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Revision 0

Hanford Site Burrowing Owl Monitoring Report for Calendar Year 2013

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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Mission Support Alliance

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1.0 Introduction

The U.S. Department of Energy, Richland Operations Office (DOE-RL) conducts ecological monitoring on the Hanford Site to collect and track data needed to ensure compliance with an array of environmental laws, regulations, and policies governing DOE activities. Ecological monitoring data provide baseline information about the plants, animals, and habitat under DOE-RL stewardship at Hanford required for decision-making under the *National Environmental Policy Act* (NEPA) and *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA). The *Hanford Site Comprehensive Land Use Plan* (CLUP, DOE/EIS-0222-F) which is the Environmental Impact Statement for Hanford Site activities, helps ensure that DOE-RL, its contractors, and other entities conducting activities on the Hanford Site are in compliance with NEPA.

The Hanford Site Biological Resources Management Plan (BRMP, DOE/RL 96-32 Rev 1) is identified by the CLUP as the primary implementation control for managing and protecting natural resources on the Hanford Site. According to the CLUP, the BRMP

> "*provides a mechanism for ensuring compliance with laws protecting biological resources; provides a framework for ensuring that appropriate biological resource goals, objectives, and tools are in place to make DOE an effective steward of the Hanford biological resources; and implements an ecosystem management approach for biological resources on the Site. The BRMP provides a comprehensive direction that specifies DOE biological resource policies, goals, and objectives.*"

DOE-RL places priority on monitoring those plant and animal species or habitats with specific regulatory protections or requirements; or that are rare and/or declining (federal or state listed endangered, threatened, or sensitive species); or of significant interest to federal, state, or tribal governments or the public. The BRMP ranks wildlife species and habitats (Levels 0-5), providing a graded approach to monitoring biological resources based on the level of concern for each resource. Burrowing Owls (*Athene cunicularia*) are ranked as Level 4 resources, the second highest ranking level in BRMP. According to BRMP, Level 4 resources require a "Moderate" level of status monitoring.

The Burrowing Owl is classified as a Washington Department of Fish and Wildlife (WDFW) Candidate Species. Burrowing Owls are protected under the *Migratory Bird Treaty Act*; this status provides protection to eggs, nests and birds. Conway and Pardieck (2006) suggested that the population decline in Washington may be due to reduced numbers of ground squirrels (*Urocitellus spp.*), yellow-bellied marmots (*Marmota flaviventris)*, and badgers (*Taxidea taxus*) that create burrows used by the owls. Loss of habitat to agriculture and other development has also affected the species. Most individuals that nest on the Hanford Site migrate south for the winter (Conway et al. 2002). Because the owls migrate to and nest on the Hanford Site and the Hanford Reach National Monument, the status of Burrowing Owl populations and the locations of burrows are of concern locally to DOE-RL and the U.S. Fish and Wildlife Service (USFWS).

Burrowing Owls hunt at any time of the day or night, but peak activity levels are usually in the morning and evening. The owls capture insects such as grasshoppers and beetles during the day and small mammals such as mice at night (Haug et al. 1993). Burrowing Owls often collect dung of other animals and surround a burrow with the excrement. It is believed that this habit may lure insects such as beetles that the owls capture and eat (Levy et al. 2004).

Typical Burrowing Owl habitat includes deserts, grasslands, prairies, other natural areas, agricultural lands, and man-altered environments. Although Burrowing Owls are thought to prefer habitat that has not been modified by man, they are found in proximity to humans at golf courses, airports and in suburban areas (Coulombe 1971). Unlike other owl species, the Burrowing Owl nest underground rather than in trees or in other above-ground structures. The owls typically use abandoned burrows created by American badgers, coyotes (*Canis latrans*), yellow-bellied marmots and ground squirrels. It is believed Burrowing Owls are capable of digging their own burrows, but often prefer those left by other animals (Haug et al. 1993). Burrowing Owls prefer open, short grass habitat with suitable perches near the burrow to survey for both predators and prey.

Monitoring Burrowing Owl populations contributes to the management and protection of the species, the maintenance of site-wide biological diversity, overall site biological resource management (DOE/RL-96-32), and assists with proper impact assessment of Hanford Site projects. Many Hanford Site projects include impacts to the ground surface with activities such as grubbing, excavating, burning, off-road driving, compacting, and leveling. Without good documentation of current owl burrow locations it can be difficult to provide effective guidance for their protection. Continued monitoring and protection of this state candidate species will help to assure the continued presence of Burrowing Owls on the Hanford Site.

2.0 Methods

Public Safety and Resource Protection (PSRP) monitoring of the Hanford Site Burrowing Owl populations initiated in 2012 (HNF-54294) and continued into 2013. Efforts in 2013 were focused on maintaining the existing artificial burrows, determining the status of previously known burrows, and surveying for new burrows.

2.1 Artificial Burrow Maintenance and Status

Artificial burrows were installed by various Hanford contractors as mitigation for environmental impacts from site development and restoration projects. Usually, the mitigation action plans required a relatively short period of monitoring and maintenance of the artificial burrows, and in most cases the timeline for monitoring and maintenance has long expired, with the exception of some Washington Closure Hanford LLC (WCH) burrows that are still maintained by WCH (WCH-512). Regular maintenance of the burrows increases the likelihood of use and ensures that past mitigation efforts continue to provide benefit. Natural burrows also tend to decline or collapse after a length of time (Bradbury and Newsome 2010) and cannot be efficiently maintained by staff to extend the life of the burrow. During

the 2012 monitoring season the majority of the artificial burrows that had been installed on the Hanford Site were in need of maintenance (HNF-54294). PSRP staff performed maintenance on all artificial burrows on site in 2013 with the exception of the burrows installed and currently maintained by WCH. All artificial burrows were maintained regardless of historical activity levels. Burrow entrances were cleared of obstructions, and heavy vegetation impeding the burrow function was removed. A heavy bristled duster with an extending handle was placed down the entrance opening to remove obstructions including spider webs, vegetation, soil, and other debris. Soil was managed around the burrow entrances by recreating original mounds over and around the pipe entrance. Steel rakes and small shovels were used to replicate a fresh soil push often present at natural mammal burrows. Maintenance was performed prior to the spring arrival of migrating owls to the Hanford Site.

