David Little Livestock Range Management Endowment

AT THE UNIVERSITY OF IDAHO

2013 Project Progress Report:

Dynamics of grazed and ungrazed slickspot peppergrass populations on the Snake River Plain

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ACCOMPLISHMENTS:

Sampling occurred during the period June 2 – 8, 2013. Data collected on the slickspots included: number of *Lepidium papilliferum* plants, classified into one of 3 forms: rosette, annual flowering, or biennial flowering, evidence of cattle trampling quantified by estimating the percentage of slickspot covered by animal hoof prints, and presence/absence of ant colonies. At total of 5 populations that were excluded from livestock grazing and 10 populations that were subject to livestock grazing were sampled. Up to 25 slickspots were sampled at each site. On those sites where 25 occupied slickspots could not be identified, as many occupied slickspots were sampled as could be found in the immediate vicinity (within 300 m of the center of the site). Slickspots observed supporting *Lepidium* are entered into the database and will be sampled in future years regardless of the presence of *Lepidium* on a particular year.

Fifteen *Lepidium* sites containing 263 slickspots were sampled during June 2013 including a total of 114 ungrazed and 149 grazed slickspots. Five ungrazed sites are located within cattle exclosures (Holding Pen Seeded, Holding Pen Native, Airbase, Three Creek and Juniper Butte). All exclosures except Juniper Butte were a part of a previous study and have been sampled annually since 2003. Ten grazed sites were sampled in 2013. Sampling of the grazed sites began in June 2010 for the Holding Pasture and South Clover sites and these have been re-sampled in 2011, 2012 and 2013. In 2011 the Juniper Butte exclosure and 8 grazed sites were added to the study. During 2013 additional slickspots were identified and sampled for some sites which had few occupied slickspots in 2011 and 2012. Two additional grazed sites were also established.

The mean number of occupied slickspots has remained relatively constant for the exclosure populations during 2011-2013 but has declined for the grazed populations (Figure 1). The percent occupied slickspots is greater in number but has declined slightly for the grazed populations since 2011. It is important to recall that sampling of most grazed slickspots did not begin until 2011 but for most exclosure sites sampling began in 2003. Therefore, I would expect a decline in the occupancy of the grazed slickspots since an 'occupied' slickspot may not have actively growing *Lepidium* plants occurring every year. In addition, the high mean number of *Lepidium* plants per slickspot on grazed sites in 2010 was greatly influenced very high densities of the plant on 2 slickspots that year. The mean number of plants per slickspot and the mean number of plants per occupied slickspot remained approximately the same for 2012 and 2013 (Figure 2). Reproductive effort, as indicated by the number of flowering plants, remains low for both grazed and ungrazed with average mean numbers of flowering plants below 2 per ungrazed slickspot and below 5 for the grazed slickspots for 2011-2013 (Figure 3) populations as compared to the flowering level recorded in 2004-2006 (Figure 4). The longer-term data indicate that between 2003 and 2013, flowering was a maximum in 2005 and had a lower peak in 2009 (Figure 4). Reproductive effort has been relatively low since that time. Generally the populations of *Lepidium* declined slightly in 2013 as compared to 2012 with respect to mean number of occupied slickspots and mean number of plants per slickspot.

PROJECTIONS:

These data have become the baseline against which future changes in grazed and ungrazed *Lepidium papilliferum* populations will be compared. It has been suggested by others that the grazed populations will be less stable and decline with respect to the changes observed for exclosure populations. At this time relative changes in the exclosure and grazed sites' populations has not differed greatly.

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PUBLICATIONS:

No publications or presentations have been made with respect to these data.

