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# Black-Tailed Jackrabbit Monitoring Report for Fiscal Year 2012



Prepared for the U.S. Department of Energy  
Assistant Secretary for Environmental Management

Contractor for the U.S. Department of Energy  
under Contract DE-AC06-09RL14728



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# Black-Tailed Jackrabbit Monitoring Report for Fiscal Year 2012

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Mission Support Alliance

Date Published  
December 2012

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## **Acronyms**

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ALE	Arid Lands Ecology Reserve
FY	Fiscal Year
GPS	Global Positioning System
WDFW	Washington State Department of Fish and Wildlife

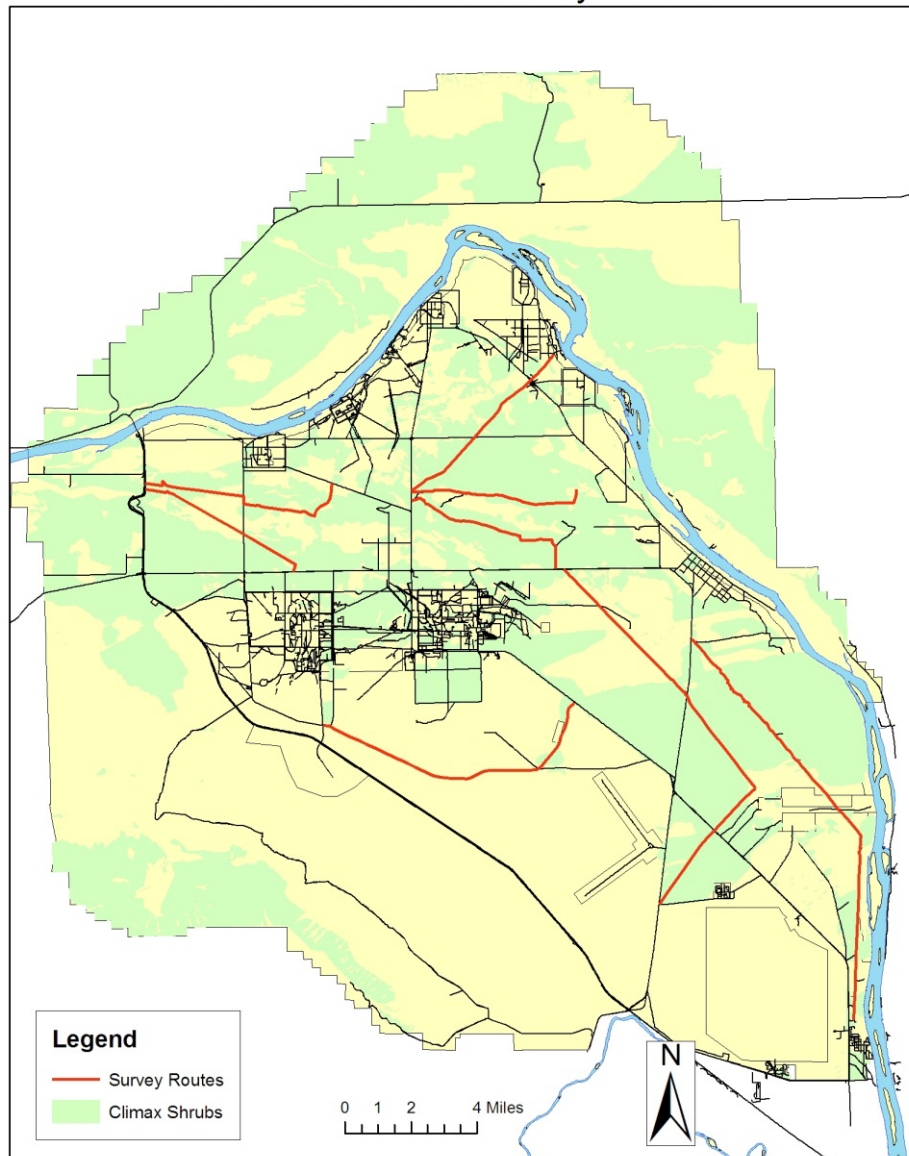
## 1.0 Introduction

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Anecdotal evidence suggests both black-tailed jackrabbits (*Lepus californicus*) and white-tailed jackrabbits (*L. townsendii*) were historically abundant; however, the Washington State Department of Fish and Wildlife (WDFW) currently list both the black-tailed and white-tailed jackrabbits as 'candidate' species of concern ([WDFW 2012](#)). Threats to jackrabbits include habitat loss and fragmentation. Lack of recent monitoring or sightings on the Hanford Site has led some to believe the population is declining, while others believe that jackrabbits may follow a cyclical pattern of population density. Black-tailed jackrabbits play an important role in the ecosystem, serving as a food source for large raptor and mammal predators including the coyote, golden eagle, and the State Threatened ferruginous hawk. Jackrabbits do not migrate long distances or go into a hibernation or estivation period, and rarely use underground burrows or dens ([Best 1996](#)). This highly localized and active ecology provides surveying opportunities through most of the year.

Black-tailed jackrabbits prefer sagebrush-dominated habitats in Washington ([PNL-8942](#)). On the Hanford Site, black-tailed jackrabbits have also been observed in rabbitbrush and bitterbrush communities, which are typical of lower elevation vegetation. White-tailed jackrabbits prefer grass-dominated habitats typically found at higher elevations in Eastern Washington, and in the past have been observed on the Arid Lands Ecology Reserve (ALE). The proposed monitoring routes (Figure 1) and transects (Figure 2) located on the central plateau and river corridor areas of the Hanford Site for 2011 and 2012, focused on the black-tailed jackrabbit on the Hanford Site.

The monitoring performed in Fiscal Year (FY) 2012 focused on determining the presence or absence of black-tailed jackrabbits on the Hanford Site. Monitoring efforts used winter spotlight surveys along routes (Figure 1) and transects (Figure 2) through likely habitat areas located on the central plateau and river corridor areas of the Hanford Site.



