

## **Results of Paleontological Inventory of Bryce Canyon National Park – 2008 Field Season**

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The 2008 field season was out most successful to date. The first season involved three undergraduate students from Weber State University, one high school student from Bryce Valley, a graduate student with the GeoCorp program, a graduate student working on his dissertation at Texas A&M University, and several student volunteers. Within Bryce Canyon National Park (BCNP) we located 25 new vertebrate fossil localities, 5 invertebrate fossil localities, and one new fossil plant locality (31 new localities total). These localities include some significant bone beds, some excellent microvertebrate sites, and the richest ostracod (small freshwater arthropods) locality ever discovered in the Cretaceous of Utah. Along the margins of BCNP, we located 12 vertebrate localities and one invertebrate locality on adjacent USDA Forest Service lands. We also did extensive screen washing of significant previously discovered localities within BCNP and tested many of our new discoveries (38 ~50lbs sacks of matrix). We also developed some localities along the margins of the boundary, particular a locality on private land about 100 m from the BCNP boundary. This last locality (UMNH VP Locality 419) may be included in a Ph.D. dissertation by Cory Redman (Texas A & M University) on the paleoecology of Cretaceous localities through time (along with UMNH VP Locality 424 which is within BCNP and UMNH VP Locality 83, just outside of the west boundary of the park). An undergraduate research project (with funding from Weber State University) was undertaken by Shayne Pearce on an invertebrate fossil locality in the Smoky Hollow Member of the Straight Cliffs Formation that he had found during the 2007 field season. In addition, we found the first marine turtle ever recovered from the Cretaceous of this region. We also measured a detailed stratigraphic section with petrographic samples that ties many of the localities we worked on this summer into stratigraphic position. Dinosaur fossils recovered during this project has attracted the attention of the Utah State Paleontologist, Dr. James Kirkland, who will become involved in the project during the 2009 field season.

During the 2008 field season, we covered the area from Pasture Wash north to Bryce Canyon (see Fig. 1). There are a few small areas that were not prospected south of Bryce Canyon which we will return to in the 2009 field season. Also, there are some interesting localities within Bryce Canyon that require some additional assessment in terms of their importance. We do not plan to spend much time in Campbell Canyon (next canyon north of Bryce Canyon) as that was well explored in the past and we plan to spend most of the 2009 field season doing inventory from Campbell Canyon to the northern margin of the park. This area may prove to be difficult due to limited access and abundant landslides in this area which will make prospecting difficult. It is our hope to complete the field part of the inventory during the 2009 field season, but it also may require a short field season in 2010 depending on what is accomplished during the 2009 field season. In summary, the project has so far produced 127 new fossil localities. Of these localities, 63 are within BCNP and 48 are on immediately adjacent USDA Forest Service and BLM (Grand Staircase-Escalante National Monument) administered lands.

Of these localities, 111 contain mostly vertebrate fossils, 13 contain primarily invertebrate fossils, and three of the localities contain paleobotanical materials.

Research continues on the fossils we have collected. We plan to submit a manuscript on frog fossils in 2009 (with Dr. Zbyňek Roček, Czech Academy of Sciences, Prague). Five abstracts by a host of authors have been submitted on mammals, amphibians, fish, lizards, and crabs, all including specimens collected in BCNP, and these papers will be presented at the “Advances in Western Interior Late Cretaceous Paleontology and Geology Conference” in St. George, Utah, in May, 2009. Shayne Pearce (undergraduate student, Weber State University) will present his abstract on his research on the Smoky Hollow Member at the Geological Society of America, Rocky Mountain Section, in Orem, Utah, in May, 2009, at the session for undergraduate research. I, along with Kelly Fuhrmann (BCNP – Resource Management) and Gayle Pollock (Bryce Canyon Natural History Association), have co-authored an abstract on this project that I will present at the 8<sup>th</sup> Conference on Fossil Resources, in St. George, Utah, in May, 2009. Furthermore, our first GeoCorp student (2007), Cory Redman (Texas A & M University), will undertake a study of vertebrate paleocommunities involving one locality in BCNP and two localities along its margins (a National Science Foundation proposal has been submitted to support this research). Research continues on other specimens by Dr. J. Howard Hutchison (turtles), University of California Museum of Paleontology, Berkeley; Dr. Jim Garner (amphibians) and Dr. Don Brinkman (fish), Royal Tyrrell Museum of Paleontology, Drumheller, Canada; Dr. Randy Nydam (lizards), Midwestern University, Glendale, Arizona; Dr. Neil Tibert, University of Mary Washington, Fredericksburg, Virginia and Dr. Elizabeth Brouwers (U.S. Geological Survey, Denver) who are jointly describing the ostracods (small freshwater arthropods); and Dr. Joe Hartman (freshwater invertebrates), University of North Dakota, Grand Forks.

