

## Botany 422-Plant Geography Spring 2017

### Term Paper / Project Information

You will be required to submit a **term paper** *or* **project** for completion of this class. Attached is a list of topics for term papers, but you are not limited to the topics on that list. Feel free to choose something that interests you. Either way, however, you **must** talk to me (Ken) or to the TA (Jeff) to reserve one of the suggested topics or to get your own topic approved. That is to ensure that:

- 1) You haven't overlapped with someone else in the class.
- 2) Your proposed topic is workable: often people suggest topics that are too large, and are impossible to cover in a term paper.
- 3) Your topic is really biogeographical, rather than ecological or in another allied field tangential to biogeography *per se*.

**DEADLINE FOR CHOOSING A TOPIC: Friday, March 17 - prior to Spring Break**

**DEADLINE FOR THE COMPLETED PAPERS: Friday, April 28**

#### **GUIDELINES FOR THE TERM PAPER:**

The term paper should represent an in-depth study of a well-defined topic or problem in plant geography. You will be advised of or given a few basic references on your topic, but it will be up to you to research the primary literature (original articles and books). *Web of Knowledge* and other computerized reference resources in libraries (e.g., Steenbock, *Geography*) should be extensively used — these should be done both backwards and forward in time (i.e., to find who has cited an older paper or article). If you do not have experience using library-based electronic resources or searching engines, please ask one of the instructors for help or ask for assistance at one of the libraries.

Term papers are normally 10+ typed pages long, double-spaced, plus additional pages for the bibliography and illustrative material (maps, tables, charts, etc.). Maintain a copy for yourself as the term papers will be kept on file in the Botany Department. Follow recent issues of the *American Journal of Botany* (see online examples) for format in terms of citing references in the body of your paper and of the Literature Cited portion.

**PROJECTS: (needs consent of instructor/TA to begin a project - please select by March 17)**

A project can be done by yourself (graduate students) or in a group of two students; in the latter case, both are expected to contribute to the data gathering, analysis, and writing of the final report. This **project is required for graduate students** and is encouraged for undergraduate students who wish to pursue an analytical approach to questions involving distributions of species or

larger groups. Two different project types are outlined below, but feel free to discuss other ideas with the instructor or TA. Both types of projects will involve acquisition of additional databasing, computer, and analytical skills with help from the instructor and/or TA.

1. Analyze the spatial pattern of plant distributions within (i) Wisconsin or (ii) continental U.S. in the context of a specific biogeographical question. Example 1: can the tension zone within Wisconsin be identified by analyzing specific species distributions by county (downloaded via the Wisconsin State Herbarium database) and using an Areas of Endemism computer program? Example 2: can a "prairie province" within the U.S. be identified by analyzing prairie species distributions by state (downloaded via the USDA Plants Database) and using an Areas of Endemism computer program?

2. Analyze molecular data from a specific group of plants or animals to understand biogeographical events. The project comprises several parts: (i) selection of appropriate group with interesting biogeographical distributions; (ii) downloading of DNA sequence information from GenBank (online); (iii) phylogenetic analysis of the data matrix using parsimony or maximum likelihood; and (iv) a biogeographical analysis of the resulting phylogenetic relationships (computers and programs available in the systematics lab for these last two steps in Birge 243)

Both types of projects will require a final, brief (3-4 pages plus citations, figures, tables) write up including introduction to the question, methods, results, and discussion of the question. There will be opportunity for you or your group to present your work during the last day of class.

**DEADLINE FOR THE COMPLETED PROJECTS: Friday, April 28**