**Figure 1. Proposed Black-Tailed Jackrabbit Nighttime Spotlight Survey Routes.**

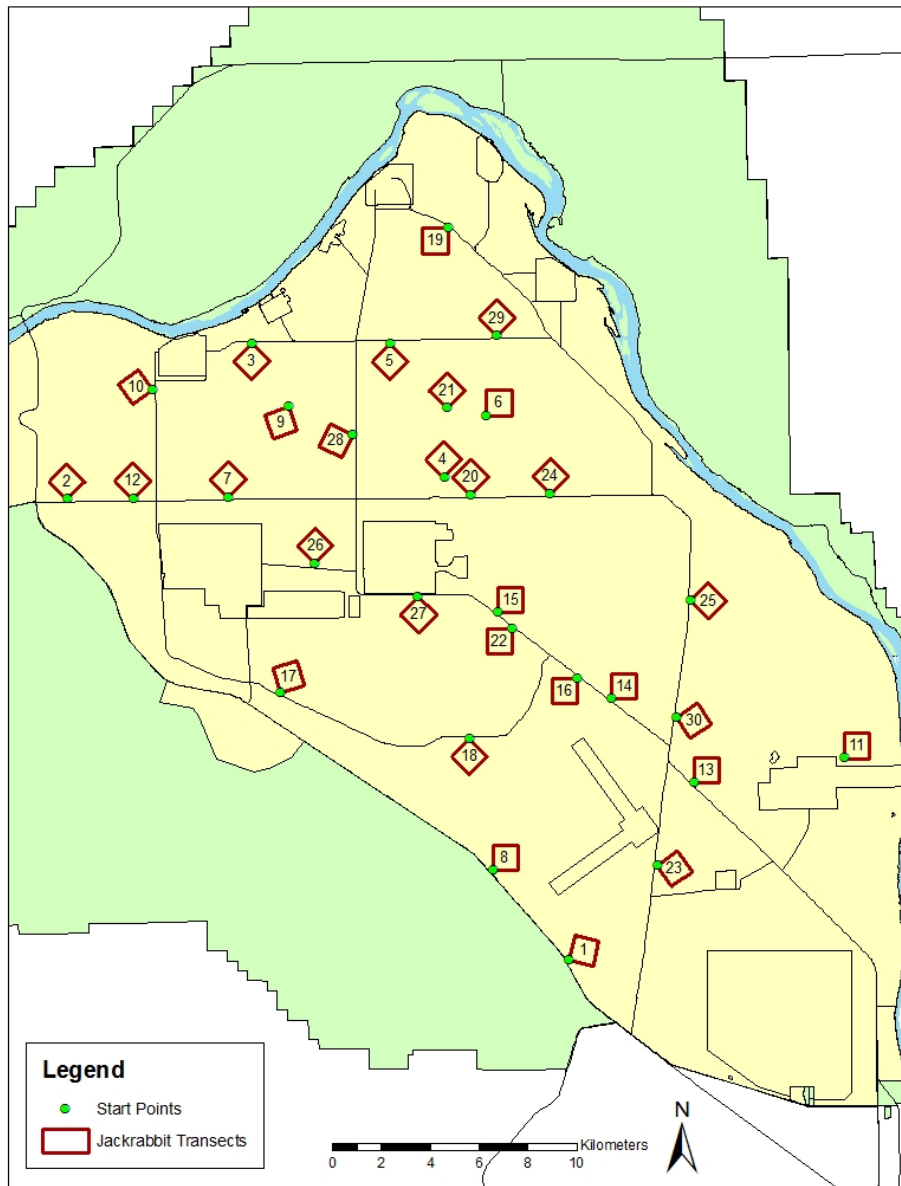
## 2.0 Methods

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Jackrabbit surveys included two different methods; the first method was nighttime spotlight surveys, and the second was walking transects. The spotlight surveys were conducted with a four-wheel drive pickup, two observers, and two spotlights. The primary observer was the passenger of the vehicle and the driver was the secondary observer. The vehicle's headlights were set to high beams for monitoring of the centerline by the secondary observer. The primary observer was responsible for the right hand side of the vehicle as well as the rear path while the secondary observer was responsible for the forward centerline and the left hand side of the vehicle. In all cases, the secondary observer (driver) is responsible for vehicle direction and speed as well as ensuring route is being followed correctly via the global positioning system (GPS) unit.

Survey routes were driven at approximately eight miles per hour. The route was driven while looking for signs of target species (e.g., eye-shine, movements, other visuals), while looking in front of the vehicle, to both sides, and to the rear from which the vehicle just traveled. Observers recorded all wildlife activity, focusing on jackrabbits. A GPS position was taken with each observation. Information was collected on a field data form, which included the species, abundance, distance from the vehicle, bearing from the vehicle in degrees, behavior, date of observation, route on which the observation occurred, meteorological data relevant to the survey, and observation comments.

