NCCN Draft Monitoring Protocol Summary

Wildlife Workgroup

Title: Elk Monitoring (version 5/28/05**)**

Parks: OLYM, MORA, LEWI

Justification: Ungulates, including elk, are often keystone species due to the pronounced effects of their herbivory and trampling on vegetation composition and structure, plant succession, nutrient cycling, and ecosystem processes. In addition, in many environments, elk serve a key role as prey for large carnivores and scavengers. Hence, significant changes in elk populations, either increasing or decreasing, would affect many ecological, cultural and wilderness values of several NCCN parks. Information on trends of ungulate populations has important management significance in NCCN Parks due to its bearing on these park's abilities to arbitrate logging, hunting and predator control activities on the park's boundaries (and potentially within park boundaries in the future).

There are several management issues and concerns regarding elk in three National Parks of the NCCN (OLYM, MORA, LEWI) that require sound information on population trend:

- Olympic National Park is home to the largest protected herd of Roosevelt elk in its natural ecosystem—a unique resource that was instrumental in the Park's creation and that today represents one of the 'signature' resources for which the Park is renowned.
- Over several decades, there has been recurrent controversy regarding the ecological effects of overabundant elk on ecological integrity of subalpine meadows in Mount Rainier National Park and of lowland rainforest communities in Olympic National Park.
- Despite protection within National Parks, elk populations have declined by 40-60% in many areas adjoining these parks, and there are legitimate concerns that migratory subpopulations that leave the parks during autumn and resident herds that live along park boundaries may be subject to similar pressures (habitat loss due to development, habitat deterioration due to forest management practices, predation, and increased legal or illegal hunting).
- High hunting pressure on branch antlered bulls outside parks can have significant effects on park elk herd composition. Research on mature breeding bulls in OLYM has shown that elk that reside over 20 miles in the park interior migrate outside of the park during the rut, where they are vulnerable to extensive state and tribal hunting seasons.
- Substantial predator control activities adjacent to Mount Rainier National Park could result in negative impacts to predator populations. Reduction in predation is likely to promote population growth of elk inside the park and generate renewed concern over the ecological integrity of the Park's renowned subalpine meadows.

- There is persistent interest among local Native American tribes to reclaim hunting rights inside current boundaries of Olympic National Park. Up-to-date information on status and trends is likely to be important in future arbitrations.
- There have been recurring proposals to introduce wolves back to Olympic National Park and hopes that wolves will naturally recolonize the Cascades from Canada. Up-to-date information on status and trends of elk is needed to assess feasibility of wolf reintroduction.
- Nationally, the increased prevalence of wildlife diseases (e.g., chronic wasting disease, mad cow disease, others) threatens ungulate populations and is a growing concern.
- Elk are a key component of Lewis and Clark National and State Historical Parks (LEWI) ecological and cultural resources. Due to the park's size and shape, LEWI elk populations are highly dependent in management outside the park. Ongoing and impending land use and management changes will likely negatively impact the park's elk. Prior to monitoring, the park needs information on elk herd movement and distribution patterns, critical habitat, effects of outside landscape use changes, linkages for movements, and the consequent effects on the parks elk population. Once this information is gained, LEWI will need ongoing monitoring of 1) land use outside the park, and 2) elk numbers and use patterns inside and adjacent to LEWI.

Monitoring Objective: Determine trends in abundance of elk populations inhabiting low-elevation winter ranges in Olympic National Park during spring, high-elevation summer ranges in MORA and OLYM, and using park and adjoining lands in LEWI.

What environmental resource will be monitored (target population)? We propose to monitor trends in counts of elk observed during aerial surveys of low elevation floodplain forests during the spring in OLYM and high-elevation subalpine meadows during autumn in OLYM and MORA. Further, while under development, we propose road and aerial surveys of elk abundance in LEWI. Justification: OLYM and MORA have historical data from aerial surveys of these areas. The areas were chosen because elk herds are most visible during these times of the year in these habitats.

