

Forest Insects and Diseases

ENTM/PLHL 4018 Schedule Fall 2012

Week of:	Lecture	Lab
Aug 20	L1 Course introduction; arthropods L2 Introduction to insects	Campus field trip
Aug 27	L1 Bark beetles and wood borers L2 Defoliators	Bark beetles, borers
Sep 3	L1 Sap and terminal feeders L2 Seed, cone and seedling insects	Defoliators, etc.
Sep 10	L1 L2	TBA
Sep 17	L1 Dispersal and host selection L2 Population dynamics	No lab
Sep 24	L1 Detection and monitoring L2 Modeling and prediction	
Oct 1	L1 Integrated pest management L2 MIDTERM 1	No lab
Oct 8	L1 Introduction to Forest Pathology, Disease, the Disease Cycle & Disease Diagnosis L2 Insect/pathogen interactions	Oral presentations
Oct 15	L1 Insect and pathogen effect on forest ecosystems L2 FALL HOLIDAY	No Lab
Oct 22	L1 Causes of Tree Diseases and Disorders L2 Causes of Tree Diseases and Disorders (cont.)	Plant Pathogens
Oct 29	L1 Wood decay & rots L2 Wood decay & rots (cont.)	Wood decays & rots
Nov 5	L1 Root diseases, Cankers & Wilts L2 Root diseases, Cankers & Wilts (cont.)	MIDTERM 2
Nov 12	L1 Foliage diseases & Rusts L2 Foliage diseases & Rusts (cont.)	Foliar diseases, rusts and cankers
Nov 19	L1 Mycorrhizae L2 THANKSGIVING HOLIDAY	No lab Nov 26
	L1 Diseases of forest nurseries L2 Decline diseases	Oral presentations
Dec. 8	FINAL 1000-1200	

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Location

Lecture RNR Rm. 206
Lab RNR Rm. 208

Instructors

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Objectives: Develop an understanding of:

1. Important pathogens and insects and the damage they cause. Be able to identify the major insects and diseases that affect southern forests.
2. The importance of forest diseases and insects in managed and natural ecosystems.
3. Ways to manage insects and diseases through the integration of biological information into forest management objectives.

Course Design

In this course we strive to present the principles of forest entomology and forest pathology, to examine the interactions between insects and pathogens in forest ecosystems, and to explore silvicultural and other strategies for managing insects and pathogens when they interfere with management objectives.

Lectures (T Th) are designed to meet particular objectives, depending on the subject matter of the day. Objectives will be identified at the beginning of each period. Readings are keyed to the lecture topics and are designed to supplement them. Pursue the readings if you want more information about a subject, or if you are confused or missed something.

The Laboratory has three components: field trips, laboratory study units, and one paper each on insects and pathogens. These papers should address a particular insect or pathogen or a group of insects or pathogens, of your choice (to be discussed with the instructor). The insect paper will be due by 5:00 pm on Wednesday, Oct. 3, and the pathogen paper by 5:00 pm on Thursday, Nov. 30. Late papers will be penalized 5 points per day unless arrangements have been made with the Instructors for an I grade for the course.

Grading

Grades will be based on two Midterm exams (100 points each), the Final exam

(200 points), insect and pathogen papers (100 points each), and lab quizzes (10 points each). Lecture exams will consist of a combination of multiple choice, short answer, and problem-solving questions that will require synthesis of information from lectures and labs. **ELECTRONIC DEVICES ARE STRICTLY PROHIBITED DURING EXAMS.** Some flexibility will be allowed in spelling of Latin names, but correct grammar is required on exams.

Grades will be assigned according to a standard scale. Minimum requirements for each grade are as follows:

A = 90% average on exams, quizzes and papers

B = 80% average on exams, quizzes and papers

C = 70% average on exams, quizzes and papers

D = 60% average on exams, quizzes and papers

F = <60% average on exams, quizzes and papers

Note: We will not give plus or minus grades (i.e., A- or C+) in this course.

Failure to complete the papers in a timely manner will result in an I (incomplete) for the course only if approved in advance by the instructors. Your grade is your responsibility, and you are urged to see the Instructors any time you encounter difficulty in the course.

Recommended Reading

Barbosa, P. and M.R. Wagner. 1989. Introduction to Forest and Shade Tree Insects. Academic Press.

Berryman, A.A. 1986. Forest Insects: Principles and Practice of Population Management. Plenum Press.

Ciesla, W. 2011. Forest Entomology: a Global Perspective. Wiley-Blackwell.

Coulson, R.N. and J.A. Witter. 1984. Forest Entomology: Ecology and Management. John Wiley & Sons.

Drooz, A.T. 1985. Insects of Eastern Forests. USDA Forest Service Misc. Publ. 1426.

Watt, A.D., N.E. Stork and M.D. Hunter. 1997. Forests and Insects. Chapman and Hall.

Insect Functional Groups and Major Species

Cone and Seed Insects

Heteroptera: leaf-footed pine seed bug (*Leptoglossus corculus*) and shieldbacked pine seed bug (*Tetyra bipunctata*)

Lepidoptera: southern pine coneworm (*Dioryctria amatella*)

Seedling Insects

Heteroptera: Lygus bugs (*Lygus lineolaris*)

Terminal Feeders

Orthoptera: mole cricket

Homoptera: cicadas

Lepidoptera: shoot moths, shoot borers

Coleoptera: pales weevil (Curculionidae), root bark beetle (Scolytidae), and white grubs (Scarabaeidae)

Sap-sucking Insects

Hemiptera: all, especially balsam woolly adelgid, aphids, scale insects, treehoppers, spittlebugs

Defoliators

Lepidoptera: forest tent caterpillar (*Malacosoma disstria*), white-marked tussock moth (*Orgyia leucostigma*), buck moth (*Hemileuca maia*), gypsy moth (*Lymantria dispar*), slug caterpillars, others

Hymenoptera: sawflies

Phasmida: walkingsticks

Orthoptera: tree crickets, katydids

Coleoptera: leaf beetles, weevils and scarabs

Bark Beetles (Scolytidae)

Dendroctonus: southern pine beetle (*D. frontalis*), Douglas-fir beetle (*D. pseudotsugae*), mountain pine beetle (*D. ponderosae*), turpentine beetle (*D. terebrans*)

Ips: pine engraver beetles

Scolytus: fir engraver

Wood Borers

Isoptera: termites

Lepidoptera: carpenter moths

Hymenoptera: wood wasps, carpenter ants

Coleoptera: ambrosia beetles (Scolytidae), long-horned beetles or round-headed borers (Cerambycidae), metallic or flat-headed wood borers (Buprestidae), and powderpost beetles (Anobiidae, Lyctidae, Bostrichidae)