The second method for monitoring the presence or absence of black-tailed jackrabbits was ground transects during the spring and summer. At the time the jackrabbit observations were made, personnel also surveyed for Townsend's Ground Squirrel colonies ([HNF-53075](#)). The transects were designed as squares with 1000 meter (1094 yards) sides and rounded corners (Figure 3). Each transect was placed at least 50 meters (55 yards) from paved roadways for the entire length of each transect. The purpose of this buffer was to maximize surveys in areas not likely to be observed from roads, since personnel using these roads could potentially document jackrabbit occurrence within 50 meters (55 yards) of paved roadways through incidental observations. This method resulted in most transects beginning 50 meters (55 yards) from any paved road, in addition to being positioned so that the legs angled 45 degrees from the road. This resulted in diamond shaped transects, with respect to the road at the start point, maximizing the distance between the transect legs, maximizing the areas surveyed from roads, and minimizing the time surveyors spent walking and not surveying. Each transect was designed to be completed by two surveyors, with each surveyor covering a 30 meter (33 yards) wide swath, for a total width of 60 meters surveyed along the length of the transects. One surveyor carried the GPS and followed the transect path, while the second surveyor paralleled the first, maintaining a distance of 30 meters (33 yards) from the first surveyor (Figure 3). Transects were located across the Hanford Site and included varying vegetation and soil types, ranging from mature sagebrush stands to open cheatgrass, and from dune sand to silt loam (Figure 2). Surveyors were looking for jackrabbit signs; such as, feces that differed from mountain cottontail (*Sylvilagus nuttallii*) scat, runways created or used by small mammals (rabbits or hares), and visual sightings of jackrabbits. Any significant trails or scats were documented in the field logbook and all animal sightings were documented using the GPS.



