FIELD ECOLOGY IN THE ROCKIES

ES 189 Summer 2017

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Purpose: To introduce students to basic field techniques and analytical skills through the study of living organisms in their natural environment (*in situ*). The specific aims for this immersion experience are: 1) to develop observation, quantification and analytical skills in a field setting; 2) to study the ecology of organisms in the Rocky Mountain Region; 3) to practice safe travel and survival skills for the purpose of field research.

Description: Research in laboratories has produced tremendous insights for modern science. However, some fields of study are best conducted outside the laboratory environment to avoid contrived conditions that lead to laboratory artifacts, finding that are only relevant under laboratory conditions. Ecology- the study of the relationship between organisms and their environment- is better served by field investigations that reduce the influence of spurious laboratory findings. In this course, students will practice basic field techniques, collect original data and complete data analysis while study the plants and animals in the Rocky Mountains of Montana. Topics will include: noninvasive survey techniques for wildlife including camera trapping and passive hair sampling for DNA; forest habitat mapping using GPS and ground surveys; wetland plant and amphibian surveys; fish ecology in mountain rivers including macroinvertebrate surveys for insect nymphs. Additionally, students will be introduced to safe travel and camping techniques in a wilderness setting including low impact hiking/camping, mountain bike travel, and river travel using canoes and/or rafts.

Outcomes: Students completing this course will be able to…

1. practice safe and low impact travel in backcountry conditions;
2. demonstrate geospatial referencing of data;
3. organize and communicate field observations in field notebooks;
4. collect and organize data associated with ongoing research projects;
5. compute basic statistical analyses of field data;
6. communicate research findings in both written and oral formats.

TENTATIVE SCHEDULE

(NOTE: All scheduled activities are subject to changes due to weather and/or logistics)

Part I: Range Riding the Rockies Mountain bike travel to complete noninvasive wildlife surveys		
Day	Topic	Key Concept
July 1	Morning	Arrive at Carroll and settle in to campus accommodations
	Afternoon	Introduction to mountain bikes: ride to Spring Meadow State Park and complete bird survey
	Evening Lecture	How to take good field notes
July 2	Morning	Visit the Montana Discovery Center
	Afternoon	Mountain bike Wakina Sky trail and complete bird surveys
	Evening Lecture	Lecture: Noninvasive survey techniques to quantify wildlife populations
July 3	Morning	Mountain bike and install cameras/hair traps along Wakina Sky and/or Mt Helena Ridge
	Afternoon	Orienteering and GPS skills on MacDonald Pass, the Continental Divide
	Evening Lecture	Analyzing GPS data
July 4	Morning	Travel to the 888 Ranch and settle in
	Afternoon	Mountain bike and install camera/hair traps on the 888
	Evening Lecture	Introduction to tree and shrub identification

Part II: Floating the Frontier Canoe and raft travel to survey riparian ecosystems		
July 5	Morning	Introduction to riparian vegetation
	Afternoon	Stream surveys on the 888
	Evening Lecture	Introduction to Fish Ecology
July 6	Morning	Missouri River float trip
	Afternoon	Fish habitat and macroinvertebrate surveys along Prickly Pear Creek
	Evening Lecture	Introduction to fly fishing techniques and backyard practice
July 7	Morning	Fishing the legendary Blackfoot River
	Afternoon	Fish habitat and macroinvertebrate surveys along the Blackfoot
	Evening Lecture	Camping on the Blackfoot and Bear Aware training
July 8	Morning	Fishing the Blackfoot and matching the hatch
	Afternoon	Macroinvertebrate surveys on Arrastra Creek
	Evening Lecture	Compare macroinvertebrate data between the Blackfoot, Arrastra Creek and the Prickly Pear
Part III: Wetlands in the Wildlands Backpacking the Scapegoat Wilderness for amphibian and wetland surveys		
July 9	Morning	Mountain bike to collect camera and hair samples on the 888
	Afternoon	BBQ and distribute backpacking equipment
	Evening Lecture	Packing a pack and low impact camping
July 10	Morning	Depart into the Scapegoat from the Heart Lake trailhead
	Afternoon	Wetland and amphibian surveys in the Heart Lake area
	Evening Lecture	Campfire talk in the Scapegoat: Amphibians as bioindicators
July 11	Morning	Hike to Alice Creek drainage
	Afternoon	Wetland and amphibian surveys in the Alice Creek drainage
	Evening Lecture	Campfire talk in the Scapegoat: the Yellowstone to Yukon Connectivity Project
July 12	Morning	Hike to Alice Creek trailhead
	Afternoon	Return to the 888 sort and organize gear
	Evening Lecture	Compare wetland/amphibian surveys with historic data
Part IV: Peaks to Prairies Wrap up field surveys and data presentations		
July 13	Morning	Return to campus in Helena
	Afternoon	Hike Mt Helena to survey urban/wildland interface
	Evening Lecture	How do we manage wildlands and people?
July 14	Morning	Mountain bike to collect camera/hair traps on Wakina Sky
	Afternoon	Mountain bike to collect camera/hair traps on Ridge Trail
	Evening Lecture	Cataloging and archiving camera and hair data
Sunday 15th	Morning	Data presentations
	Afternoon	Pack and depart Carroll