Project Summary
Rocky Mountains Cooperative Ecosystem Studies Unit

Project Title: Relative abundance and distribution of snowshoe hares in Yellowstone National Park

Type of Project: Research

Funding Agency: National Park Service, Yellowstone National Park; RM-CESU

Effective Dates: April 1, 2002 – December 20, 2003

Funding Amount: $11,500

Investigators and Agency Representative:
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Project Abstract:
We will use counts of fecal pellets and live-trapping to estimate the relative abundance of snowshoe hares across a variety of forest types and successional stages within YNP. We will use existing GIS maps of vegetation and geography (elevation, aspect, slope, etc.) to stratify the forest types in YNP. We will survey the main forest types by focusing first on areas accessible by road or trail, or that allow us to use backcountry cabins as based stations. Study sites will be distributed across YNP and will include recently burned (post 1977) conifer forests. We anticipate being able to establish pellet plots on a minimum of 25-40 sites during summer 2002. Survey data will consist primarily of counts of fecal pellets observed on transects. This methodology was developed in Yukon and has been used there for > 20 yr. We are currently adapting this methodology for use in montane forest types in the western U.S., based on data from our Montana study sites. We will also live-trap snowshoe hares at 6-8 sites to provide us with mark-recapture estimates of density. The selection of sites will be based primarily on suspected lynx presence (from the ongoing lynx surveys), and secondarily on the basis of suspected high snowshoe hare numbers (from snow track data collected during the lynx surveys or high pellet counts). This prioritization will ensure that we obtain demographic information about snowshoe hares from areas that are likely to be of most importance to lynx.

Outcomes with completion dates: Our research will provide the following: data on current snowshoe hare distribution and relative abundance across YNP forests; demographic data from snowshoe hare 'hotspots' to link to the lynx surveys; and a survey design and network of sites that can be used through time to address changes in snowshoe hare abundance.

Preliminary Report: Please see page 2.

Keywords:
Snowshoe hares, Yellowstone National Park, lynx habitat, prey base

For Administrative use only:
Date Annual Report Received: December 18, 2002, please see page 2.

Date Final Report Received:

Publications, etc. on file:

RM-CESU Project Report: Snowshoe hare research in Yellowstone, Summer 2002; $5750 from RM-CESU
Principal Investigators: Dr. Karen E. Hodges & Dr. L. Scott Mills, University of Montana
Yellowstone contact: Dr. Kerry Murphy
Date of summary: 3 December 2002

Purpose: Our primary objective in summer 2002 was to estimate snowshoe hare population abundance in 4 habitats characteristic of Yellowstone National Park.

Research Accomplishments: We established 13 study grids in 4 habitat types, spruce-fir, LP2, LP3, and 1988 burn. We chose these sites either because they are possible lynx habitat (spruce-fir, LP3), or because they are a dominant stand type within YNP forests (LP2, 1988 burn). On each study grid, we live-trapped hares for 3-5 nights. We counted fecal pellets (as an index of hare abundance) on these sites and 28 additional sites.

This research also benefited from funding from YNP ($5,750) and from GYCC ($6,740) as well as in-kind contributions such as housing, boat support, and GIS support. Additionally, the Rocky Mountain Research Station of the USFS has funded some of our work on snowshoe hares in western Montana, and some of Dr. Hodges' time and some of the field gear were made available by a grant from RMRS.

Products: The final products will take three forms: 1) reports to YNP wildlife biology staff, 2) building blocks for applying for more funding to continue the research, and 3) peer-reviewed publication(s).

We have already submitted summary reports to YNP staff. We are in the process of applying for more funding to continue this work next year. We are working on synthesizing our results for publication, but if we are successful in attracting additional funding, we may delay publication to incorporate more than one year of data.

Contribution to Park needs: Our research meets Yellowstone research needs because we provide the first research on snowshoe hares in the Park and because snowshoe hares are the major prey species for the federally threatened lynx. Our results therefore provide basic scientific information as well as contributing to the ability of Park scientists to evaluate the Park in terms of lynx needs. Park biologists are currently using our results during Section 7 consultation with USFWS about lynx management, as required under ESA provisions.