**Figure 2. Transect Locations Across the Hanford Site Central Plateau.**

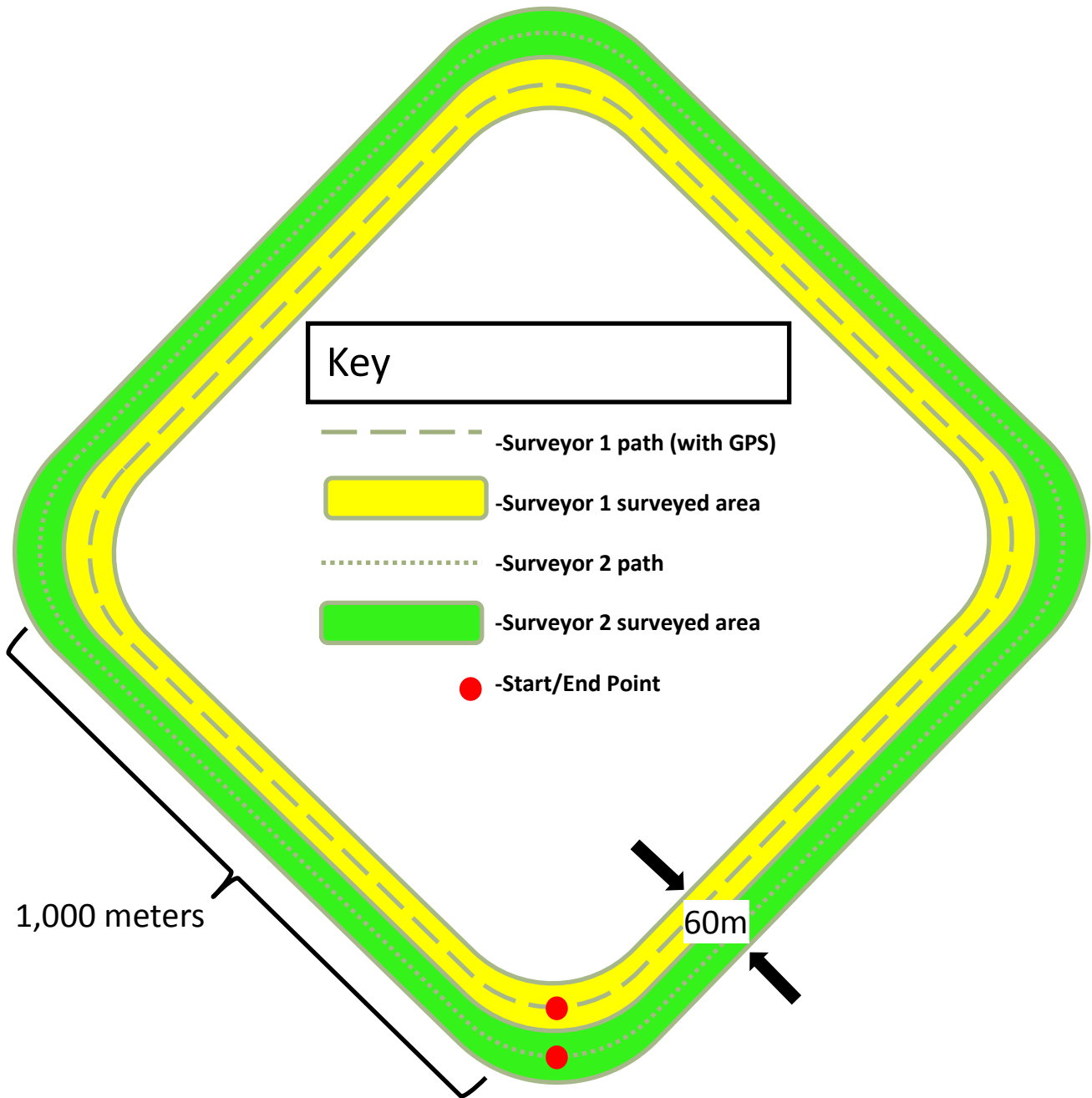


Figure 3. Diagram of Transects Designed for Conducting Jackrabbit Surveys

### 3.0 Results

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The winter spotlight surveys began in December of 2011, for several reasons including; limiting fire danger risk from driving vehicles on primitive roadways, contrasting with previous contractor's summer spotlight surveys, and coinciding with potential snowfall to perform jackrabbit track surveys. Nine survey routes were originally proposed; but due to overgrowth of roadways, two routes were not attempted. In addition, two of the seven routes monitored were shortened or altered because of roadblocks or poor road conditions. All deviations from the proposed routes were documented (Figure 5). For the seven routes that were monitored, there were no confirmed black-tailed jackrabbit observations; and in general, the surveys documented very little wildlife activity during the winter nights.

Pedestrian surveys were performed at 30 transects (Figure 2) between March 5 and May 2, 2012. Each transect was completed in its entirety, except for Transect GS27, which had to be terminated following the completion of one leg, because the transect intersected a restricted access area. Staff documented when the obvious jackrabbit signs were present on the route, which usually included heavy trails for small mammals, scat identification, and/or beds of jackrabbits (Figure 5). The survey summaries are provided in Table 1. Jackrabbit sightings or signs were documented on over 30 percent of the surveyed transects (Figure 6).



