Field Name	Field Value
Name	Dr. Randy Mitchell
Organization	Department of Biology, University of Akron
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Web_Address	www3.uakron.edu/biology/mitchell/
Renewal	No
Permit_Number	2009-0002
Activity	Research
Project	Traplining behavior of foraging pollinators
Dates	May 2009- October 2011
Group_Size	1-7
Research_Area	No
Eighteen_Acres	Yes
Garden_Pond	Yes
Grandview_Alley	Yes
Round_Top	Yes
Sensitive_Area	No
Bath_Pond	Yes
Garden_Bowl	Yes
North_Fork	Yes
Other_Areas	Yes
Public_Areas	Yes
Steiners_Woods	Yes
Building	Yes
Prep_Work	None - just access to the building
Sampling_Collecting	Yes
Sampling_Methods	We will collect ~200 fruits of each plant species (Penstemon digitalis and Mimulus ringens), and a few voucher bee specimens.
Description	We will individually mark bumble bees and follow them as they move through populations of marked flowering plants. This will help us to understand patterns of bee movement, and how those patterns affect plant reproduction. My students and I will mark and follow bumble bees visiting tagged and mapped plants (Penstemon digitalis and Mimulus ringens) at several sites on the BNP, and on Panzner wetlands. I will use surveyor’s flags to mark all plants within a roughly 20x20m area with individual numbers. I and my

	assistants will then capture, mark, and release foraging bumble bees (the marks are small plastic disks with numbers on them, glued to the bees back). We will then record the sequence of plants visited by theses bees over a week or two of observation. This will let us investigate the existence and consequences of differences among pollinators in their foraging behavior, and particularly in their propensity to 'trapline' (follow repeatable routes between plants). Study of each species will last 2-3 weeks – a week or so of marking and mapping plants, and marking bees, and a week or so of following bees. All markings will be removed at the end of the study. The Penstemon study will run from about June 1 for 2-3 weeks, and will most likely be only at BNP. The Mimulus study will start around Mid-July and end in early August. It will probably be all at Panzner. I do not plan any manipulative experiments – only observations, collections, and occasional fruit collection Impact on the Preserve should be very slight – we are not collecting whole plants, will collect only a few insects as vouchers, and marking insects has little to no effect on their survivorship. Some visitors will see our study areas.