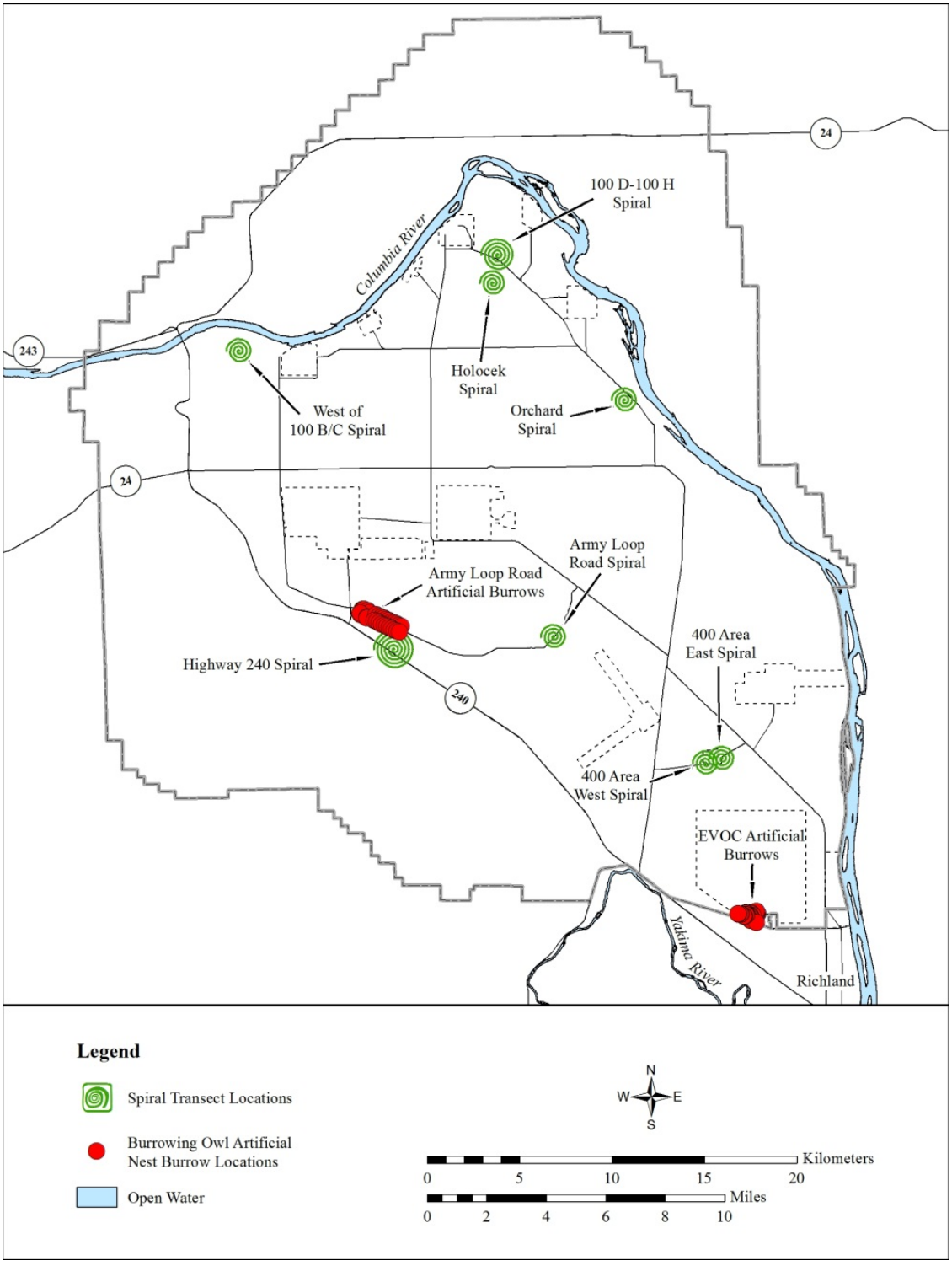


Figure 1. Burrowing Owl Nest Burrow Survey Locations on the Hanford Site in 2013

2.2 Surveys for New Active Burrows

In 2012, all known previously identified burrows were visited, and the status (i.e. in-use, collapsed, etc.) documented (HNF-54294). In 2013, a systematic approach was designed to locate new or previously undocumented burrows on the Hanford Site. Transects were developed to locate new burrows in the vicinity of natural burrows that were determined to be active in 2012 (Figure 1). Each transect was an Archimedean spiral that originated at the known active burrow or centroid of a cluster of active burrows, and spiraled out approximately 500 meters (m)(1640 feet) from outermost active known burrow in cluster. The successive turns of the spiral had a separation distance of approximately 200 m (656 feet) (Figure 2). Transects were walked with three staff members who walked approximately 30 m (100 feet) apart. Surveyors walked with a Global Positioning Unit (GPS) along the predetermined transect line while being paced by additional personnel on both sides.

