

**Interagency Special Status Species Program**  
**FY 2014 Inventory & Conservation Planning Project**  
**Survey for sand dune endemic species in the Oregon Dunes National**  
**Recreation Area**



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### 1.0 PROJECT OBJECTIVES

Survey 1,500 acres of un-stabilized or semi-stabilized dune habitat to determine the presence or absence of species and plant communities endemic to this habitat type.

### 2.0 INTRODUCTION

The Oregon coastal dune sheet between Heceta Head and the North Spit of Coos Bay, a distance of 86 kilometers (54 miles) (Cooper 1958, Wiedemann 1984), is the longest continuous stretch of sand dune habitat in the Pacific Northwest. Over the past 60 or so years, the sparsely vegetated plant communities that occupied un-stabilized and semi-stabilized sand habitat in this area have dramatically decreased with the introduction and establishment of European beachgrass (*Ammophila arenaria*) and Scot’s broom (*Cytisus scoparius*), and afforestation with shore pine (*Pinus contorta* var. *contorta*). Planting began in what is now the Oregon Dunes National Recreation Area (ODNRA) around 1910 and continued through the 1970’s to stabilize sand that drifted over roads, jetties, railroad tracks, and buildings. As a consequence, native dune communities that require some sand movement have largely been replaced with a dense monotypic cover of beachgrass, Scot’s broom, and other non-native species. With the loss of habitat, native dune plants and their associated invertebrates have become increasingly rare. Seven plant species and one invertebrate from these habitat types were targeted by the survey. Of the eight target species, two are currently documented from the ODNRA.

No systematic vegetative surveys had been conducted in the (ODNRA) since vegetation mapping for the ODNRA Management Plan (1994) was completed and the publication of *Plant Associations of the Oregon Dunes National Recreation Area* (Christy *et al.* 1998). In 2009, a survey conducted by The Xerces Society targeted historic sites along the Oregon coast for Siuslaw hairy-necked tiger beetle (*Cicindela hirticollis siuslawensis*) and the Oregon plant bug (*Lygus oregonae*). Presence or absence of the plant bug’s host plants, silver beachweed (*Ambrosia chamissonis*) and yellow sandverbena (*Abronia latifolia*), was documented at each site. However, none of the 9 survey locations visited on the Siuslaw National Forest was found to currently have host plants (Mazzacano *et. al* 2009).

Target species included the following:

***Lygus oregonae*** (Oregon plant bug) ranges along the immediate coast from the Long Beach Peninsula in southwest Washington to Humboldt County in northern California. It is ranked G2/S2, Oregon Biodiversity Information Center (ORBIC) List 1 (ORBIC 2013), and is Bureau of Land Management (BLM) and Forest Service Strategic. Oregon records are from Tillamook, Lincoln, and Curry Counties (ISSSSP 2012). The plant bug is endemic to two plant species, *A. latifolia* and *A. chamissonis*. Results from the 2009 Xerces Society survey along the Oregon coast found either host plant at 27 percent of survey sites but only one extant Oregon plant bug population was located in the largest contiguous patch of *A. chamissonis* (Mazzacano *et al.* 2009, ISSSSP 2012).

***Abronia latifolia*** (yellow sandverbena) ranges from southern Vancouver Island to southern California. The species has a rank of G5/S3 (ORBIC 2013) and has no status as sensitive or strategic. As one of the two host plants for Oregon plant bug, it was identified as a target species. Mature plants often form low mounds in the sand and the species was a major component of the low beach foredune that existed before the introduction of European beachgrass.

***Ambrosia chamissonis*** (silver beachweed) ranges along the immediate coast from southeast Alaska to Baja California. The species is not ranked and has no status, but similar to *A. latifolia*, it is included as a host plant for Oregon plant bug. Despite its status, the species is uncommon within the ODNRA. Known sites are associated with open dunes and beaches.

***Artemisia pycnocephala*** (coastal wormwood) ranges along the immediate coast from Coos County, Oregon to Monterey County, California. It is ranked G4/G5/S1, ORBIC List 2 (ORBIC 2013), and is BLM and Forest Service sensitive. There are no documented sites within the ODNRA, where it is suspected to occur. Habitat is expected to be semi- or un-stabilized dunes or sand plains within close proximity to beaches.