All localities have been well documented and plotted on a master geologic map (a copy of which will accompany the copy of this report provided to BCNP). We curated 1000's of specimens from 49 localities this year and used 228 additional BRCA catalogue numbers (many individual numbers representing large numbers of specimens) and completed making corrections and improvements in the catalogue as directed by Leslie Courtright (National Park Museum Curator, Zion NP).

A large scale map with the localities plotted on them, all 2008 locality data (on paper and digitally), and the 2008 field notes (digital) will be provided to BCNP. The last three years of locality data (on paper and digitally), and the last three years of field notes (digitally) will be provided to Leslie Courtright at Zion NP so that she has a complete copy of the records to date. Leslie will also receive a copy of the BRCA catalogue to date (digital).

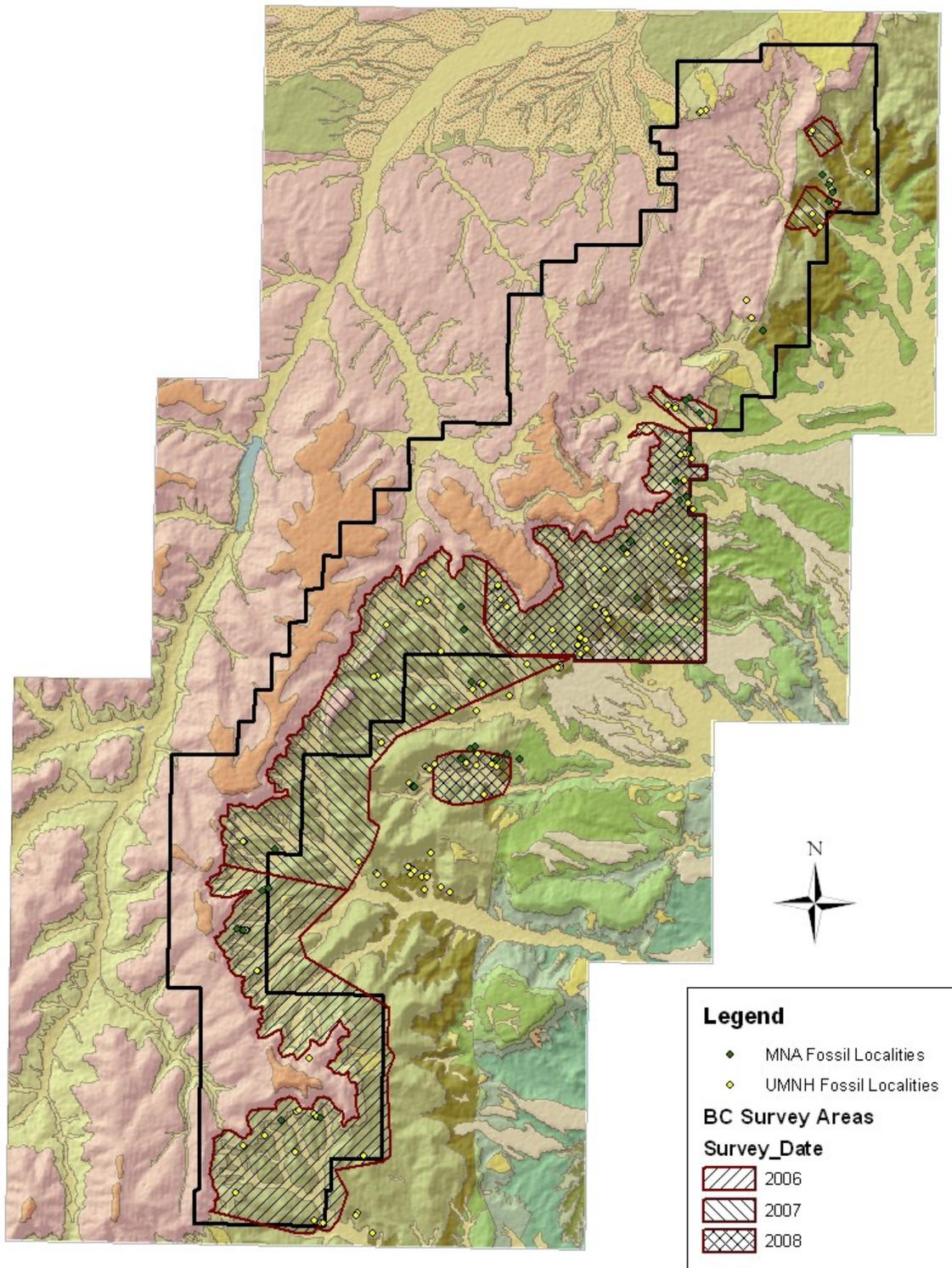


Figure 1. Distribution of know fossil localities in and near Bryce Canyon National Park, and shaded areas indicated areas covered so far by the inventory.