

Robyn J. Burnham

- 1) Ecology of temperate climbing plants
- 2) South American forest history

Both research projects can involve undergraduates in field excursions, if funds are available once the student's background in the project is complete.

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1) Are climbing plants increasing in abundance and biomass in temperate forests due to fragmentation and increased CO₂? Indications from elevated CO₂ studies are that climbing plants (vines and lianas) benefit even more than trees do from increased levels of CO₂. Furthermore, fragmentation and forest degradation also create opportunities for expansion of climbing plants. We will establish a network of baseline vine and liana plots in forests of the midwest and northeastern U.S. Our goals will be to create a long-term opportunity to monitor forest health via this commonly overlooked plant life form. Students will gain experience in using herbarium and web-based reference material, field identification and censusing of climbers, data base plot entry, field design and set-up, and writing scientific publications to report research results. Field trips to local and northeastern natural areas will be a part of the long-term project.



2) Explore the evolutionary history of plants using fossils from the Andes Mountains in South America. Fossils from both Bolivia and Ecuador were collected over the past 5 years but their identities and relationships are poorly known. Undergraduates will collaborate with Robyn Burnham and her grad students on describing, identifying, and applying fossil plants to calibrate the tree of life. Fossils represent leaves, fruits, and seeds of dry tropical forests of inter-montane basins (Ecuador) or lowland moist forests of the Amazon (Bolivia). Students will gain experience in handling fossils, using herbarium and web-based reference material, data base character entry, interpretation of molecular phylogenies that can be calibrated using fossil plants, mapping of biogeographic distributions, and writing scientific publications to report research results.