# Communities and Ecosystems

**Biol. 472**  
3.0 credits

Class meets in Irving 208, MWF 1:00-2:00 pm  
Text: *Ecology: Individuals, Populations, and Communities* by Begon, Harper, and Townsend. All listed readings below are from this book. Additional readings will be assigned in class.

Objectives: I hope that students will learn 1.) to understand the forces that structure communities and ecosystems, and 2.) to think critically about the science involved in studying communities and ecosystems and their responses to perturbation.

## Schedule of Lectures
This schedule is tentative & subject to change.

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Reading</th>
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<tbody>
<tr>
<td><strong>September</strong></td>
<td></td>
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</tr>
<tr>
<td>8</td>
<td>Introduction: defining communities &amp; ecosystems</td>
<td>Ch. 1</td>
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<tr>
<td>11</td>
<td>Evolution and patterns in the distribution of communities</td>
<td>Ch. 2, 3</td>
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<tr>
<td>13</td>
<td>Biomes of the world</td>
<td>Ch. 1</td>
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<td>15</td>
<td>Niches and resources</td>
<td>Ch. 4</td>
</tr>
<tr>
<td>18</td>
<td>Population processes</td>
<td>Ch. 6</td>
</tr>
<tr>
<td>20</td>
<td>Intraspecific competition</td>
<td>Ch. 7</td>
</tr>
<tr>
<td>22</td>
<td>Interspecific competition</td>
<td>Ch. 20</td>
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<tr>
<td>25</td>
<td>Competition and community structure</td>
<td>Ch. 10</td>
</tr>
<tr>
<td>27</td>
<td>Competition continued, predation</td>
<td></td>
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<tr>
<td>29</td>
<td>Predator-prey interactions</td>
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<td><strong>October</strong></td>
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<tr>
<td>2</td>
<td>Parasitism and disease</td>
<td>Ch. 12</td>
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<td>4</td>
<td>Role of parasitism, predation in community structure</td>
<td>Ch. 21</td>
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<tr>
<td>6</td>
<td>Review; <em>problem set 1 due</em></td>
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<tr>
<td>9</td>
<td>MID-TERM EXAM I</td>
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<tr>
<td>11</td>
<td>Role of disturbance in community structure</td>
<td>Ch. 21</td>
</tr>
<tr>
<td>13</td>
<td>Mutualisms</td>
<td>Ch. 13</td>
</tr>
<tr>
<td>16</td>
<td><em>Discussion of paper in class</em></td>
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<tr>
<td>18</td>
<td>Case study: control of pests and weeds</td>
<td>Ch. 16</td>
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<tr>
<td>20</td>
<td>Community characterization, succession, ecosystems</td>
<td>Ch. 17</td>
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<td>23</td>
<td>Ecosystems, GPP, and NPP</td>
<td>Ch. 18</td>
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<td><em>Short written assignment due</em></td>
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<tr>
<td>25</td>
<td>Controls over NPP</td>
<td>Ch. 18</td>
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<tr>
<td>27</td>
<td>Energy flux through ecosystems</td>
<td>Ch. 18</td>
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<tr>
<td>30</td>
<td>Decomposition</td>
<td>Ch. 11</td>
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<tr>
<td><strong>November</strong></td>
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<tr>
<td>1</td>
<td>Nutrient cycling in ecosystems</td>
<td>Ch. 19</td>
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<td>3</td>
<td>Global biogeochemical cycles</td>
<td>Ch. 19</td>
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<td>6</td>
<td><em>Student presentations I</em></td>
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<td>8</td>
<td>Climate change</td>
<td>Ch. 19</td>
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<tr>
<td>10</td>
<td>Review; <em>problem set 2 due</em></td>
<td>Ch. 19</td>
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</tbody>
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13 MID-TERM EXAM II
15 Food webs Ch. 22
17 Community stability and food web structure Ch. 22
20 Student presentations II Ch. 19
22 Islands and community structure Ch. 22
24 Thanksgiving Holiday, NO CLASS Ch. 22
27 Student presentations III
29 Species’ effects on ecosystem processes, species invasions Ch. 23

December
1 Species invasions- Cane Toads (movie)
4 Student presentations IV
   Term paper due
6 Global patterns in diversity Ch. 24
8 Conservation and diversity Ch. 25
11 Student presentations V
13 Conservation, diversity, and sustainability Ch. 25
15 Review; final problem set due

18 FINAL EXAM 1-3 pm Irving 208

Instructor: Dr. Syndonia Bret-Harte
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Email: syndonia@liter.uaf.edu
Office hours: Monday 2:15-3:15 pm or by arrangement

Grading policy:
Exams (50% of total points):
  2 midterms (15% each)
  1 final (20%)

Assignments (50% of total points):
  1 oral assignment (20%)
  1 short written assignment (10%)
  3 problem sets (10%)
  1 term paper (10%)

Make-up exams will only be permitted in case of illness or family emergency, and then only if I am notified in advance of the exam by email or phone. Problem sets will not be accepted late. Assignments and papers turned in late automatically lose 10% for each day that they are late.