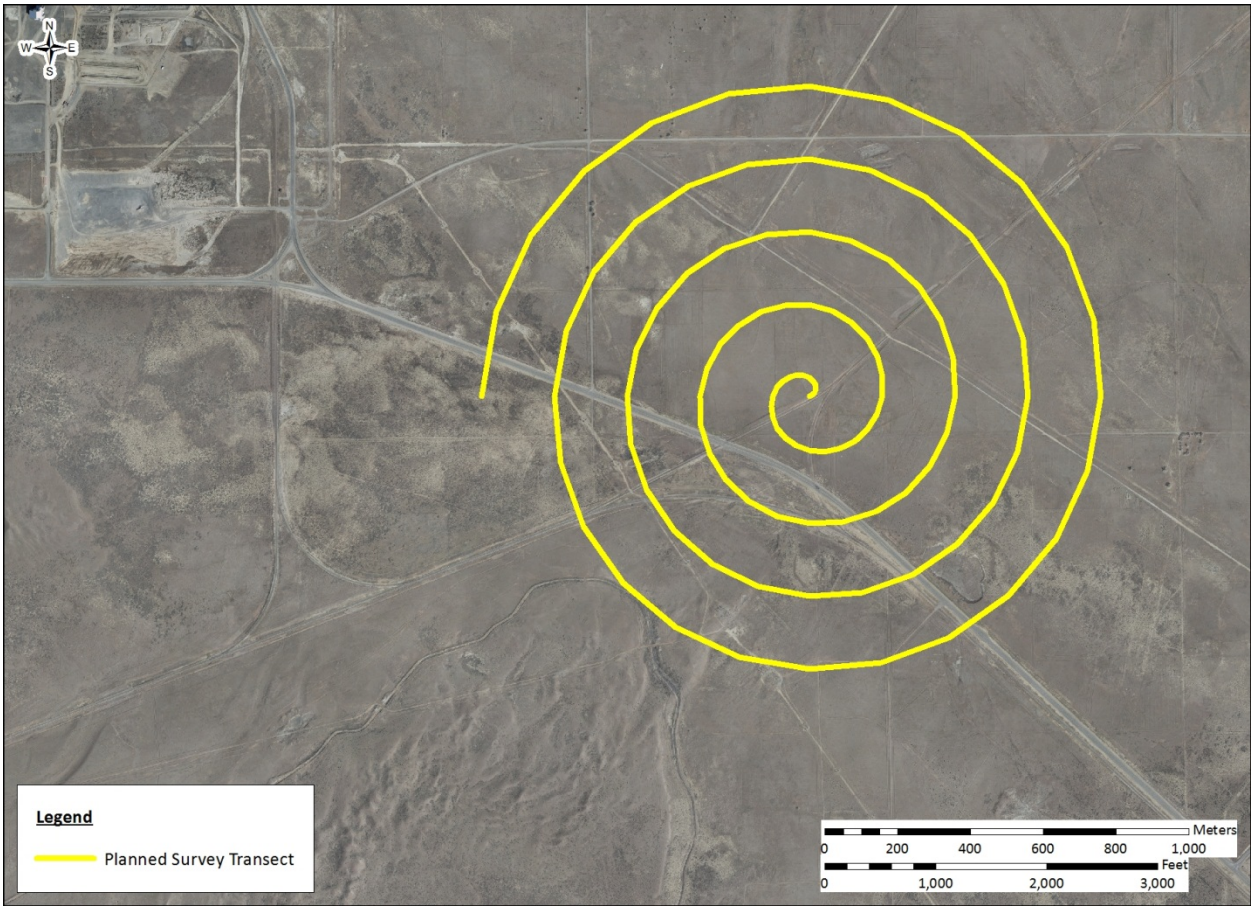


Figure 2. An Example of a Spiral Transect Designed to Detect Burrowing Owl Nest Burrows on the Hanford Site in 2013

When a new burrow was encountered, field members visually scanned the area, looking for signs of occupation. If an owl was flushed from a burrow, surveyors noted where it landed. These locations were also examined to determine if undocumented burrows existed in the vicinity. Field team members determined if a burrow was active by looking for owls in the burrow, or the presence of castings, feces, feathers, and footprints at the opening of the burrow (Figure 3). Brief scans of the surrounding area for additional burrows were made at each location. All newly discovered burrows were documented with a GPS and added to the current list of Hanford Site burrows.

Figure 3. Active Burrowing Owl Nest Burrow in Pipe with Survey Identifiers Such as Feathers, Castings and Footprints

2.3 Burrowing Owl Capture and Banding at the Volpentest HAMMER Training and Education Center Site

PSRP staff assisted the USFWS collect Burrowing Owls at the artificial burrow at the HAMMER Emergency Vehicle Operations Course (EVOC). USFWS was attempting to retrieve tracking devices placed on owls in previous years. From 2009 to 2011, researchers from the USFWS and The Global Owl Project fitted 93 owls from Saskatchewan, Oregon and Washington with ultra-lightweight geolocators. The geolocators can detect sunrise and sunset times, which can be used to determine latitude and longitude. The latitude and longitude data can be used to determine the winter distribution of each individual owl (Fortin 2013). In order to the retrieve data, however, the owls must be recaptured and

the geolocator removed. Twenty-five owls have been recaptured, and USFWS continues to look for other geolocators that are still missing. A field survey was performed prior to trapping to identify active burrows and clusters being used by owls. This preliminary survey increased the trapping success rates because traps were placed only at active burrows. Traps were double entry swing door style. Staff members retrieved owls from traps, determined the sex and age of the owls, and banded each owl with an identification band before the bird was released.

3.0 Results

For the purpose of this report, the term "burrow" is used to identify either a natural or artificial subterranean nest structure. A natural burrow could be a hole excavated by a fossorial mammal (mammalian origin) or a man-made object such as a pipe or culvert that was discovered and occupied by owls (anthropogenic origin). An artificial burrow is a structure that is installed specifically for the purpose of attracting Burrowing Owls.

3.1 Artificial Burrow Maintenance and Status

Field staff performed maintenance on 52 artificial burrows in 2013. In February 2013, 33 burrows located at the HAMMER EVOC were inspected and maintained. Three burrows (PNNL1, PNNL4A and PNNL4B) were not maintained due to the presence of owls on the associated perches. Burrows were maintained and prepped for the upcoming breeding season (Figure 4). All artificial burrows at the HAMMER EVOC course appeared to be usable following the staff maintenance routines.

Staff performed maintenance on all 22 Interim Disposal Facility (IDF) mitigation burrows installed parallel to Army Loop Road. Maintenance was performed on the 22 IDF burrows in the same manner as the HAMMER burrows. However, not all IDF burrows were useable, even after maintenance. The area where the IDF burrows were installed has sandy soil. Weather conditions and northern pocket gopher (*Thomomys talpoides*) activity in the area had filled many of the burrow entrances and/or chambers. Six burrows were deemed plugged and unusable with current maintenance techniques (Table 1). The WCH artificial burrows on Army Loop Road were not maintained by PSRP staff because WCH continues to maintain these burrows.

Figure 4. Artificial Burrow HAMMER PNNL 10 Before and After Maintenance. Inactive in 2012, Active in 2013 Following Maintenance

Table 1. Army Loop Road Unusable Artificial Burrows Following Maintenance

Burrow Site Name	Construction	2012 Status	2013 Maintenance
IDF_PNNL1	Artificial	Inactive	**UNUSABLE**
IDF_PNNL2	Artificial	Inactive	COMPLETE
IDF_PNNL3	Artificial	Inactive, unusable	COMPLETE
IDF_PNNL4	Artificial	Inactive, unusable	COMPLETE
IDF_PNNL5	Artificial	Inactive, unusable	**UNUSABLE**
IDF_PNNL6	Artificial	Inactive, unusable	**UNUSABLE**
IDF_PNNL7	Artificial	Inactive, unusable	COMPLETE
IDF_PNNL8	Artificial	Inactive, unusable	COMPLETE
IDF_PNNL9	Artificial	Inactive, unusable	COMPLETE
IDF_PNNL10	Artificial	Inactive	**UNUSABLE**
IDF_PNNL11	Artificial	Inactive, unusable	**UNUSABLE**
IDF_PNNL12	Artificial	Inactive, unusable	COMPLETE
IDF_PNNL13	Artificial	Inactive, unusable	COMPLETE
IDF_PNNL14	Artificial	Inactive, unusable	COMPLETE
IDF_PNNL15	Artificial	inactive	COMPLETE
IDF_PNNL16	Artificial	Inactive	COMPLETE
IDF_PNNL17	Artificial	Inactive	COMPLETE
IDF_PNNL18	Artificial	Inactive, unusable	COMPLETE
IDF_PNNL19	Artificial	Inactive, unusable	COMPLETE
IDF_PNNL20	Artificial	Inactive	COMPLETE
IDF_PNNL21	Artificial	Inactive, unusable	COMPLETE
IDF_PNNL22	Artificial	inactive, unusable	**UNUSABLE**

Monitoring staff returned later in the breeding season to document owl activity at all of the artificial burrows. If an owl was seen on approach towards the burrow, it was documented as active, as were nearby burrows within the associated cluster. Further monitoring disturbance was avoided to minimize impacts to nesting pairs at a time when brooding was still possible. Following these methods, 21 burrows at HAMMER were categorized as active (Figure 5). This was up from 2012 when 16 burrows were identified as active at the HAMMER (HNF-54294). There were no active artificial burrows on Army Loop Road, including PNNL and WCH burrows, but a new mammal-origin natural active burrow was identified during the survey (Figure 6).