**Figure 4. Example of Small Mammal Trails Commonly Used by Members of the Leporid Family.**

## 2011 Spotlight Survey Routes Performed

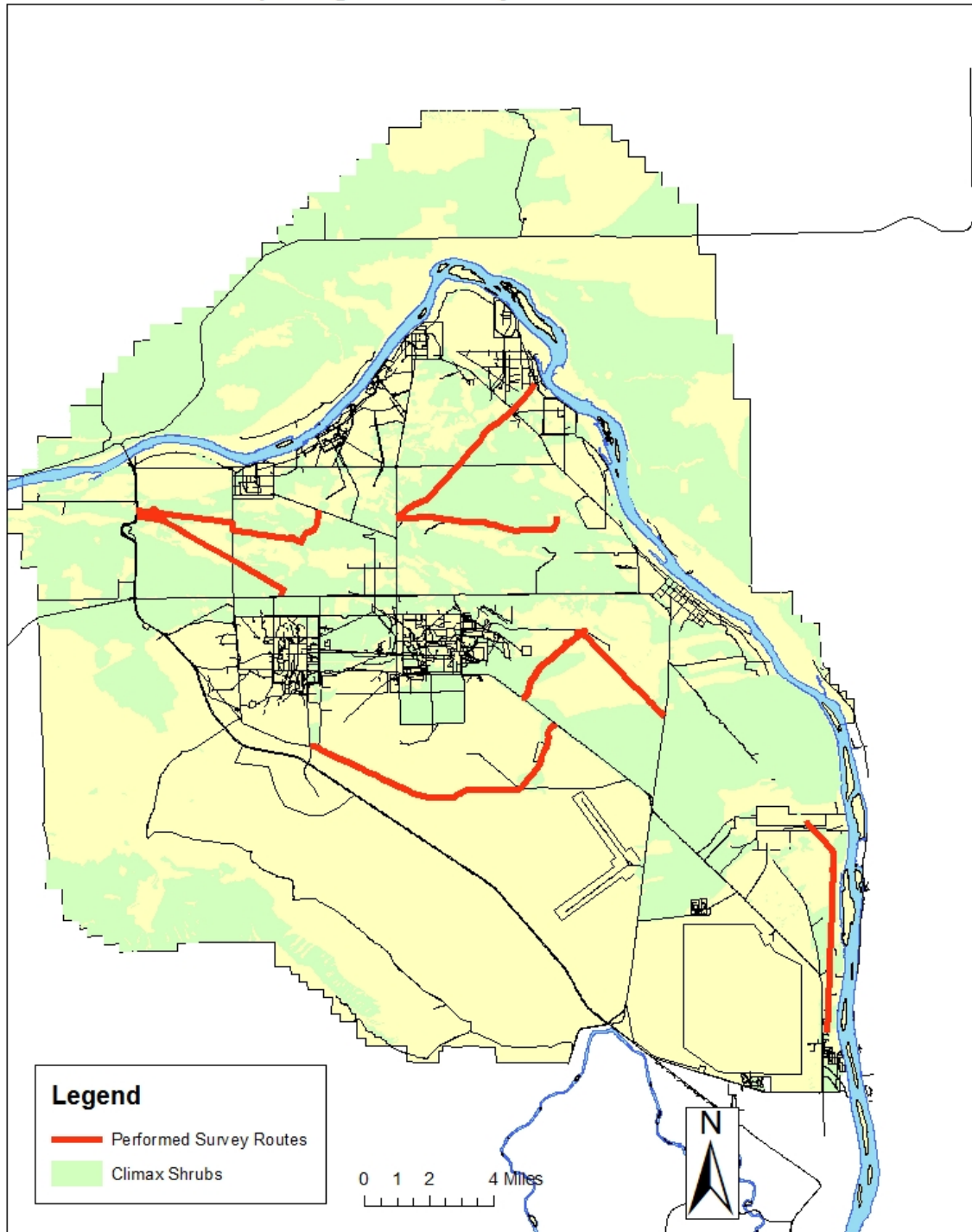


Figure 5. Spotlight Survey Routes Performed during FY2012.

**Table 1. Summary of Data from Transects Completed while Surveying for Jackrabbits in FY2012**

2012 Transect	Transect completed	Date Surveyed	Surveyors	Jackrabbit Presence	Observations
GS1	yes	4/4/2012	CL, JN	no	
GS2	yes	3/5/2012	JW, JN	no	burrowing owl burrow documented
GS3	yes	4/17/2012	JW, CL	yes	jackrabbit sign
GS4	yes	4/3/2012	JW, MF	yes	some jackrabbit sign
GS5	yes	4/2/2012	JW, CL	yes	one jackrabbit
GS6	yes	4/12/2012	CL, JN	yes	high level of jackrabbit sign
GS7	yes	5/1/2012	CL, JN	no	
GS8	yes	4/4/2012	CL, JN	no	
GS9	yes	4/3/2012	CL, MF	no	
