

Ross Biological Reserve

& Alton A. Lindsey Field Laboratory

Biological Sciences, Purdue University, December 2012

Ecology and Evolutionary Biology

RESEARCH FOCUS

Josh Shields, working with Mike Jenkins of the Department of Forestry & Natural Resources, is documenting impacts of the invasive exotic Amur honeysuckle (*Lonicera maackii*). This shrub



can impact forests to the point of reducing tree recruitment and habitat quality for wildlife. Josh has removed honeysuckle from a 70m x 70m area near the edge of the Reserve where honeysuckle is very dense. He is measuring the response of the herbaceous plant community and small mammals. Spring ephemeral plants (like spring beauty, above) are expected to be most sensitive to honeysuckle competition because of the shrub's ability to leaf out early in the spring. Preliminary results suggest that the diversity of spring ephemerals has increased in response to the removal of Amur honeysuckle. Josh is also precisely mapping individual honeysuckle plants to better quantify the spatial pattern of invasion. His study will improve understanding of both the impacts of invasions and strategies for slowing the spread of invasives.

Other continuing research includes studies of impacts of climate change on plant communities (by Lindsey Fellowship winner Asya Robershaw), studies of avian sensory systems with respect to risk of aircraft collision, and studies of how birds communicate in multiple modalities. Many undergraduates are involved in these studies and in classes like field ecology at the Reserve.

OPEN HOUSE SEPTEMBER 28, 2013

During Purdue's Homecoming weekend next fall, we will have our pancake breakfast to celebrate the 64th anniversary of the Ross Reserve and 14th anniversary of the Lindsey Lab. We welcome alumni, faculty, students, friends, and families 8:00am - 2:00pm at the Lindsey Lab. We'll have short presentations of current research & building progress at 10:00.

It has been another productive year at the Ross Reserve. Innovative research at all levels continues along with class projects, local school programs, and collaboration with community organizations. One of the most exciting developments is the planning of a low-impact "green" classroom building (below).



We have first built a strong cross-campus alliance of faculty, staff, and students from five colleges to research sustainable construction strategies and apply them to a cost-effective, self-powering building that will house both a classroom and quarters for a graduate ecologist-in-residence. This alliance includes engineers, architects, building technologists, interior designers, landscape architects and ecologists and has focused the energy of four student organizations concerned with sustainability. We have financial backing from Tipmont Electric Cooperative, the Provost, Vice President for Research and Director of University Sustainability, as well as our Department, alumni, faculty and friends. [continued]





Outreach in 2012 has included school groups like the Happy Hollow fourth-grade class below. They investigated invasive plant species and generated reports of their findings later at their school to Reserve faculty. Our Artist in Residence, Gabriela Sincich, helped them illustrate their plants. We partnered with NICHES land trust in several workshops for volunteers, including sedge identification, and we are continuing this cooperation for conservation. Students in the Summer Biology Experience, funded by the Howard Hughes Medical Institute, and in the International Biology Olympiad, once again made good use of the Reserve and the Lindsey Lab. Purdue classes, like surveying and landscape architecture, made the Reserve a study area in preparation for construction. The new classroom will improve our ability to conduct these kinds of programs, and its relevance to the ecological footprint of everyday life will bring home the message of sustainability for the community.

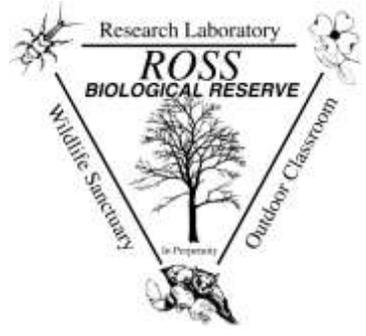
The Ross Reserve has always been a center for testing ecological principles and promoting environmental awareness, so its infrastructure should contribute to these goals. The classroom is being designed from the outset to communicate ecological principles and make the working of the building transparent. Buildings account for half of the energy use in the US, yet we have been slow to apply even simple principles of ecological efficiency to them. We began the process of integrating expertise by bringing an architect to campus with experience in the demanding Living Building Challenge. She gave a public talk and conducted a day-long workshop that attracted participants from across the university community. We then ran a semester-long seminar entitled "Ecological Principles in Building" that brought together faculty, professionals and students from five schools and administration covering topics from architecture and certification to finance and landscape integration. We have created a spring course that will cover this range of topics and apply principles to the Ross Reserve building. It will use a solar array and passive design to achieve net-zero energy, process all waste on site, and minimize impact embodied in building materials. We are taking time to balance technical sophistication with down-to-earth affordability so that the building can stand as a model for residence-size sustainability.



Construction will start in the spring of 2014, and will involve community members who helped design it.



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 (left) on county road 875, with signs to Ross Hills. Just before a turn and the county park, after a golf-course service road, the Reserve sign and entrance are on the left.



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