***Campylopus schmidii*** (campylopus moss) has a large, disjunct distribution in Lane County, Oregon, northern California, Mexico, Hawaii, Asia, Africa, and Australia. The distribution pattern is thought to be the result of long-distance spore distribution on the winter jet stream (ISSSP 2011). All known populations in Oregon occur between Heceta Head and the Siuslaw River. Habitat is restricted to sand substrates, often at the edge of shore pine forest in areas that may be seasonally inundated. The species is ranked G4/S2, ORBIC List 2 (ORBIC 2013) and is BLM and Forest Service Sensitive.

***Carex macrocephala*** (big-headed sedge) ranges along the coast from Alaska south to Coos County, Oregon and northern Japan and Russia. Formerly a dominant species on the leeward side of the foredune and inland sand plains (Wiedemann 1984), the species has been extirpated from much of its range in the Pacific Northwest due to the introduction of European beachgrass

(Wilson *et. al* 2008). Habitat is expected to be un-stabilized or semi-stabilized sand. The species is both Forest Service and BLM Sensitive with a rank of G5/S2 and ORBIC List 2 (ORBIC 2013).

***Gilia millefoliata*** (seaside gilia) historically occurred along the coast from Curry County, Oregon to Marin County, California with a disjunct population to the north in Lincoln County, Oregon. Habitat is expected to be un- stabilized or semi-stabilized dunes and bluffs above the beach. There are no known sites within the ODNRA where it is suspected to occur. The species is BLM and Forest Service Sensitive with a rank of G2/S1, ORBIC List 1 (ORBIC 2013).

***Phacelia argentea*** (silvery phacelia) ranges along the coast from Coos County, Oregon to Del Norte County in northern California. There are no known sites within the ODNRA where it is suspected to occur. Habitat is un-stabilized or semi-stabilized sand and the base of coastal bluffs. The species is BLM and Forest Service Sensitive with a rank of G2/S2, ORBIC List 1(ORBIC 2013).

Additionally, herbaceous plant communities associated with un-stabilized or semi-stabilized sand and identified by the Heritage Program as “Globally Significant” were identified and mapped.

### **3.0 SURVEY METHODOLOGY**

Survey areas were identified using aerial photo interpretation keying in on the following parameters;

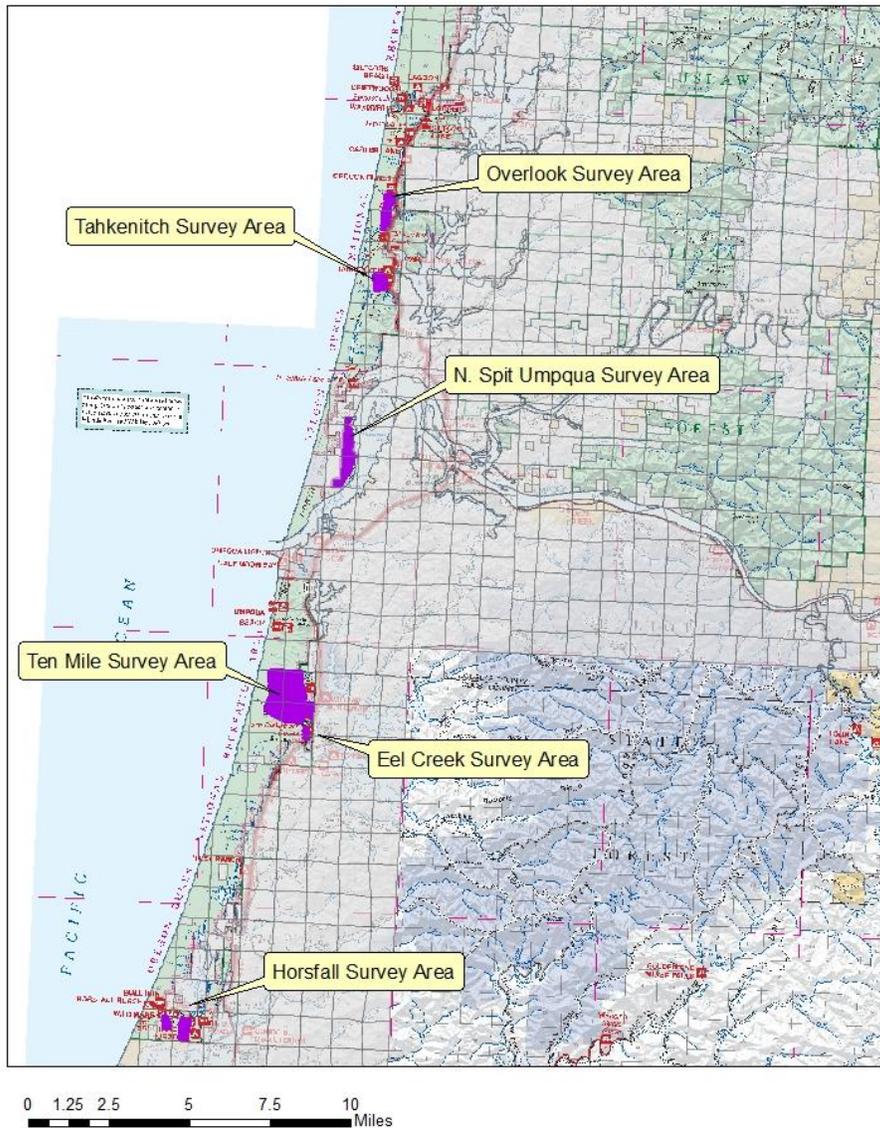
1. sand habitats;
2. relatively sparsely vegetated areas, indicating that there has been some sand movement;
3. hummock-forming European beachgrass vegetation appeared not to be dominant;
4. at least five acres in area;
5. located in a land allocation not open to motorized use.

