ERSC 4499/5499 Surficial Processes
Spring 2005
Due: Friday, May 6, 2005 **Name _____**

CLASS PROJECT
PINNACLE MOUNTAIN STATE PARK BLOCKFIELD

INTRODUCTION

For this project, we will examine a block-field at Pinnacle Mountain State Park and postulate hypotheses regarding the geomorphic processes that formed the blockfield. A block-field is an accumulation of typically angular blocks of rocks over solid or weathered bedrock that has no obvious cliff as an apparent source of material. Blockfields occur on very gentle to steep slopes (block streams). Various origins have been suggested to explain blockfields. Over the course of this project, we will collect, analyze, and interpret field data and identify and read literature on the possible origins of the block-fields on Pinnacle Mountain.

FIELD PROJECT TIME, PLACE, ETC:

On our first visit to Pinnacle Mountain, we discussed the general overview of the geologic setting. This visit will be focused on the specific blockfield to collect field data. Most of the project time will be spent climbing on boulders: hiking boots are strongly recommended. Other things you will need include: pencils, Brunton compass, hand level, field notebook, rain gear (?), lab handout, measuring tape and a calculator (optional). Also, make sure you have your eye height and pace recorded in your field notebook.

OBJECTIVES

1. To learn geomorphic field methods
2. To analyze field data
3. To develop and test hypotheses.
4. To determine the origin of the blockfield on Pinnacle Mountain.

FIELD PROCEDURE

1. Visit Pinnacle Mountain and get an overview of the surrounding geology/vegetation and the blockfield. Getting an overview of the field site is always-the first step in any field problem. Record background information in your field notes; make preliminary sketches, take photographs…
2. At a **fresh** bedrock outcrop, determine lithology, bedding thickness, joint spacing, and structure. Also note the degree of roundness and lichen cover on the rocks (use charts and tables provided).

3. Each group will make at least 3 boulder counts at different locations on the blockfield. For at least 10 boulders at each site, determine the following for each boulder:
    - c-axis length
    - c-axis orientation and inclination
    - boulder roundness
    - degree of lichen cover
    - Be sure to record the location of each of the 3 boulder-count sites in the GPS/PDA. Also note whether there is any interstitial material at each site, and estimate the boulder deposit thickness.
    - At some time during the field project, write at a descriptions of the blockfield—be sure to note differences from one side to the next an from the bottom to the top.
    - Each group will measure one of 3 specified profiles on the blockfield: (Two longitudinal and one transverse topographic profile). A measuring tape will be used to determine distances and the Brunton compass to determine elevation. Be sure to record the location and orientation of the profiles.
4. Determine the extent of the blockfield and trace the field up hill to its source.

DATA ANALYSIS

All of the data collected will be shared with the whole class; each student will work on the resulting database individually.

1. Plot the 3 topographic profiles, using a vertical exaggeration of 2 times, from the field data collected. Show and label the 3 profile locations on an air photo base map.
2. Plot the boulder orientation and angle data on equal area graphs provided for each site where the class collected data. Indicate the location of each site on the air photo base map.

PROJECT REPORT

The precise way in which the field project report is presented is up to the individual student. All reports, however, must include the following:

1. all field data and notes (original--not rewritten),
2. three topographic profiles,
3. plots of boulder orientations,
4. and a summary (2-3 pages, double-spaced) of the field problem, methods, results, and interpretation.

In the analysis of your data and in your report, be sure to make use of all of your data and their implications. Consider preparing additional figures that can easily display and summarize your data (ie. a figure showing the average boulder size and orientation at each site).

In your report described above, make sure you address each question listed below.

1. What is the average slope (in degrees) on each of the 2 longitudinal profiles you constructed? Is it variable? If yes, how so?
2. List at least 2 hypotheses that could provide reasonable explanations for the origin of the blockfield.
3. For each of the 2 hypotheses listed above, list supporting and contradicting evidence for each.
4. What additional data and/or research would be necessary to confirm, deny, or add confidence to the validity of the hypotheses listed?
5. Discuss the processes you think were (are) responsible for the accumulation of the deposit.
6. How old do you think the deposit is? Explain. Do you think the blockfield is active? Explain.

Intro	States problem, location, gives background	
Methods	Description of data collection	
Results	Results	
Hypotheses	2 defined	
Interpretation	Supporting and contradictory evidence for both	
Summary	Which one, How old is deposit What more data needed?	