

Introduction to Ecology

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Ecology is the study of the interaction between the living components of the earth with the environment, including the distribution and abundance of plants and animals and the impact of human activities on these distributions. Ecologists attempt to predict how changes in the environment affect ecological systems. This course first examines ecological hierarchy, from the species level through populations, communities, and ecosystems. Key ecological principles are then illustrated with applied examples ultimately providing participants the tools to evaluate environmental issues for themselves.

Session 1 - Intro to ecology

Session 2 - Population ecology

Assignments Due: Calculate your ecological footprint:

1. Read an introduction: www.footprintnetwork.org/gfn_sub.php?content=footprint_overview
2. Take two quizzes to estimate your footprint. See how different answers affect the results.
 - www.myfootprint.org
 - ecofoot.org (click on "personal footprint" under "footprint basics")After investigating the information provided by each set of websites, write a two-page report on what changes you make to your current lifestyle to decrease your footprint?
3. After investigating the information provided by each set of websites, write a two-page report on what changes you could make to your current lifestyle to decrease your footprint?

Your report is due (by email) at the beginning of class.

Required Readings:

Intro to ecology reading - [Reading assignment 1](#)

Session 3 - Community ecology

Files:

File Title

[Assignment 2](#)

[Assignment 2 Supplement](#)

Notes

Assignment 2 supplement: Kery et al. 20

Session 4 - Ecosystem ecology

Assignments Due

Acacia and (Evil) Ant Mutualism:

Read the following paragraph to help answer questions 1-3. Then visit the two websites

Acacias, tropical and subtropical woody plants in the mimosa family, sometimes have a mutualistic relationship with ants. Individual acacia plants support individual colonies of a particular ant species. The plants are typically thorny, but acacias supporting ants have greatly enlarged, hollow thorns. The ants use the thorns as nesting sites, maintaining eggs and pupae within. The acacias also provide nectar produced at the bases of leaves and specialized fat/protein bodies (Beltian bodies) produced in the leaves. The ants continually feed on the sugary nectar exuded from the nectaries and harvest the Beltian bodies, consuming smaller insect herbivores that might otherwise damage the plant and repelling other herbivores. The ants also maintain a competition-free zone around their host plant by pruning away competing plants. This mutualism has been studied carefully by Daniel Janzen and colleagues.

1. The benefits of the ant-acacia mutualism to the ants are fairly obvious, but the benefits to the acacias are less so. Propose an experiment for assessing the benefit of the ants to the acacias.
2. Not all species of acacia form mutualistic partnerships with ants. In a setting where ant-acacia mutualism has not arisen? (low herbivore pressure = not that many organisms are eating the acacia)
3. What about a setting where herbivore pressure on acacias is high? Why might the ant-acacia mutualism not have arisen?

Visit the following two websites to answer questions 4 and 5:

waynesword.palomar.edu/acacia.htm
web.fscj.edu/David.Byres/ant1.html

4. Can all ant-acacia relationships be classified as mutualistic? If not, how would you describe the others?
5. Do the in-house ants interfere with acacia pollinators? Why or why not?