GS10	yes	4/3/2012	CL, MF	yes	one jackrabbit
GS11	yes	5/2/2012	CL, JN	no	
GS12	yes	3/8/2012	JW, MF	yes	one jackrabbit
GS13	yes	5/2/2012	CL, JN	no	
GS14	yes	4/18/2012	CL, JN	no	
GS15	yes	5/1/2012	JW, SJ	no	
GS16	yes	4/25/2012	CL, JN	no	
GS17	yes	4/17/2012	JN, SJ	no	
GS18	yes	4/17/2012	JN, SJ	no	
GS19	yes	4/9/2012	JW, CL	no	burrowing owl burrow documented
GS20	yes	4/3/2012	JW, MF	yes	one jackrabbit
GS21	yes	5/1/2012	CL, JN	yes	moderate jackrabbit sign
GS22	yes	5/2/2012	JW, MF	no	
GS23	yes	4/4/2012	CL, JN	no	
GS24	yes	3/5/2012	JW, JN	no	
GS25	yes	4/17/2012	JW, CL	yes	
GS26	yes	4/3/2012	JW, MF	yes	one jackrabbit
GS27	yes	4/2/2012	JW, CL	yes	large part of transect within CA
GS28	yes	4/12/2012	CL, JN	yes	
GS29	yes	5/1/2012	CL, JN	no	
GS30	yes	4/4/2012	CL, JN	no	one jackrabbit