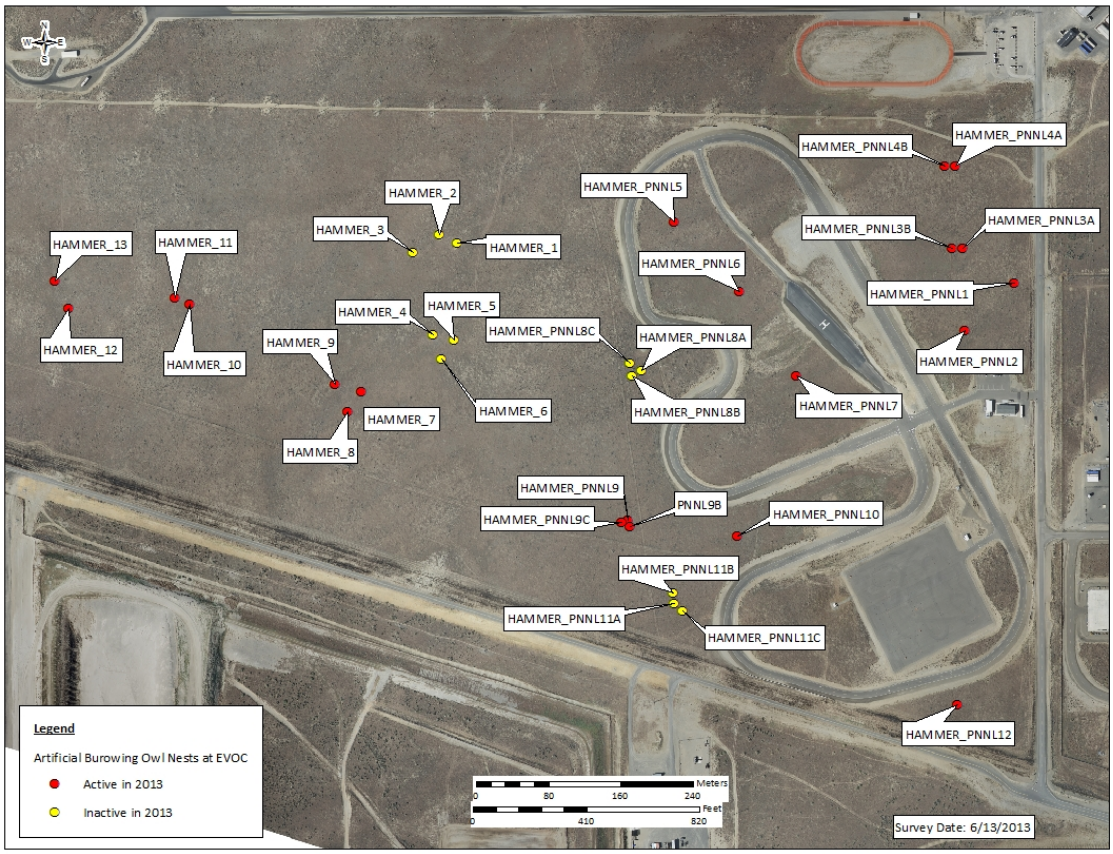


Figure 5. HAMMER Artificial Burrow Survey Results

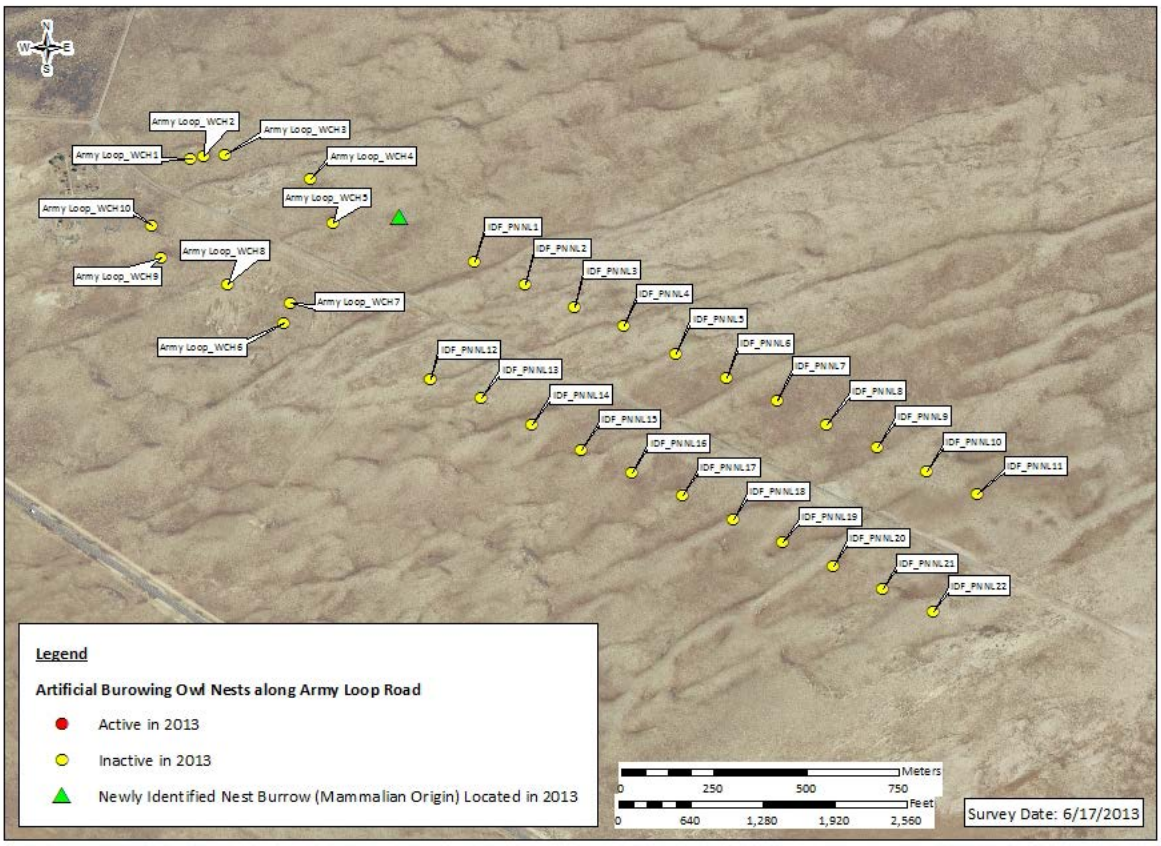


Figure 6. Army Loop Road Artificial Burrow Survey

3.2 Surveys for New Active Burrows

In 2012 there were 23 active natural burrows known on the Hanford Site. These burrows were made up of a mix of mammalian and anthropogenic origins. Survey spirals centered on known active burrows were used to search for additional, previously undocumented burrows. A total of 8 spirals were surveyed, resulting in the discovery of 14 new burrows (Figure 7). Nine of these burrows were located in structures of anthropogenic origin while the other 5 were of mammalian origin. The location of the survey spirals also allowed staff to document the status of the burrows that were active in 2012 (Figure 8). Not all burrows active in 2012 remained active during the 2013 season. Fifteen of the twenty-three burrows remained active from 2012 into the 2013 year, for a total of 29 active natural burrows on Hanford in 2013. The notable trend in decreasing burrow activity continued in 2013 for the burrow clusters along state Highway 240. In 2010, a total of 14 burrows were classified as active. This number decreased over the next two years, with only 6 burrows still in active status in 2012. During the 2013 spiral surveys along state Highway 240 only one historical burrow was active; however 2 new burrows were discovered, for a total of 3 active burrows in the highway 240 cluster. The 100-B/C Area anthropogenic burrows, which had maintained active status since 2010, were empty and inactive in 2013. The inactivity at the 100-B/C Area was likely the result of a new Swainson's Hawk nest located in the immediate vicinity.

