

## **Project Completion Report – Interim 2005**

**Project Title: Science Education Technology Equipment for the NPS Upper Columbia Basin Inventory and Monitoring Network**

**Park: Upper Columbia Basin Network**

**Funding Source: Rocky Mountains CESU Education Technology Equipment  
Funding-NPS, RM-CESU funding**

**Contact: Tom Rodhouse, Ecologist, NPS Upper Columbia Basin Network,  
[Tom\\_Rodhouse@nps.gov](mailto:Tom_Rodhouse@nps.gov), 541-312-8101**

### **Project Description:**

The NPS Upper Columbia Basin Network (UCBN) received financial support from the Rocky Mountain Cooperative Ecosystem Studies Unit (RMCESU) in 2005 to purchase handheld computers (PDAs) and other digital technology equipment to support its education and citizen science programs. The UCBN has taken an active role in developing opportunities for students and volunteers to work on network inventory and monitoring projects. A partnership with the Oregon Museum of Science and Industry (OMSI) has allowed for students to work directly with network staff and contracted scientists on butterfly and vertebrate inventory activities in the John Day Fossil Beds National Monument in 2002 AND 2003. In 2004, a 15 day “tent-and-van”-based program brought 8 high school students to three UCBN parks to study bats. The team, organized through OMSI’s camps program and directed by UCBN staff, conducted bat inventories and pilot bat monitoring activities and produced a professional summary of findings for the parks and network (see [http://www1.nature.nps.gov/im/units/ucbn/Outreach\\_ed.htm](http://www1.nature.nps.gov/im/units/ucbn/Outreach_ed.htm)). The anticipated programs in 2005 prompted the UCBN to seek assistance from the RMCESU to purchase computer equipment identified as “mission critical” for successful programs. The UCBN has not received its full funding and was unable to provide this equipment from its FY05 budget.

In early 2005, the NPS/RM CESU purchased approximately \$10,941 worth of technological equipment for UCBN citizen science programs in 2005 and 2006. The equipment was intended to be employed in programs beyond 2006 as well. Equipment included Dell Axim hand-held personal digital assistants (PDAs), ESRI ArcPad software and licenses, a Dell Inspiron laptop, an LCD projector, screen, secure digital data storage cards, and Holux bluetooth GPS units. At the time of the funding request, anticipated UCBN programs in which the equipment was intended for use included a teacher training for the NPS *Aliens in Your Neighborhood* invasive weeds curriculum in the John Day Fossil Beds National Monument, as well as an OMSI high school botany research team in three UCBN parks. Additional programs were anticipated both for 2005 and 2006.

### **Project Results - 2005:**

The *Aliens in Your Neighborhood* curriculum teacher training scheduled for March, 2005 at OMSI’s Hancock Field Station in the John Day Fossil Beds National Monument was

cancelled due to insufficient teacher registration. This was in part a result of overlap with regional school district spring breaks. The UCBN plans to organize future curriculum trainings.

The OMSI High School Botany Research Team ran as scheduled from June 19-July 1, 2005. Seven students participated in the program and all reported enjoying the trip. The group produced a report on results of sampling aspen (*Populus tremuloides*) in City of Rocks National Reserve (CIRO). Data generated were of sufficient quality and rigor for use in pilot analysis and sample size estimation. This project will be very helpful to the UCBN as it begins to develop a long-term monitoring protocol for aspen in several network parks. The group also traveled to Craters of the Moon National Monument and Preserve to assist the UCBN with vegetation map ground truthing. NPS-RM CESU-purchased digital equipment was employed throughout the trip, including use of the laptop for program slideshows and PDA trainings, data management, and report writing. Students generated a draft report on aspen as well as a Microsoft Powerpoint slideshow of the entire experience. ArcPad training was provided on the Dell Axim PDAs to students and staff at the beginning of the program and these units were used periodically throughout the trip to generate GPS locations and to plot locations on park base maps. Five PDAs were used with the botany team, allowing remaining units to be available for the following program which ran simultaneously.

An additional citizen science program was organized for 2005 by the UCBN and OMSI after the request for funding was submitted. OMSI's NSF-funded Salmon Camp program for Native American science students visited the Weippe Prairie unit of Nez Perce National Historic Park (NEPE) with NEPE and UCBN staff to conduct sampling of camas (*Camassia quamash*) and the invasive weed sulphur cinquefoil (*Potentilla recta*). The program occurred June 27-30, 2005, and students measured frequency, stem density, and cover of the two target species in 0.5 m<sup>2</sup> quadrats aligned along 200-m transects. Data were collected directly in ArcPad using the Dell Axim PDAs and Holux GPS units. The group convened during the final afternoon to review results in ArcView. All of the equipment provided by the NPS-RM CESU was used during this program. Custom field forms were created in ArcPad allowing students to input quadrat data and log GPS locations "on-the-fly". At the conclusion of the project, PDAs were hot-synched to the laptop and results were quickly mapped and projected using the Dell Inspiron laptop, LCD projector, and screen. This equipment greatly facilitated both the efficiency of data collection and analysis as well as the students participation in all aspects of the project, from data collection and management to analysis and discussion of results. This program was extremely successful in providing students an opportunity to work in a culturally significant site, conduct applicable field data using state-of the-art digital mapping and analysis technology, and participate in a round-table discussion about the significance of their work to the UCBN and NEPE long-term monitoring and site management efforts.

Planning is underway for 2006 UCBN/OMSI citizen science programs. Tentative plans include a second season of camas sampling in NEPE by Salmon Camp, as well as a high school ecology research team traveling to Lake Roosevelt National Recreation Area to participate in their fire effects and water quality monitoring activities. Also under

consideration is a request for a repeat of the 2004 bat research team. *Aliens in Your Neighborhood* curriculum training opportunities are also being pursued for several locations in the UCBN. Each of these possible 2006 programs will benefit tremendously from the RMCESU-provided digital equipment dedicated for supporting citizen science. Finally, in October 2005, project contact Tom Rodhouse will be delivering a presentation on the UCBN citizen science program at the George Wright Society Great Rift Symposium in Pocatello, Idaho, in which the NPS-RMCESU support will be highlighted.

**Budget:**

The following list of equipment was purchased by the RMCESU in support of the UCBN citizen science program. Costs per item are approximate and do not reflect the actual final purchase and shipping costs. A total of \$10,941 was used to buy this equipment, about \$200 more than was initially proposed.

A. Equipment

Dell Axim 30x handheld computers (10 @ \$343.20)	\$3432.00
Holux GR-230 Bluetooth GPS (10 @ \$149.99)	\$1499.90
512 mb Secure Digital Card (10 @ \$60)	\$ 600.00
Dell 2300 mp DLP LCD Projector	\$1599.00
Da-lite Versatol Portable Tripod Projection Screen	\$ 89.00
Projection Screen Carrying Case	\$ 45.00
Dell Inspiron Laptop	\$1500.00
ESRI ArcPad Licenses (10 @ \$202)	\$2020.00

**References and Reports:**

See attached:

- 1) Baseline Survey of Quaking Aspen (*Populus tremuloides*) in City of Rocks National Reserve: June 27-29, 2005 (OMSI High School Botany Research Team)
- 2) Accompanying CD – Botany Team powerpoint presentation and selected photos
- 3) Weippe Prairie Camas Lily Pilot Sampling Project: Summary of Findings from Weippe Prairie, Nez Perce National Historical Park June 27-30, 2005 (OMSI Salmon Camp)
- 4) Accompanying CD – Salmon Camp photos from the Weippe Prairie portion of their program