Within each of the survey areas identified, transects were walked at a distance sufficient to provide close to 100 percent visual coverage of individual plants. All target species locations as well as globally significant plant communities (Christy *et. al* 1998) were mapped using a Trimble portable data recorder. To survey for Oregon plant bug, an insect net was swept over the top of all host plants. The contents of the net would be examined and true bugs (Hemiptera) that had any resemblance to *Lygus* sp. would be collected for later determination by an expert.

### **4.0 RESULTS AND DISCUSSION**

A complete survey was conducted from May through August, 2014 covering nine survey areas totaling 1575 acres.

## Areas Surveyed - Total 1,575 Acres



No target sensitive plant species were located. *Abronia latifolia* was found at a number of small sites in the Horsfall and Overlook survey areas. Typically, these consisted of one to five plants in an area no larger than about 10 meters<sup>2</sup> (108 ft<sup>2</sup>). The largest was about 0.02 ha (0.05 ac).

Because not every acre of potential habitat for target species within the ODNRA was identified and included in the survey, it is possible that populations of species that were not located may exist. Survey results suggest however that unknown sites, if present, would be rare.



The largest site of *Abronia latifolia* in the survey area totaled about 0.05 acre in area

A relatively large population of Siuslaw hairy-necked tiger beetle (*Cicendia hirticollis siuslawensis*) was found incidentally within the North Spit Umpqua survey area. Because the general habitat is described as moist, firm sand near freshwater outflows into the ocean (Mazzacano *et. al* 2009, ISSSP 2007) the species was not identified as a survey target. The located site is in an ephemeral wetland on sand without any direct outflow to the ocean. The general habitat area covers about 4 hectares (10 acres) on National Forest lands with additional habitat in adjacent private ownership. The mapped area occupied by larvae burrows or the presence of adults totaled 1 hectare (2.5 acres). The most common plant association is the Creeping Spikerush-Nevada Rush community (*Eleocharis palustris-Juncus nevadensis*). As noted by Christy *et. al* (2009), plant species composition in this association is variable due to complex microtopographic and hydrologic gradients. The Siuslaw hairy-neck co-occurs with two other tiger beetle species, *Cicendia oregona* occupying the zone just above the wet sand and *C. bellissima* in the driest sand areas. Occupied habitat mapping took place one day when weather conditions were favorable using binoculars at close range to identify adults. Threats to the site include vegetative succession leading to denser plant cover and disturbance from motorized

vehicles. Trespass off-highway vehicle tracks in areas of larval burrows were noted during two visits.