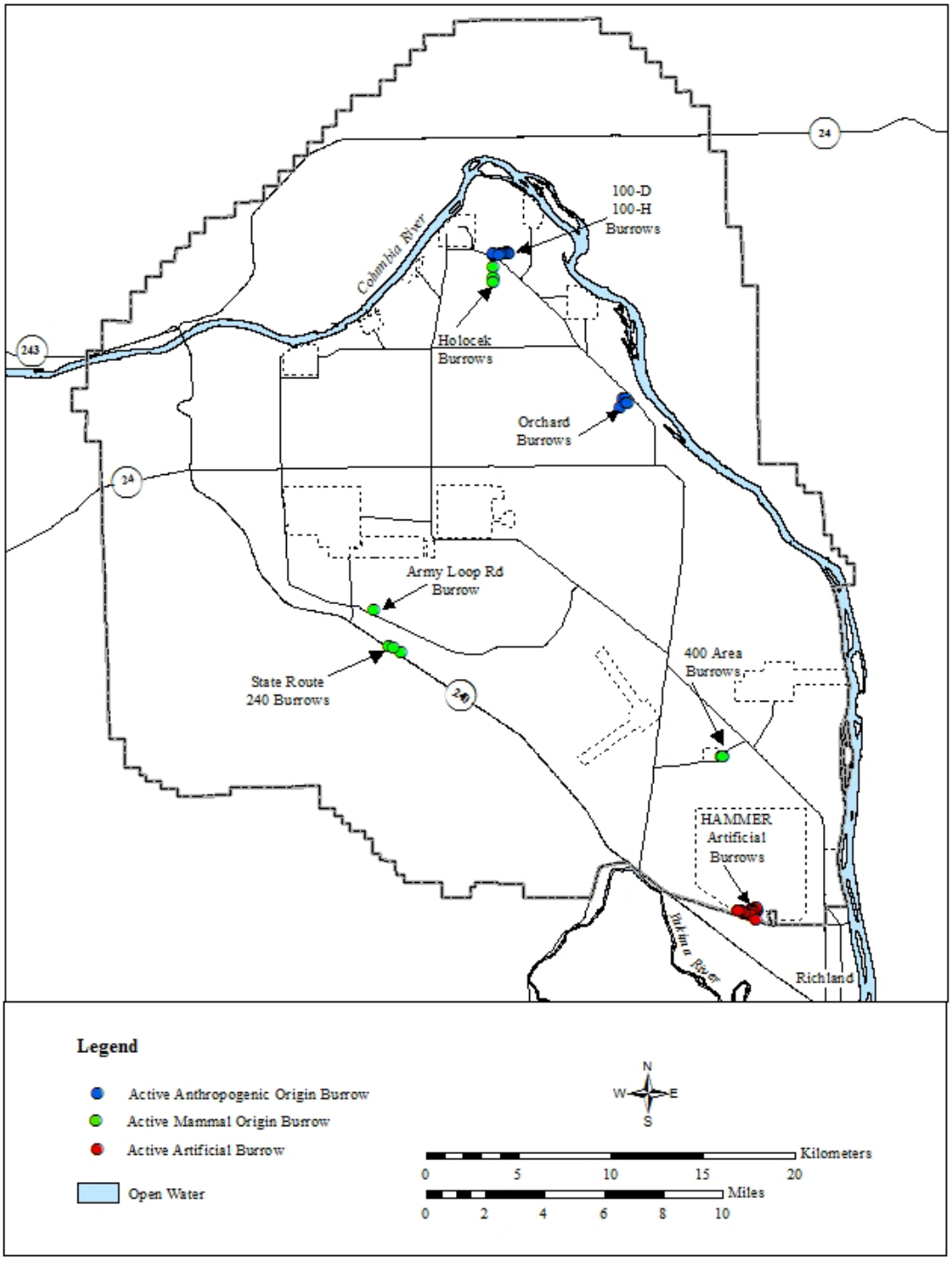


Figure 7. Active Burrowing Owl Burrows on the Hanford Site in 2013

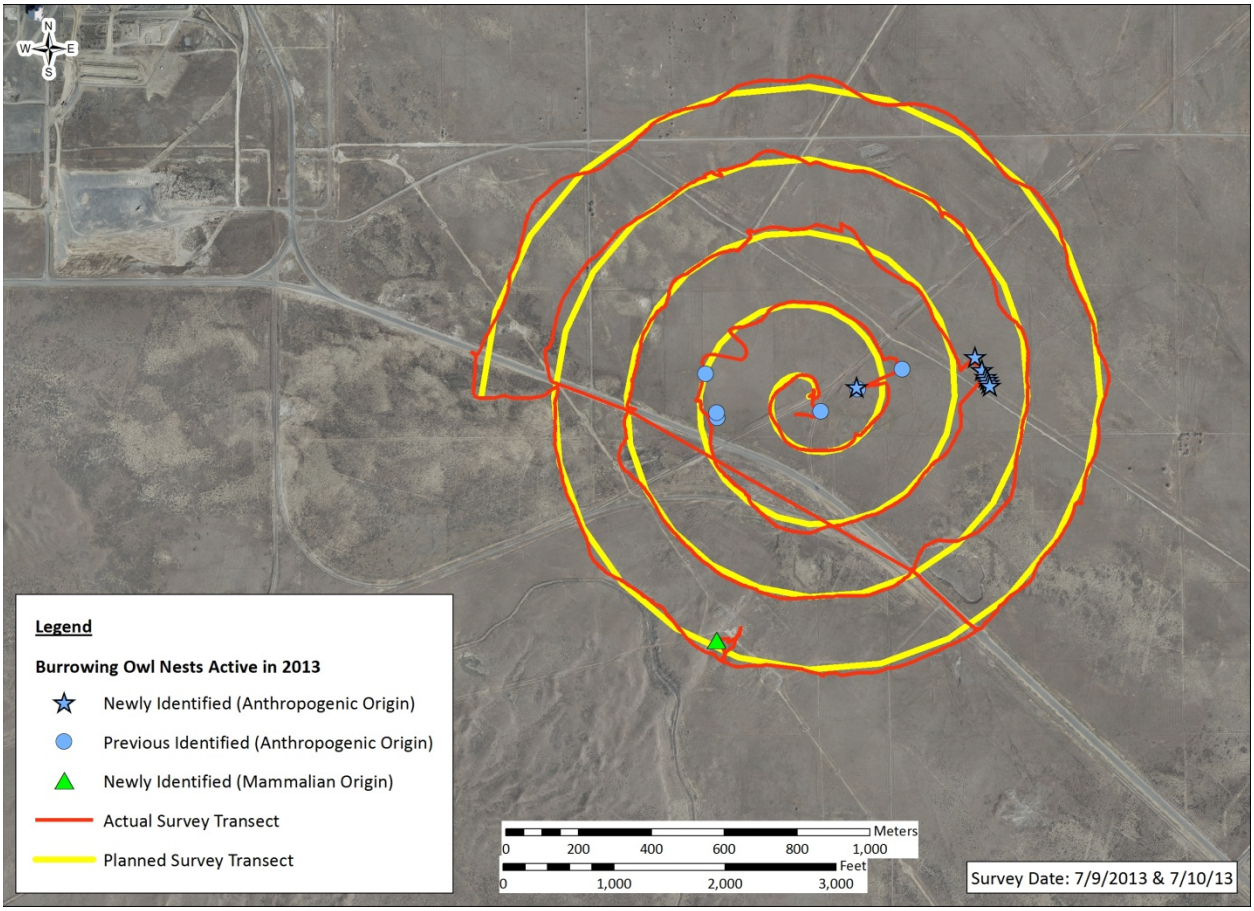


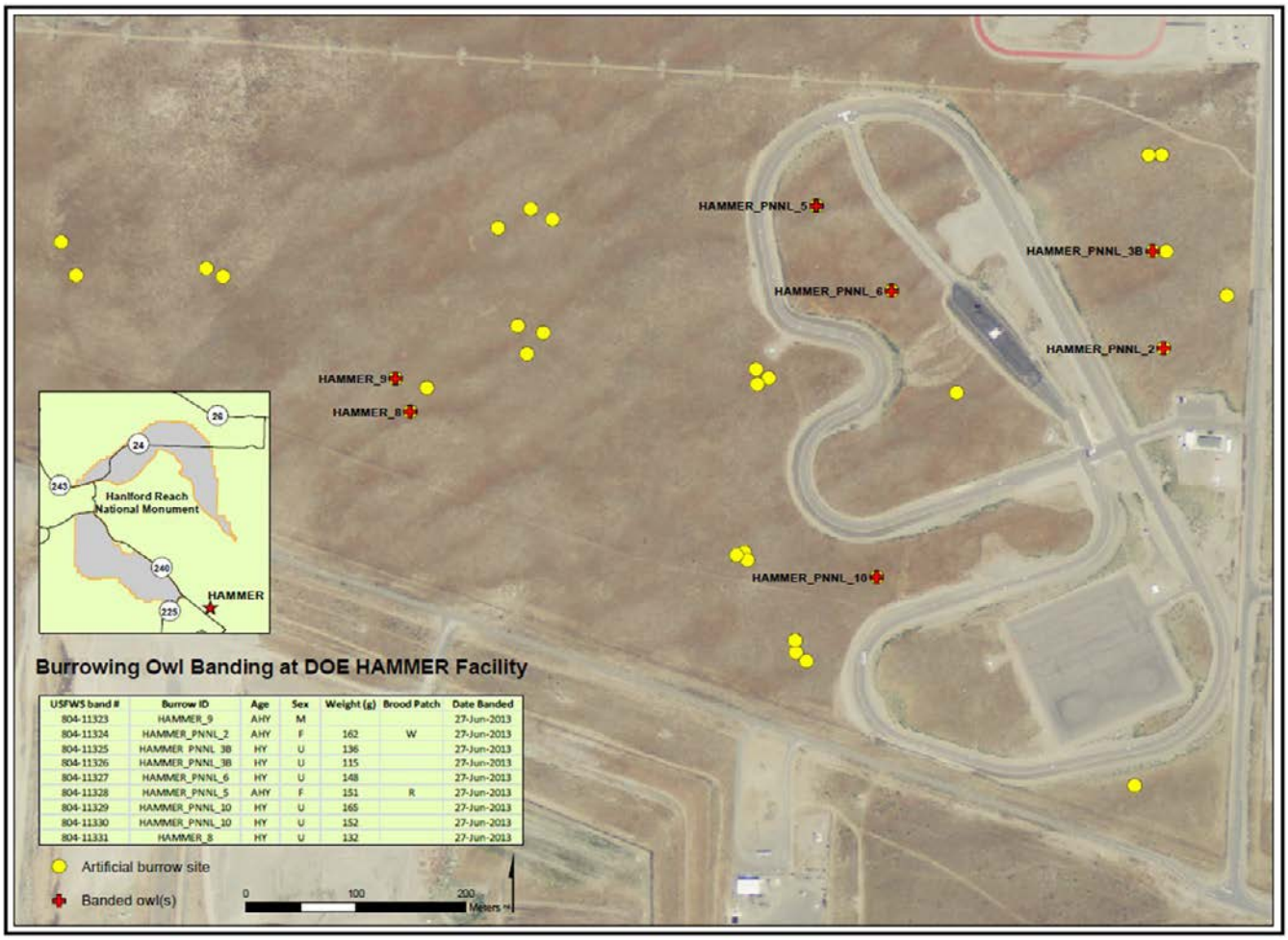
Figure 8. Example of Data Collected During a Single Spiral Survey in 2013 (100-D/100-H Spiral)

3.3 Burrowing Owl Capture and Banding at the HAMMER Site

USFWS contacted PSRP about using this increase of successful artificial burrows at the HAMMER as an opportunity to trap owls to recover geolocators used in their owl migration study (Fortin 2013). In an effort led by the USFWS team, a total of 12 traps were placed in front of the burrow openings to trap owls returning to or exiting from the burrow (Figure 9).

A total of 9 owls were captured and banded (Figure 10), but no geolocators were recovered. Six owls were found to be hatch-year birds, the other 3 were after hatch year. The 3 after hatch year owls consisted of a male and two females, one with a wrinkled brood patch, and the other a recovering brood patch. The differing maturity of brood patches on the female owls highlight timing of brood hatching, with the recovering brood patch further along in the rearing process than the wrinkled patch owl. All captured owls were banded, left leg for hatch-year and right leg for after-hatch year, and released with USFWS band numbers (Figure 11).

