**Topics in Biodiversity and Nature’s Services**

**Instructor**: Dr. Lindsey Albertson; Office: 303 Lewis Hall; Email: [lindsey.albertson@montana.edu](mailto:lindsey.albertson@montana.edu)

**Class meeting**: Wednesdays, 11-11:50am, Lewis Hall Ecology Library, Room 309

**Office hours**: By email appointment (lindsey.albertson@montana.edu)

**Learning objectives**:

Students will be able to:

1. disentangle and integrate ecological research topics of positive interactions, facilitation, foundation species, and biodiversity and ecosystem services
2. Define and describe the history of the study of the role of animals and plants in ecosystems;
3. Summarize the current state of ecological knowledge related to facilitation and positive interactions in freshwater ecosystems with an emphasis on identifying knowledge gaps within particular study topics;
4. Practice techniques for reviewing a body of literature through a variety of methods including, but not limited to, manuscript writing, formal presentation, meta-analysis, conceptual figure and model creation, and guiding group discussion.

**Assignments**:

Undergraduate and graduate students:

(1) Come to class!

(2) Complete all readings and other homework assignments (e.g. podcasts, gathering papers, extracting data from papers) before class and be prepared to discuss the topic each week.

**Grading**:

Undergraduate students:

(1) 40% Attendance

(2) 40% Participation

(3) 20% Homework (1 hour of data extraction or writing per week expected)

Graduate students:

(1) 30% Attendance

(2) 30% Participation

(3) 40% Homework (1 hour of data extraction or writing per week expected)

Attendanceis required. One excused absence is allowed but must be discussed with Dr. Albertson within 3 days of the missed class. Missing a second class results in drop of a letter grade (from A to B). Missing a third class results in drop of co-authorship on any manuscript that might come of the work we do.

Bring a laptop to class because we will be extracting data.

Plagiarism is not tolerated and consequences follow Montana State University’s Code of Conduct (http://www.montana.edu/policy/student\_conduct/).

See the next page for the course schedule.

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| **Date** | **Class meeting topic** | **Readings and other assignments** |
| 15 Jan | Class introductions | None |
| 22 Jan | Positive interactions: a review of background info and what we know in freshwater ecosystems | (Bertness and Callaway 1994)  (Bruno et al. 2003)  (Holomuzki et al. 2010)  (Silknetter et al. 2020) |
| 29 Jan | The Meta-analysis approach | (Gurevitch et al. 2001) |
| 5 Feb | Search terms, spreadsheet, paper allocation | Question/hypothesis list  Compile list of potential papers |
| 12 Feb | Data extraction techniques; Data collection | ImageJ  Data extraction |
| 19 Feb | Data collection | Data extraction |
| 26 Feb | Data collection | Data extraction |
| 4 Mar | Albertson traveling; No Class | Data extraction |
| 11 Mar | Data analysis | TBA |
| 18 Mar | Spring Break; No Class | None |
| 25 Mar | Data analysis | TBA |
| 1 Apr | Data analysis | TBA |
| 8 Apr | Finalize Figures; Writing | Paragraph writing |
| 15 Apr | Writing | Paragraph writing |
| 22 Apr | Writing | Paragraph writing |
| 29 Apr | Writing | None |
| 6 May | Final exams week | No meeting |

**Class Readings**

Bertness, M. D., and R. Callaway. 1994. Positive interactions in communities. Trends in Ecology & Evolution 9:191–193.

Bruno, J., J. J. Stachowicz, and M. D. Bertness. 2003. Inclusion of facilitation into ecological theory. Trends in Ecology & Evolution 18:119–125.

Gurevitch, J., P. S. Curtis, and M. H. Jones. 2001. Meta-analysis in ecology. Advances in Ecological Research 32:199–247.

Holomuzki, J. R., J. W. Feminella, and M. E. Power. 2010. Biotic interactions in freshwater benthic habitats. Journal of the North American Benthological Society 29:220–244..

Silknetter, S., R. P. Creed, B. L. Brown, E. A. Frimpong, J. Skelton, and B. K. Peoples. 2020. Positive biotic interactions in freshwaters: A review and research directive. Freshwater Biology:fwb.13476.