THE EVOLUTION OF BODY SIZE
(GES 325/BIOSCI 325)

Course Syllabus Autumn 2006

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<td>Why does size matter?</td>
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<td>Is there an optimum size?</td>
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<td>Tues 10/10</td>
<td>What are life-history correlates with size?</td>
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<td>Tues 10/17</td>
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<td>Tues 10/24</td>
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<td>Tues 10/31</td>
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<td>Tues 11/21</td>
<td>What limits maximum size? What limits minimum size?</td>
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<td>Tues 11/28</td>
<td>Are there links between micro and macroevolutionary patterns in size?</td>
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Instructors
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Elizabeth A. Hadly, Bio Sci, Herrin Labs 280, 725-2655; hadly@stanford.edu

Readings
Readings available on CourseWork: https://coursework.stanford.edu/

Topics
We will investigate of the influence of organism size on evolutionary and ecological patterns and processes, using the primary literature. We will integrate theoretical principles, observations of living organisms, and data from the fossil record. Questions we will address include: What are the physiological and ecological correlates of body size? Is there an optimum size? Do organisms tend to evolve to larger size? Does size affect the likelihood of extinction or speciation? How does size scale from the genome to the phenotype? How is metabolic rate involved in evolution of body size? This course is intended as a discussion seminar for upper division undergraduates and graduate students. Priority will be given to graduate students.

Requirements
Preference is given to graduate students. The course is offered on a Satisfactory/No Credit basis. One term paper is required; discussion participation is expected.
TENTATIVE READING LIST

Resource Texts
Princeton University Press, 176 pp. (available mid-October)
Schmidt-Nielsen K. 1984. Scaling: Why is Animal Size So Important?

Why does size matter?

Is there an optimum size?
Required
   consequences of an energetic definition of fitness, American Naturalist 142: 573-584.
   benthic marine invertebrates. Integrative and Comparative Biology 42:
   853-861.
5. Roy K., Jablonski D., Martien K.K., 2000. Invariant size-frequency
   distributions along a latitudinal gradient in marine bivalves, PNAS 97:
   13150-13155.

Supplementary
   Paleontological Society), Vol. 2, Supplement to Vol. 42, no. 5 of the
   Journal of Paleontology. Paleobiological Aspects of Growth and
   D.M., Marquet P.A., Maurer B.A., Niklas K.J., Porter W.P., Tiffney B.,

What are life-history correlates with size?

Required


Supplementary


Does size scaling apply equally to all species?

Required


Supplementary


What controls population trends in size?

Required


Supplementary


**What are the macroevolutionary trends in body size?**

Required


Supplementary


**Are there alternative explanations for body size trends?**

Required


Supplementary


**Does size affect extinction risk or taxon longevity?**

**Required**


**Supplementary**


**What limits maximum size? What limits minimum size?**

**Required**


Supplementary


Are there links between micro and macroevolutionary patterns in size?

Required


Supplementary