Siuslaw hairy-neck tiger beetle habitat interspersed with the Salt Rush-Nevada Rush community type



Siuslaw hairy-necked tiger beetle. Photo: Ron Lyons

Mapped areas of globally significant plant communities associated with un-stabilized and semi-stabilized sand totaled 15 hectares (38 acres) or 2 percent of the total survey area. These were distributed in 163 individual stands with a mean size of 0.1 hectare (0.25 acre). The remainder of the survey area was either dominated by non-native plants, or open sand with little or no vegetation. Common invaders that had established included European beachgrass, Scot's broom, sweet vernal grass (*Anthoxanthum odorata*), little hairgrass (*Aira praecox*), pink (*Dianthus barbatus*), parentucellia (*Parentucellia viscosa*), and others. Comparing the distribution and size of the mapped plant communities with that from 1994 (Christy 2012), the current areas are smaller and more scattered in distribution. Some of this difference may be due to a coarser mapping standard used in 1994, and the use of non-native species cover as a mapping determinant for this survey. However, it is likely that over the past 20 years, both the area occupied and the habitat integrity of native dune vegetation has been reduced due to invasive species encroachment.



Bearberry (*Arctostaphylos uva-ursi*) Association on semi-stabilized sand in the Eel Creek survey area



Typical habit of seashore bluegrass on un-stabilized sand in the Horsfall survey area.



Seashore Bluegrass Association on semi-stabilized sand in the Eel Creek survey area.



Red Fescue (*Festuca ammobia*) Association on semi-stabilized sand in the Tahkenitch survey area.

*Lygus oregonae* (Oregon plant bug) habitat was limited to *A. latifolia* sites which were likely too small to support plant bug populations. Net sweeps of *Abronia* did not result in the capture of any true bugs. Given the results of the 2009 Xerces Society survey for the species (Mazzacano *et. al* 2009) that yielded one extant population associated with a large patch of *A. chamissonis*, these results were not surprising. If *A. chamissonis* does exist within the ODNRA, it is most likely to occur as small populations close to the beach in European beachgrass dominated foredune areas.

*Abronia latifolia*. The only target species located by the survey, *A. latifolia* sites are concentrated in the southern-most survey area. It was most often associated with the Seashore Bluegrass Association in un-stabilized sand. As noted, sites are small, generally consisting of one to a few plants, with the exception of the one larger population. Although the species is judged too common for Sensitive status, its numbers in the ODNRA are likely much reduced compared to the period before European beachgrass introduction and it is important as one of two Oregon plant bug hosts.

*Ambrosia chamissonis*. The few known locations of *Ambrosia* along the central Oregon coast occur in dune habitat within close proximity to the beach. Most remnant areas of un-stabilized

sand are now confined a short distance to the east of the high foredune which has formed along the beach with European beachgrass establishment. Areas surveyed ranged from 0.5 kilometer (0.3 mile) to 3.2 kilometers (2.0 miles) inland. Based on the survey results, it is likely that any remnant populations that remain will be small and associated with beachgrass-dominated foredune areas.

*Artemisia pycnocephala* reaches the northern extent of its range in Coos County, corresponding with the southern portion of the ODNRA. Most of the un-stabilized and semi-stabilized sand habitat that occurs in this portion of the ODNRA outside of motorized areas was included in the survey. It is therefore unlikely that this species is present.

*Campylopus schmidii* populations in Oregon are concentrated just north of the survey area. Because the distribution is thought to be the result of long distance spore distribution, and fertile plants are unknown in Oregon, it may be that the species is restricted to this small area. Even so, suitable habitat may occur in open shore pine forest habitat that was not targeted by the survey and efforts should continue to survey for this species within the ODNRA.

*Carex macrocephala* is documented in the literature to have been a dominant component of inland dune communities as well as along beaches and foredunes. As such, it would have been expected to occur within survey areas. The negative survey results indicate that the species, if it still exists, is very rare within the ODNRA.

*Gilia millefoliata* was the least likely species to have been located by the survey. Its range is mostly south of the ODNRA and it was included because of the one historic site from Lincoln County to the north. Negative results indicate that the species is likely not present on the ODNRA.