Figure 9. Example of the Type of Traps Used in Front of Burrow Openings



USFWS band #	Burrow ID	Age	Sex	Weight (g)	Brood Patch	Date Banded
804-11323	HAMMER_9	AHY	M			27-Jun-2013
804-11324	HAMMER_PNNL_2	AHY	F	162	W	27-Jun-2013
804-11325	HAMMER_PNNL_3B	HY	U	136		27-Jun-2013
804-11326	HAMMER_PNNL_3B	HY	U	115		27-Jun-2013
804-11327	HAMMER_PNNL_6	HY	U	148		27-Jun-2013
804-11328	HAMMER_PNNL_5	AHY	F	151	R	27-Jun-2013
804-11329	HAMMER_PNNL_10	HY	U	165		27-Jun-2013
804-11330	HAMMER_PNNL_10	HY	U	152		27-Jun-2013
804-11331	HAMMER_8	HY	U	132		27-Jun-2013

Figure 10. U.S. Fish and Wildlife Service Burrowing Owl Trapping and Banding at the HAMMER
Image Courtesy of the USFWS Mid-Columbia Refuge Complex

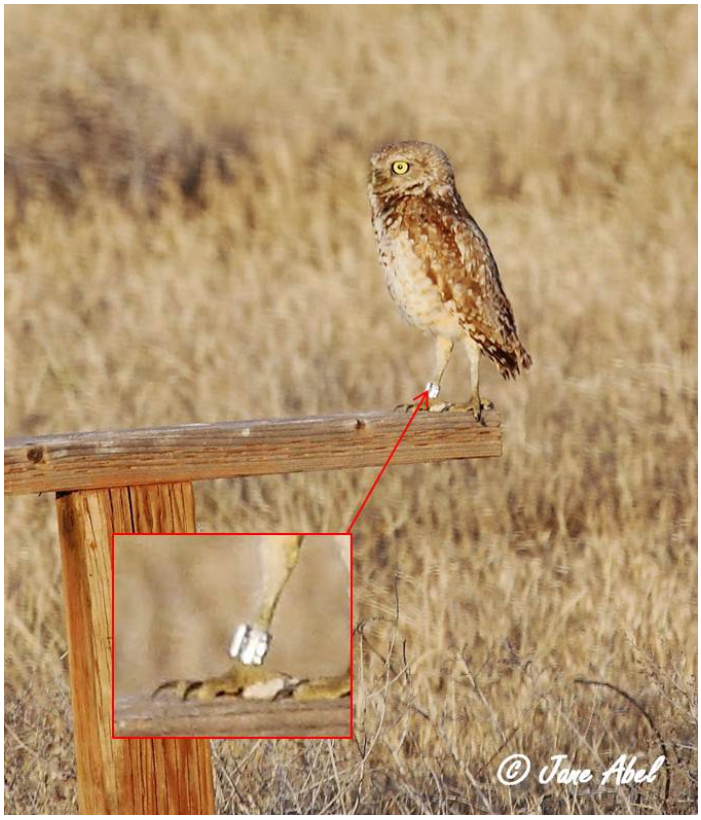


Figure 11. Banded Burrowing Owl Following Trapping and Release
(photo courtesy of Jane Abel)

4.0 Discussion

The two main focuses of the 2013 monitoring season were to locate new natural burrows and maintain the artificial burrows on the Hanford Site. Natural mammalian origin burrows have a limited life expectancy in the wild (Bradbury and Newsome 2010). Therefore, monitoring existing historical burrows without actively searching for newer burrows will always lead to the conclusion that the Hanford Site population is declining, which may be incorrect. Except for documenting the Highway 240 burrows, no documented efforts designed to discover new burrows had been performed in recent years. Burrowing Owls use multiple burrows within a relatively small area for nesting, escape, and feeding. This can create the clusters of burrowing owls that are seen on the Hanford Site. The spiral survey design used during 2013 was based on this clustering tendency. The expectation was that new burrows would originally arise as secondary burrows near current or recently active burrows. The spiral surveys were successful; 14 new burrows were discovered within the 8 spirals. A total of 29 natural burrows and 21 artificial burrows were documented as active in 2013 (Figure 12), for a total of 50 active burrows, which is up from 39 observed in 2012 (Appendix). The trend since 2010 shows an increase in the number of active burrows on the Hanford Site. The increase of burrows in 2013 can be largely attributed to the surveys for undocumented burrows. Of the 23 natural burrows that were active in 2012, only 15 remained active in 2013.

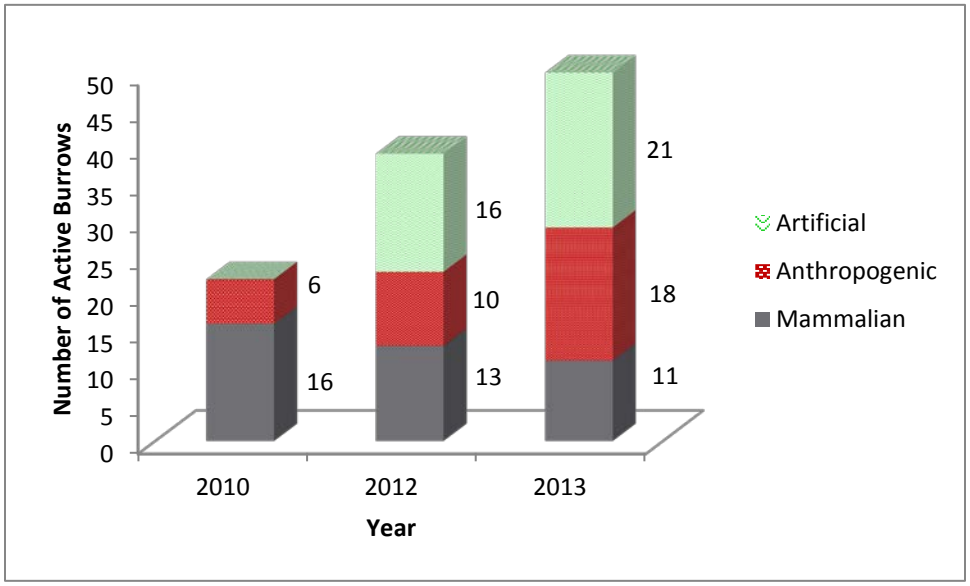


Figure 12. Number of Active Burrows per Year by Burrow Origin Type

A second trend that has continued since 2010 is the lower proportion of active burrows being of mammalian origin. Large mammals like the American badger and coyote dig when searching or chasing food. The larger tunnels that are created become potential burrow structures for burrowing owls. Owls tend to select nest burrows from an area with a high density of burrows, often close to roads, surrounded by bare ground or short grass (Haug et al. 1993). To the human eye, the Hanford Site appears to have many mammalian digs that meet these preferences. It is not known why owls choose structures such as clay pipes or abandoned irrigation piping over burrows from mammal digs. It could be as simple as the anthropogenic burrows require less work for the owls to prepare and maintain as a burrow. This affords the owl more time and energy for actions including hunting and breeding. A second option could be that the depth and size of the available mammal digs do not meet the requirements of the owls. The size of the dig could vary based on the prey being chased by the fossorial mammal. Larger burrowing prey like ground squirrels could result in a larger, more suitable burrow compared to that of smaller rodent species. Currently there is a very low density of Townsend's ground squirrels (*Urocitellus townsendii*) on the Hanford Site, considering the vast amount of potential habitat. Of the 12 ground squirrel colony locations known prior to 2012, 7 were vacant during 2012 surveys. The currently active colonies are along state Highway 240 (with one colony intermixed with the Highway 240 owl burrows) or near areas that have high human disturbance including the WYE barricade, 300 Area and a vineyard (HNF-53075).