What will be measured (i.e., specifically the measurable attribute)? Raw counts of elk observed from standard aerial survey protocols will yield data on population trends. It will also include sex and age composition counts of elk on subalpine meadows at MORA and OLYM. We will pursue improving the protocols in the future to include adjustments for visibility biases once appropriate corrective models are developed, or double sampling methods have been tested and developed, to allow more accurate trend and population estimates.

Where will it be monitored? Aerial surveys will be flown over (i..e, inference is limited to) low-elevation floodplain forests of the Hoh, South Fork Hoh, and Queets drainages in OLYM, high-elevation summer ranges of the North and South Rainier elk herds in MORA, and high elevation subalpine habitats from High Divide, Bailey

Range, and Skyline Ridge in OLYM. These areas correspond with areas traditionally surveyed since the 1980's in each park and the most significant elk ranges in each park. In LEWI we anticipate monitoring the whole Parks and relevant adjacent lands.

How will it be measured? We will count all elk observed from a helicopter using helicopter survey methods that have been developed for OLYM and MORA.

In OLYM low-country, we will conduct 3 replicate counts of elk between 15-30 March each year from a helicopter flying approximately 200m above ground in parallel transects over each survey area.

In MORA and OLYM high country we will conduct 3 replicate counts of elk between 15-30 September each year from a helicopter flying approximately 200m above ground in parallel transects over each survey area.

Protocols for LEWI need to be developed. Initial steps in LEWI protocol development will take place in a workshop schedule for the Fall of 2005.

How frequently will it be monitored? In OLYM winter surveys, one watershed will be surveyed each year (hence, a 3-year return cycle for monitoring in each watershed). In OLYM high country surveys, selected summer range blocks will be resurveyed each year.

In MORA, the survey will be conducted every year by the park and partners. Costs have been shared in the North Rainier herd survey flights since 1996 through formal agreements.

In LEWI elk will be monitored each year.

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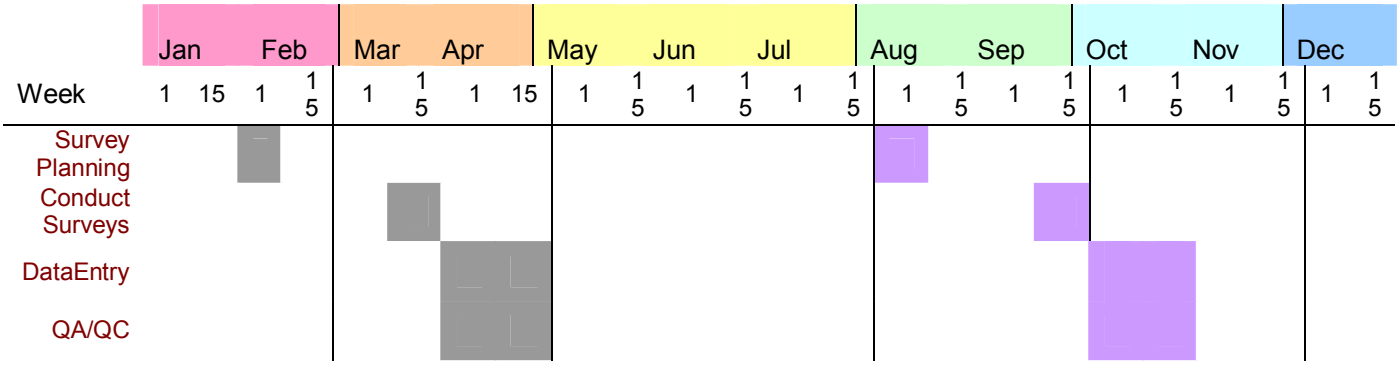
Development Schedule, Budget, and Expected Interim Products

- The principal investigators will hold a protocol review workshop in the fall of 2005, and develop a protocol for peer-review in August 2006.
- Scheduling timelines for winter (grey) and summer surveys (purple) are listed below



Reporting

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