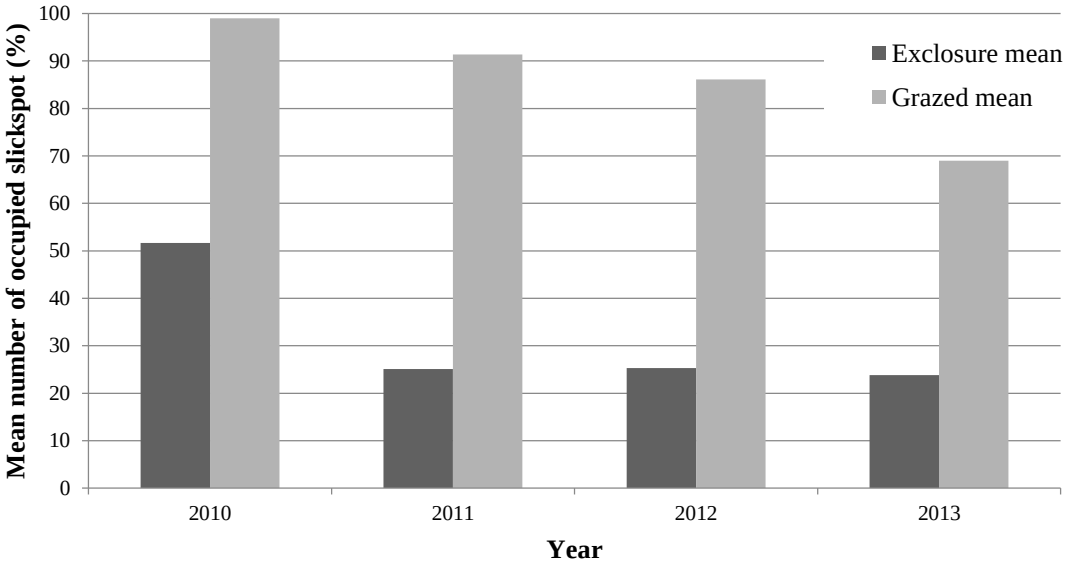

Figure 1. *Mean percentage of occupied slickspots found within exclosures and grazed sites from 2010 through 2013.*
*[1]**Note:** Slickspot occupancy would always be greater in the grazed sites than the exclosure sites because sampling of grazed slickspots began in 2010 and only sites with Lepidium present were initially included for sampling. Occupancy of most exclosure sites was determined by the presence of Lepidium in 2003.*

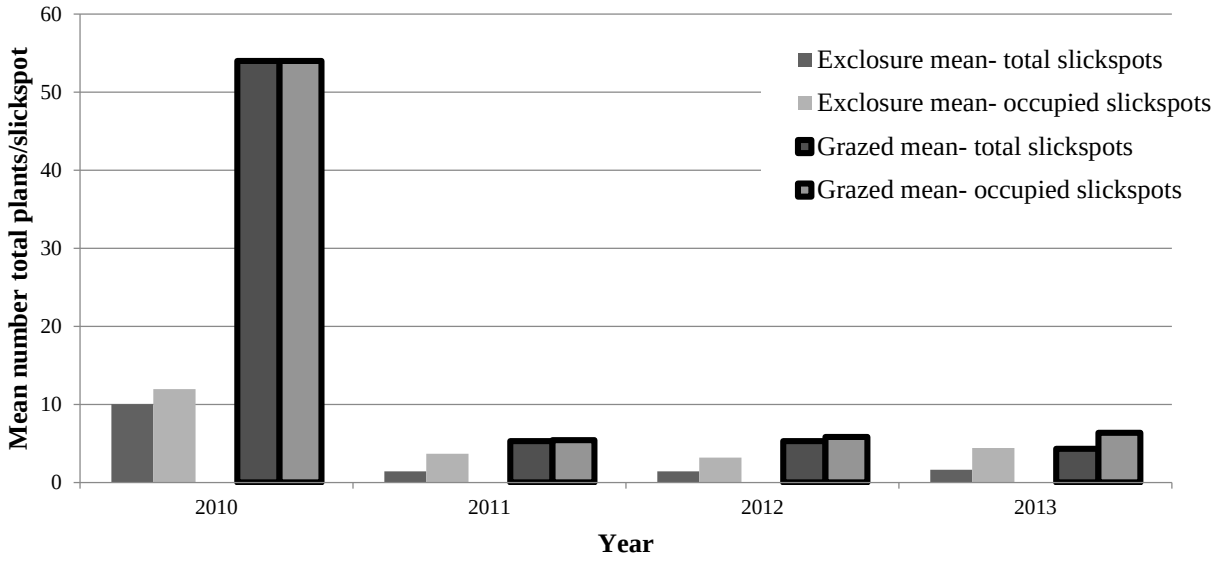

Figure 2. *Mean number total plants/slickspot and Mean number of plants/occupied slickspot found in exclosures and grazed sites from 2010 through 2013. An 'occupied slickspot' is defined as one that contained at least one actively growing plant at the time of sampling.*

