Engage Professional and Citizen Scientists to Survey the Biota of Olympic National Park—Coordination and Logistics: An ATBI Pilot Project

Final Project Report

Introduction/Background

This project began as a National Park Service (NPS) effort to seed a pilot study that might one day develop into a full-scale All Taxa Biotic Inventory (ATBI) for Olympic National Park (OLYM). Conceived as an effort to collect only one or two major taxa, at only a few locations within the Park, the project received a big stimulus when T. W. Pietsch of the University of Washington (UW) received an NSF "Small Grant for Exploratory Research" (SGER) that supports some of the same goals. For the purposes of this Implementation Plan, and because the conduct of these two activities was considered germane to the organization of a future OLYM ATBI, the NPS tasks and those conducted with NSF funds were merged. As originally proposed the NPS-funded part of this project was to collect and identify aquatic and riparian beetles at selected locations within OLYM. The SGER grant was focused on the Elwha River Watershed in an effort to establish baseline data to document invertebrate and non-vascular plant communities before two dams on the river are removed. The NSF project was not restricted to beetles but does includes them, along with microbes, lichens, mosses, liverworts, fungi, other insect taxa, and spiders. A further change to the structure of the TA was implemented when Chris Marshall and OSU were unable to complete the complementary and collaborative task agreement to this one, J8W07070029. The NPS was forced to terminate the agreement with OSU and decided to redirect the funds to a new agreement (J8W07100003) with the UW for curation of the materials collected. This has meant that all work originally tasked for OSU has not been done. This resulted in the UW taking on many aspects of OSU's unfulfilled role. The UW conducted all of the collecting events and Beetle Blitz's associated with the completed work of this Task agreement. The most important change has been in the shifting of curation and preliminary identification work from OSU to the University of Washington. It has also been decided that the material collected will now be redirected to the California Academy of Sciences for permanent storage as part of a long term loan from the NPS.

Study Area: Olympic National Park

Methods/Techniques: As outlined in the Detailed Implementation Plan the work followed the model developed at Great Smoky Mountains National Park (summarized by C. Parker and E. Bernard, "The Science Approach to the Smokies ATBI," George Wright Society Forum, 23(3):26-36, 2006), both traditional and structured sampling was used. Sampling was conducted during a series of intense, short-term (one or two days)

collecting efforts (each referred to as a "Beetle BioBlitz") as well as long-term and consistent collecting using fixed locations and a standard set of traps.

Aquatic beetles were collected by hand, with small grabs and cores, push and kick nets, emergence traps, and black-lights; terrestrial beetles by hand, beating, sweep nets, and by light, malaise, pitfall, and flight intercept traps; soil-dwelling beetles by hand tools, sifters, and pitfall traps.

Locations of samples: Currently almost all of the samples are still at the University of Washington while performing final curation under TA J8W07100003. The only specimens not at UW are beetles that were collected during the Beetle Blitz of 22 August 2008 (<400 specimens). These were curated and sent to OSU prior to the NPS termination of its contract with OSU.

Results: Numerous collecting trips to OLYM were made during the first year of the task agreement with collecting conducted late into October of 2008. This included over 50 separate visits by groups of one to four participants, and three major week-long efforts (1-5 April; 28 April−3 May; 26 May−1 June 2008), each consisting of nine to 12 collectors. A six-day backpacking trip to the headwaters of the Elwha was completed in late July/early August 2008. The UW conducted four Beetle Blitz/educational forays with students and citizen scientists. These included two field events for students and teachers of the Crescent Middle School in nearby Joyce, Washington, one for Native American students of the Lower Elwha Klallam Tribe, one for Clover Park Middle and High School in Lakewood, Washington and a purely educational evening event for the Rochester Middle School in Rochester, Washington, Saratoga School in Stanwood, Washington and the largely Native American Wellpinit High School in Wellpinit, Washington.

UW also conducted a Beetle Blitz, on 22 August 2008, out on the coast at Ruby Beach, with eight participants, including students, various volunteers, and educators affiliated with the Olympic Park Institute. Sets of traps were run continuously from March to October at five locations along the Elwha and for a two week period in late August at three locations along the coast.

All pertinent data, including latitude and longitude, detailed macro- and microhabitat descriptions, collecting methods, date, time, and name of collector, were entered on-site into field databooks. Subsequent computer data entry was done by students and citizen scientist volunteers, i.e., entering their own data as part of the learning process, under careful supervision. Locality and taxonomic data generated by the NSF-funded portion of the project were made available via a dedicated website (*http://www.Elwha Biodiversity.org*), but we anticipate that all OLYM material will eventually be entered into the new NPS ATBI database template under development by Peter Kingston and colleagues.

Below is a list compiled from the project database of Taxa and the number of individuals that were collected for each:

Unit_Name	Sum of Individual Count
Diptera	>30000
Hymenoptera	17777
Coleoptera	13776
Hemiptera	9771
Acari	6215
Araneae	3342
Formicidae	2449
Trichoptera	2284
Plecoptera	2161
Collembola	1974
Aphidoidea	1406
Isopoda	531
Psocoptera	483
Opiliones	428
Chilopoda	351
Ephemeroptera	325
Thysanoptera	287
Orthoptera	238
Lepidoptera	210
Diplopoda	203
Dermaptera	203
Mollusca	88
Neuroptera	77
Dicondylia	76
Pseudoscorpiones	41
Symphyla	35
Siphonaptera	30
Raphidioptera	27
Odonata	14

Lists of species: Specimens have not been identified to species yet because of the termination of the contract with OSU.

Management Recommendations: Until more specimens are identified to species and the resulting data are analyzed we can make no management recommendations.

Summary/Conclusions

By any measure this project was successful in meeting three primary goals: (1) to serve as a pilot project to demonstrate that large scale biotic survey and inventory can be conducted effectively and efficiently—both in terms of biodiversity (numbers of specimens and numbers of species) and geographic breadth—in ONP, by teams of relatively inexperienced citizen scientists, despite large areas of rugged, inaccessible terrain; (2) to provide rewarding environmental education for citizens who would otherwise never have the experience; and (3) to foster the importance and esthetic value of understanding and learning about biodiversity—what is there and the urgent need to protect it—in essentially pristine habitats that exist so close to home. We strongly urge the Park Service to consider implementing biotic survey and inventory in ONP on a continuing and long-term basis.

With many thanks for the support. We hope this brief report of accomplishments meets with your satisfaction.