionally, a pest landed on a tree similar enough to its host tree to be digestible, yet dissimilar enough to lack defenses against the pest. In the early 1950s, for example, woolly adelgids from Japan were discovered in the United States. The tiny insects found the sap of Eastern hemlocks delicious and began to multiply, decimating hemlock trees. By the time the problem raised alarms in the 1970s, the outbreak could not be contained. It may be thousands of years before the hemlock regains the abundance it had a mere five decades ago.



Scientists in 2007 examining some of a Massachusetts park's hundreds of 300-year-old hemlock trees that were dying of an infestation of woolly adelgid. Dina Rudick/The Boston Globe, via Getty Images

This story of the hemlock infestation highlights a second parallel to human pandemics: There's usually a lag between when tree plagues begin to take hold and when they become noticeable. Once established, they become extremely difficult to eradicate and can cause billions of dollars in damage.

And new tree pandemics continue to strike. In California, sudden oak death, a disease caused by a nonnative fungus-like pathogen, was first noticed in the 1990s. It has killed millions of trees and had "devastating effects on coastal forests in California and Oregon," according to a state task force in California.

Ash trees have been decimated by the emerald ash borer, an Asian beetle that first struck in suburban Detroit in the early 1990s. It has since killed hundreds of millions of trees and threatens the 16 known ash species native to the United States, plus the insect species that feed on them.

Then there is the spotted lanternfly, native to East Asia, which is thought to have arrived in Pennsylvania in 2014 and is demolishing orchards and vineyards at a cost of millions of dollars a year.

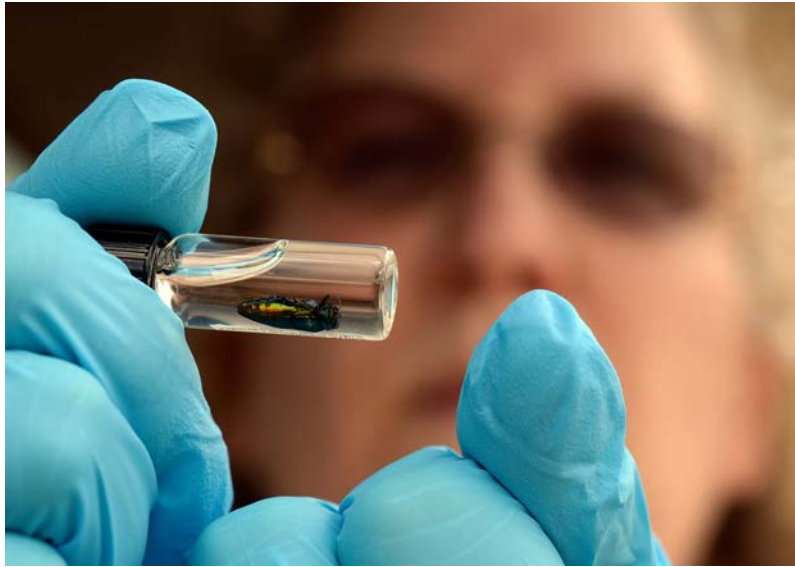
Perhaps the most straightforward measure to address this would be to stop importing trees and plants. But that's unlikely to happen. The horticulture industry, which generated more than \$4.5 billion in sales of nursery stock in 2019, according to the Agriculture Department, has long thrived on offering customers a profusion of plants from around the world.

Regulators have instead developed risk-assessment protocols and banned or quarantined imports of some trees and woody plants known to harbor dangerous pests. These measures have helped, but the United States' plant protection system remains leaky.

Because pests usually specialize on a single plant genus like oak or maple, Dr. Lovett recommends banning imports of close relatives of native trees. Recent innovations have given scientists even more precise tools to identify new insect or pathogen threats. By planting trees native to the United States and Europe in China, for example, researchers have discovered insects native to Asia that could do major damage to American or European trees.

Similar experiments are underway to identify threats to Asian trees from elsewhere. International trade of trees those insects live on could be restricted.





The emerald ash borer, a Asian beetle, has killed hundreds of millions of trees and threatens the 16 known ash species native to the United States. Cyrus McCrimmon/The Denver Post, via Getty Images

Regulating live plants won't be enough. The emerald ash borer and another destructive invader, the Asian long-horned beetle, hitchhiked to the United States not on live trees but on wooden packaging material used to move freight. The spotted lanternfly is thought to have arrived in egg form on landscaping stone. Regulators have responded by requiring wood packaging to be heat-treated or fumigated. Requiring shippers to use alternate packing materials could be an even more effective solution.

And just as coronavirus testing has been insufficient, so have inspections of incoming shipments for insects or diseases that could attack trees. Only a small fraction is inspected. Still, live insects are detected in an average of some 800 shipments annually, according to calculations by Faith Campbell, president of the Center for Invasive Species Prevention. An unknown number slip through.

We also have a role to play, by being responsible consumers and transporters of plants. Andrew Liebhold, an entomologist at the Forest Service, told me he worries about pests hitchhiking on exotic plants carried on airplanes by travelers in luggage, which is barely inspected at all. He is also concerned about the boom in e-commerce, which the pandemic has, if anything, increased. "You can buy all kinds of weird plants and have them sent to you," he said. "It's a very difficult pathway to control."

In recent years, a chorus of voices — including ecologists and public health experts — have called for preserving forests and trees to head off a host of ills, from urban heat stress to global climate change and human pandemics. Indeed, it has become clear that deforestation increases the chances that humans will be exposed to more dangerous pathogens.

But far less attention has gone to stemming the expanding tide of plagues that humans, through ballooning global trade, weak regulatory systems and sheer carelessness, have inflicted on trees. If we want forests to protect us, we first need to protect them.

Gabriel Popkin is an independent journalist who writes about science and the environment. He has written extensively about threats to trees and forests. He also leads tree identification walks in the Washington, D.C., area, where he lives.

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