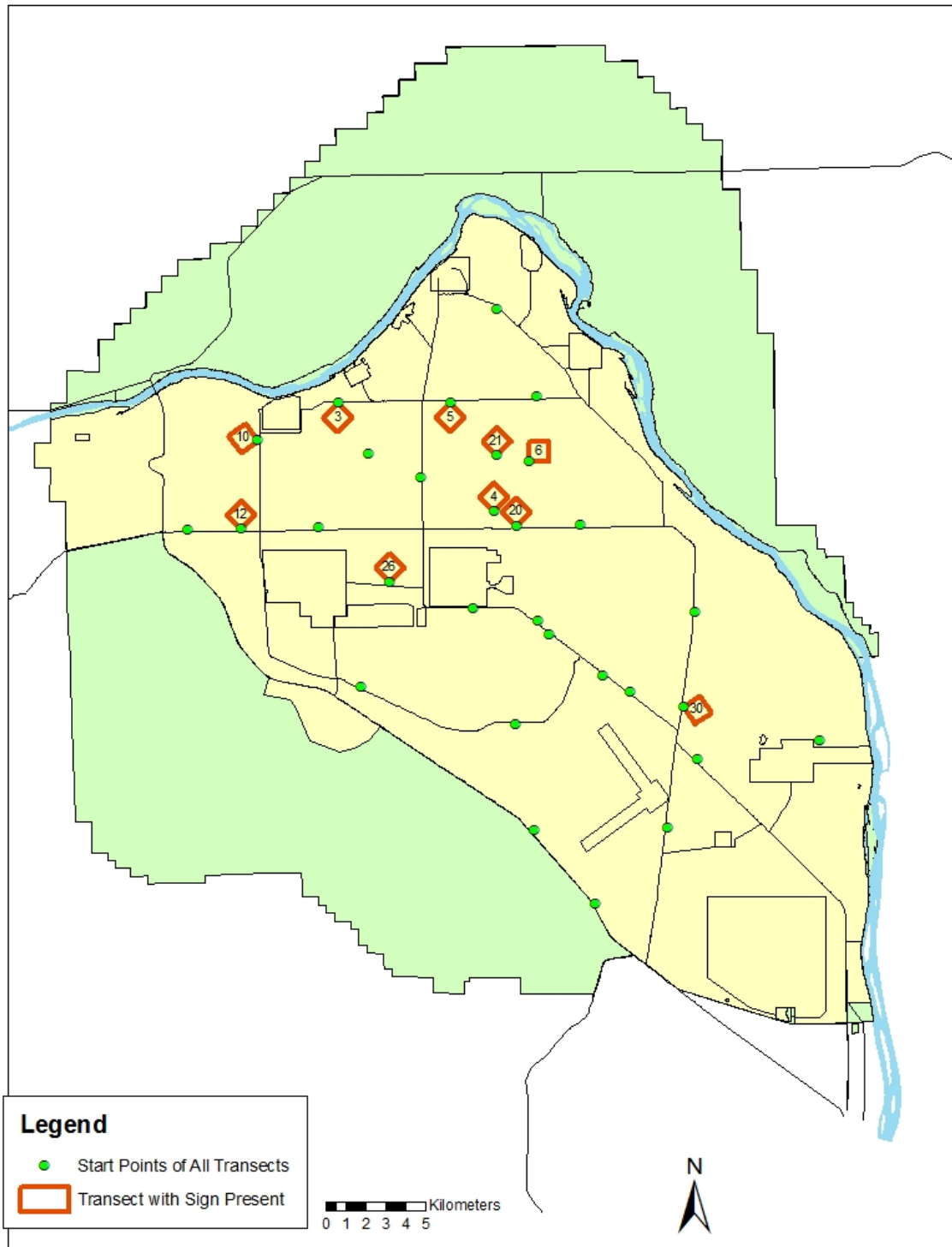


Figure 6. Jackrabbit Signs Identified during FY2012 Surveys.

## 4.0 Discussion

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Spotlight surveys are standard protocol for jackrabbit surveys. With many roads throughout the Hanford Site both maintained and primitive, this method was determined to be the most efficient and effective way to cover large areas to document the presence of jackrabbits. Spotlight survey methods are low cost, involve minimal hours, and provide large coverage; however, spotlight surveys also provide some difficulties on the Hanford Site. The routes with dense sagebrush areas made spotlight surveys difficult, because any animal in the area can quickly use the sagebrush for cover, making observation nearly impossible with the spotlight survey. Therefore, no determination could be made on whether performing the spotlight surveys during the winter contributed to the lack of FY2012 observations; or if the populations are too low to detect using spotlight surveying. Repeating these surveys during the late spring and early summer would help determine whether seasonal variation (winter) spotlight surveying contributed to the lack of observations during FY2012, or whether populations are too low to detect using spotlight surveying.

A total of 117 kilometers (73.7 miles) of transects were walked during the 2012 ground squirrel and jackrabbit combined survey effort, covering 702 hectares (1,735 acres). This survey was a significant effort and time commitment; however, only about 1% of the central Hanford Site was surveyed. Several black-tailed jackrabbits (*Lepus californicus*), were flushed, and documented using this method. This survey method was an effective way to cover remote tracts of ground over a broad area and could prove useful for other surveying efforts. While being an effective method for determining the presence or absence of jackrabbits on the Hanford Site, it was a labor and time intensive effort. The