



# Ross Biological Reserve & Alton A. Lindsey Field Laboratory

*Biological Sciences, Purdue University, August 2011*

## OPEN HOUSE OCTOBER 22

During Purdue's Homecoming weekend, we will have our annual pancake breakfast to celebrate the 62<sup>nd</sup> anniversary of the Ross Reserve and 12<sup>th</sup> anniversary of the Lindsey Lab. We welcome alumni, faculty, students, friends, and families from 8AM to 2:00 at the Lindsey Lab. We will have short presentations of current research at 10:00. Directions below.

As the forest in the Ross Reserve slowly changes and is better understood, new experimental research programs have been initiated to complement long-term observational studies. Nancy Emery and students are studying herbaceous plant communities and their potential responses to climate change ("Research Focus" at right), and Esteban Fernández-Juricic and students are studying the ecological and aeronautical implications of bird visual systems. They are asking whether understanding of birds' responses to radar on airplanes could be used to avert collisions, and whether variability among individuals in response to predators is based on variability in visual systems. Josh Shields, working with Mike Jenkins of Forestry & Natural Resources has removed invasive honeysuckle from large areas of second-growth and is measuring the response in plant and mammalian communities. Ken Henry and Mark Nolan, working with Jeff Lucas, completed the 19<sup>th</sup> and 20<sup>th</sup> PhD theses since 1980 on research conducted at the Reserve. Dr Lucas' lab has long studied the acoustic and informational structure of birds' vocalizations, and how they are used in communication within mixed-species flocks, often using experimental approaches. Alton Lindsey's vision of a "living laboratory" still works.



## RESEARCH FOCUS

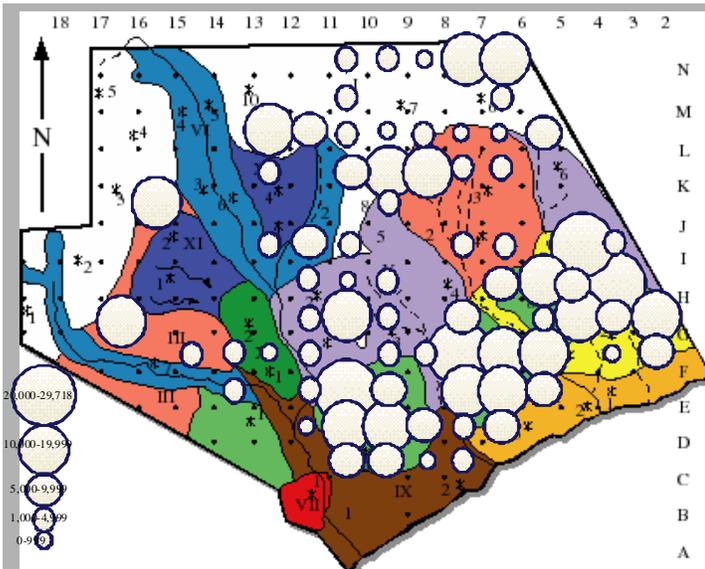
Asya Ayrapetov, a PhD student in Botany & Plant Pathology, is working with Nancy Emery and six undergraduates to understand the



impacts of climate change on forests. The spring ephemeral community is a functionally important group of herbaceous perennials with emergence and flowering stages that are highly sensitive to environmental variability.

Focusing on the spring beauty (*Claytonia virginica*, above), Asya is measuring effects of soil and air warming and early canopy closure on the plants' timing of emergence and flowering. Altered pollinator interactions could curtail reproductive success through pollen limitation. Changes in pollinator behavior and abundance could also interact with other spring ephemerals like bloodroot (at left). She has established experimental plots in a quarter-hectare fenced study area in mature forest where some plots will be heated to levels predicted by climate-change models. Department staff have been instrumental in executing the technically sophisticated experimental design. This work is unique in its focus on a distinctly vulnerable plant community and complex species interactions under natural conditions, combining a naturalist's insight into plant and insect ecology with an experimentalist's rigor. Asya has been awarded a National Science Foundation Graduate Research Fellowship. The Ross Reserve's protected forest and infrastructure make it an ideal location.





The decadal tree census, conducted by Matt Gasner and Anna Ciecka, was expanded to include most of the Reserve and more than 10,000 tagged trees. This database was employed by the Field Ecology class to ask whether Faulkner's soils map could explain plant community composition. Some species' distributions, like black oak (*Quercus velutina*; above) map closely onto particular soils (dry and ridge soils), and statistical classification of tree communities results in three main community types: second-growth dominated by tulip poplar; sandy soils dominated by black oak; and more diverse forests on richer, moister soils.



Another watershed event has been the demolition of the trailer ("curator's quarters") installed in 1978 with a National Science Foundation grant. This makes way for a planned second log structure modeled on the Lindsey Lab to house a resident graduate ecologist and researcher space. The Department is launching a fundraising campaign to match pledges already received from faculty and Friends of the Ross Reserve, including Elizabeth Lindsey, Marion Jackson, Steve Austad, Scott Wissinger, Bill Bromer, Stephanie Fabritius, Brian Keane, Pete Fauth, Cathy Mossman, Aaron Pierce, and Jill Jankowski.

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In May we honored Peter Waser on the occasion of his retirement with a picnic at the Lindsey Lab, attended by many faculty, grad students, and families. Peter arrived at Purdue shortly before the retired trailer, and has stood the test of time much better.



As in many previous years, Biology Outreach veterans Isidore Julien and Clark Gedney made excellent use of the Lindsey Lab and Reserve. Students in their Summer Biology Experience, funded by the Howard Hughes Medical Institute, spent four days (above) exploring the Reserve ecosystems, ecology, and the scientific method. In addition, the team that won gold medals at the International Biology Olympiad in Taiwan studied plant biology with Nancy Emery at the Ross Reserve during their National Finals in June.

The Reserve lies between the Ravines golf course and the Ross Hills County Park, on the north bank of the Wabash in Tippecanoe County. From campus, follow South River Road (becoming Division Road) downstream (southwest) past Fort Ouiatenon, Granville bridge, and the Ravines golf course, turning south on county road 875, with signs to Ross Hills. Just before a turn and the county park, the Reserve sign and entrance are on the left.