Two substantial clusters had a decrease in the number of active burrows. A cluster of burrows along state Highway 240, which had 14 active natural burrows in 2010, was documented as only having 3 active burrows in 2013. No physical change to the landscape has taken place in those 3 years to explain such a drastic decline. The 14 previously active burrows were all of mammal origin; no additional effort was made to determine the structural integrity or future viability of the inactive burrows. The second cluster had multiple active burrows over multiple years is the 100-B/C Area cluster. This group of

burrows was made up of a mixture of anthropogenic and mammal origin burrows in an old homestead site west of the 100-B/C Area. A small Siberian elm (*Ulmus pumila*) tree remains living on the homestead. In 2013, a Swainson's Hawk (*Buteo swainsoni*) chose this elm tree as a nesting location. The presence of the large raptor nesting directly within the cluster of burrows likely prevented any Burrowing Owls from using those burrows in 2013. The use of this Swainson's Hawk nest in coming years may affect future burrowing owl occupation at this location.

All artificial burrows on the DOE managed lands were maintained prior to the breeding season. A large number of burrows were unusable before being maintained by PSRP staff (HNF-54294). Six burrows along the Army Loop Road installations were unusable even following maintenance because soil had filled entrances or chambers to a level that could not be resolved without major excavations of the entire burrow structure. The remaining 16 burrows were maintained to an acceptable level. There were no active burrows within the Army Loop Road installations in 2012. The maintenance of these burrows did not result in increased activity; no artificial burrows along Army Loop Road were active in 2013. Thirty artificial burrows at HAMMER were maintained during February; another three burrows had owls present and were not approached. In 2012, 16 of the 33 burrows were active. After maintenance; the HAMMER installations had 21 active burrows. PSRP staff assisted USFWS trap owls within the HAMMER artificial burrows; a total of 9 owls were trapped, including 3 adult birds and 6 hatch year birds. Three unique burrows contained hatch year birds, suggesting at least 3 successful nests within the HAMMER cluster. Because mammal-origin natural burrows have been declining around the site, it is crucial that there is continued maintenance of the artificial burrows to provide locations for young owl dispersion.

Should funding allow for continued Burrowing Owl monitoring, in addition to maintenance of burrows, surveys for previously undiscovered burrows would be a focus in the future. With reductions of clusters such as those at state Highway 240 and the 100-B/C area, continued monitoring will help discern if owls from those areas have located new burrows within the Hanford boundary. DOE-RL and USFWS will continue to be concerned about Burrowing Owls because the Hanford Site represents an important habitat area for the species. The Burrowing Owl is a Candidate Species in Washington State, and protecting remaining habitat in places such as Hanford is necessary for the continued viability of the species.

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APPENDIX

Historical Status of Burrowing Owl Burrows Active in 2013

Historical Status of Burrowing Owl Burrows Active in 2013

Site Name	Construction	2010	2012	2013
ARMY-3	MAMMAL	n/a	n/a	Active
FFTF-1	MAMMAL	Active	Active	Active
FFTF-1A	MAMMAL	n/a	Active	Active
FFTF-1B	MAMMAL	n/a	Active	Active
H240-10	MAMMAL	n/a	n/a	Active
H240-11	MAMMAL	n/a	n/a	Active
H240-1B	MAMMAL	Active	Active	Active
HAMMER_10	Artificial	n/a	Inactive	Active
HAMMER_11	Artificial	n/a	Active	Active
HAMMER_12	Artificial	n/a	Active	Active
HAMMER_13	Artificial	n/a	Inactive	Active
HAMMER_7	Artificial	n/a	Inactive	Active
HAMMER_8	Artificial	n/a	Inactive	Active
HAMMER_9	Artificial	n/a	Inactive	Active
HAMMER_PNNL1	Artificial	n/a	Inactive	Active
HAMMER_PNNL10	Artificial	n/a	Inactive	Active
HAMMER_PNNL12	Artificial	n/a	Inactive	Active
HAMMER_PNNL2	Artificial	n/a	Active	Active
HAMMER_PNNL3A	Artificial	n/a	Active	Active
HAMMER_PNNL3B	Artificial	n/a	Active	Active
HAMMER_PNNL4A	Artificial	n/a	Active	Active
HAMMER_PNNL4B	Artificial	n/a	Active	Active
HAMMER_PNNL5	Artificial	n/a	Active	Active
HAMMER_PNNL6	Artificial	n/a	Active	Active
HAMMER_PNNL7	Artificial	n/a	Active	Active
HAMMER_PNNL9	Artificial	n/a	Inactive	Active
HAMMER_PNNL9B	Artificial	n/a	Active	Active
HAMMER_PNNL9C	Artificial	n/a	Active	Active
HolocekHS1	MAMMAL	n/a	Active	Active
HolocekHS2	MAMMAL	n/a	Inactive	Active
HolocekHS3	MAMMAL	n/a	n/a	Active
OLDF-10	ANTHROPOGENIC	n/a	n/a	Active
OLDF-11	ANTHROPOGENIC	n/a	n/a	Active
OLDF-12	ANTHROPOGENIC	n/a	n/a	Active
OLDF-2	ANTHROPOGENIC	Active	Inactive	Active
OLDF-2A	ANTHROPOGENIC	Active	Active	Active
OLDF-2B	ANTHROPOGENIC	n/a	Active	Active
OLDF-3	ANTHROPOGENIC	Active	Active	Active
OLDF-3A	ANTHROPOGENIC	n/a	Active	Active
OLDF-4	ANTHROPOGENIC	Active	Active	Active

Historical Status of Burrowing Owl Burrows Active in 2013

Site Name	Construction	2010	2012	2013
OLDF-5	MAMMAL	n/a	n/a	Active
OLDF-6	ANTHROPOGENIC	n/a	n/a	Active
OLDF-7	ANTHROPOGENIC	n/a	n/a	Active
OLDF-8	ANTHROPOGENIC	n/a	n/a	Active
OLDF-9	ANTHROPOGENIC	n/a	n/a	Active
ORCH-1A	ANTHROPOGENIC	unk	Active	Active
ORCH-3	ANTHROPOGENIC	Inactive	Inactive	Active
ORCH-3A	ANTHROPOGENIC	Inactive	Inactive	Active
ORCH-6	ANTHROPOGENIC	n/a	n/a	Active
ORCH-7	ANTHROPOGENIC	n/a	n/a	Active