surveys alone do not provide population estimates for the species, but may provide a relative abundance if the study were repeated. It also provides on-the-ground documentation of jackrabbit activity, including flushes, scat, and runs, providing areas where a more extensive study could be focused.

As would be expected, all transects with jackrabbit sign were located almost completely in mature climax shrub stands (i.e. sagebrush, bitterbrush, and/or hopsage). Five out of six jackrabbits flushed were located in the corridor of intact shrubs that extends north and south sides of Gable Mountain and Gable Butte; this is the largest intact section of mature shrub habitat remaining on the Hanford Site. It appears that this area maintains the conditions necessary for jackrabbits, while other portions of the Site, which have lost the mature shrubs due to wildfire, may not. Staff experience has documented black-tailed jackrabbits using heavy industrial areas as well on the Hanford Site. However no transects or monitoring efforts were focused on industrial areas during FY2012. Although walking transects were distributed across a larger portion of the central Hanford Site, almost all jackrabbits were observed in areas that also contained spotlight routes (Figures 5 and 6). Additional surveys would be necessary to determine whether driving or walking surveys are more efficient in terms of per-unit-effort documentation of jackrabbit presence.

Additional surveys and monitoring for black-tailed jackrabbits are needed on the Hanford Site. If precipitation is favorable during the 2012-2013 winter season, snowfall track surveys will be performed to document additional habitat areas being used by black-tailed jackrabbits. The FY2012 monitoring effort documented the continued presence of the black-tailed jackrabbit on the Hanford Site, and provided an initial indication of the distribution on the Hanford Site and primary habitats used.

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