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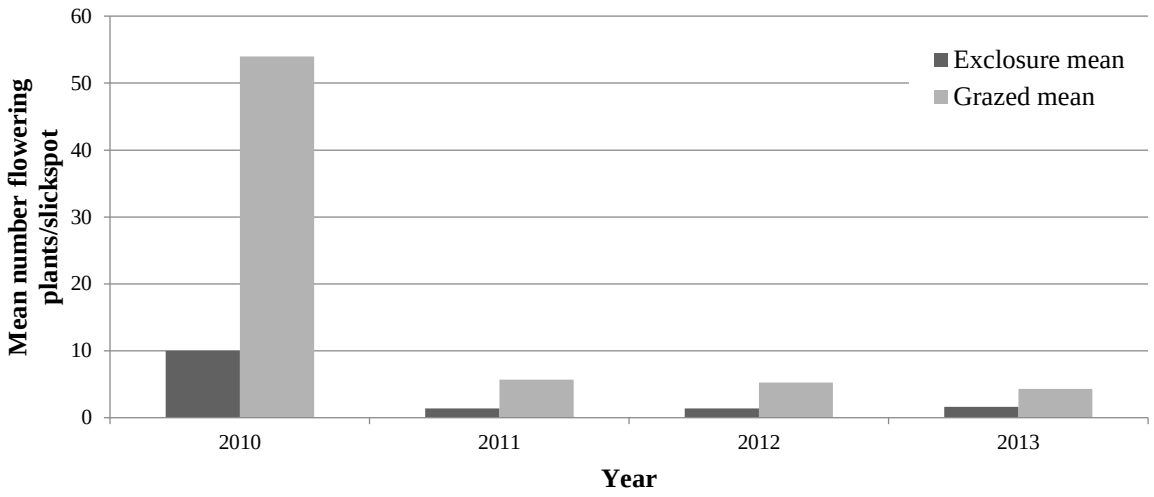

Figure 3. *Mean number of flowering plants/slickspot found within exclosure and grazed sites from 2010 through 2013.*

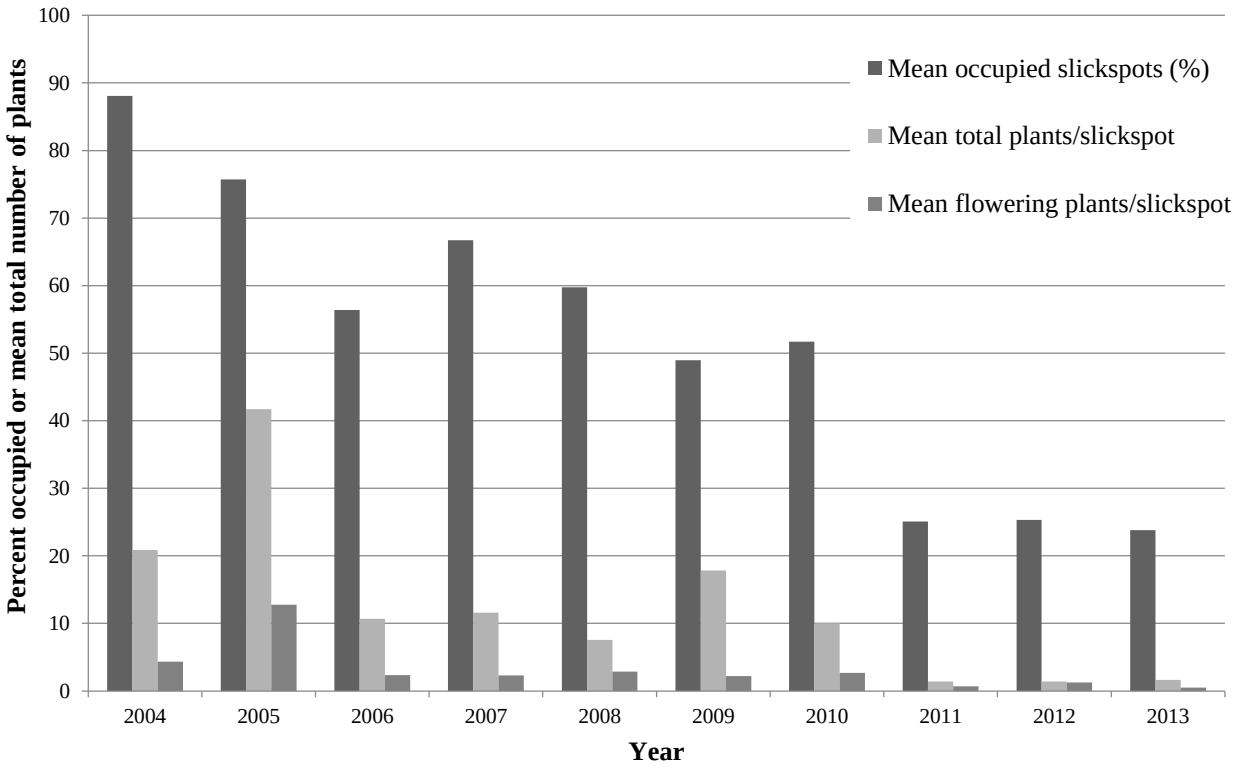

Figure 4. *Long-term population trend inside exclosures expressed as Mean occupied slickspots, Mean number of Lepidium plants/slickspot, and Mean number of flowering Lepidium plants/slickspot from 2004 to 2013.*

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