*Phacelia argentea* has a similar range as *Artemisia pycnocephala*, reaching the northern extent of its range in Coos County. As with *Artemisia*, there is little available habitat in this portion of the ODNRA outside of motorized allocations, and the species is likely not present.

## **5.0 LITERATURE CITED**

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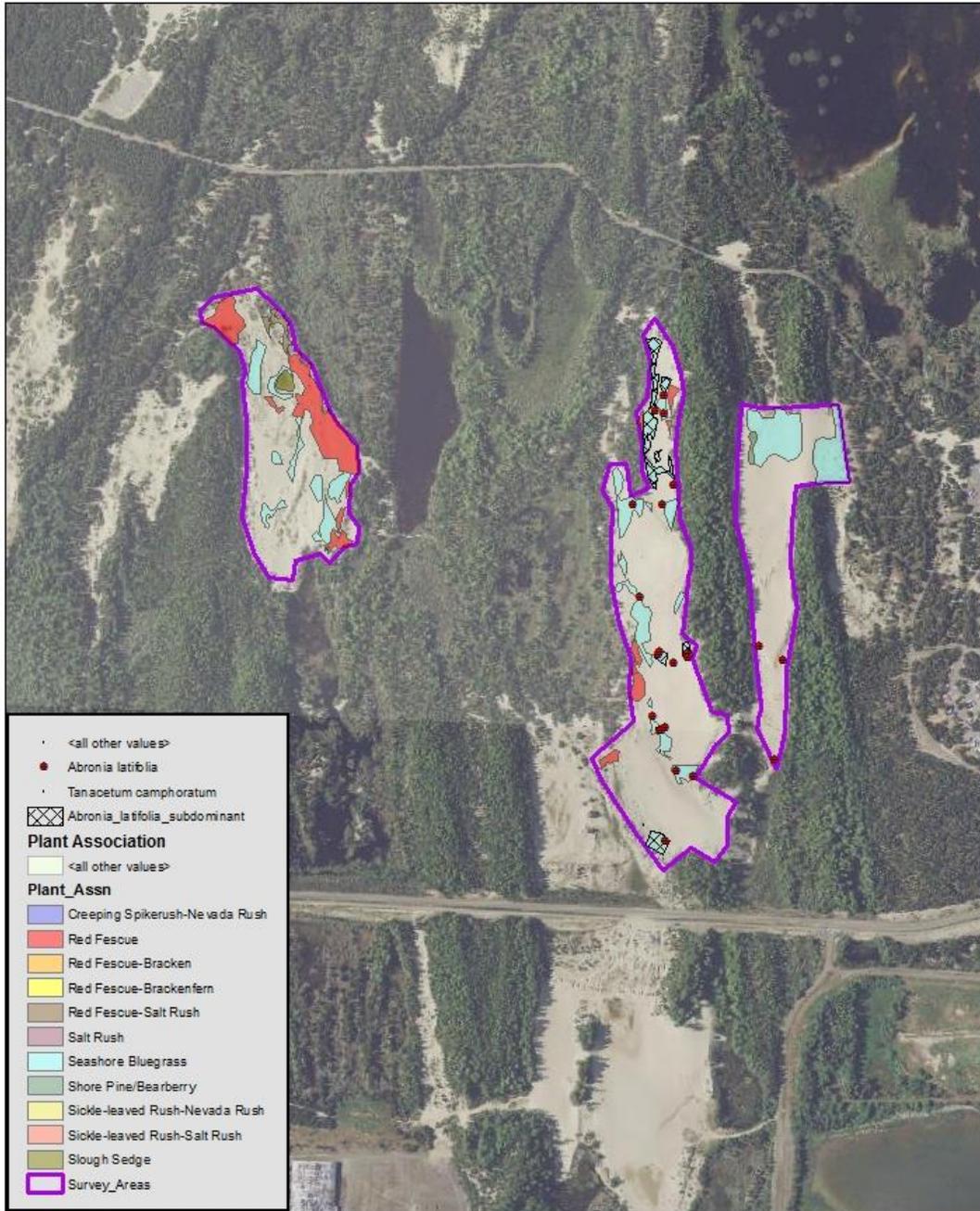
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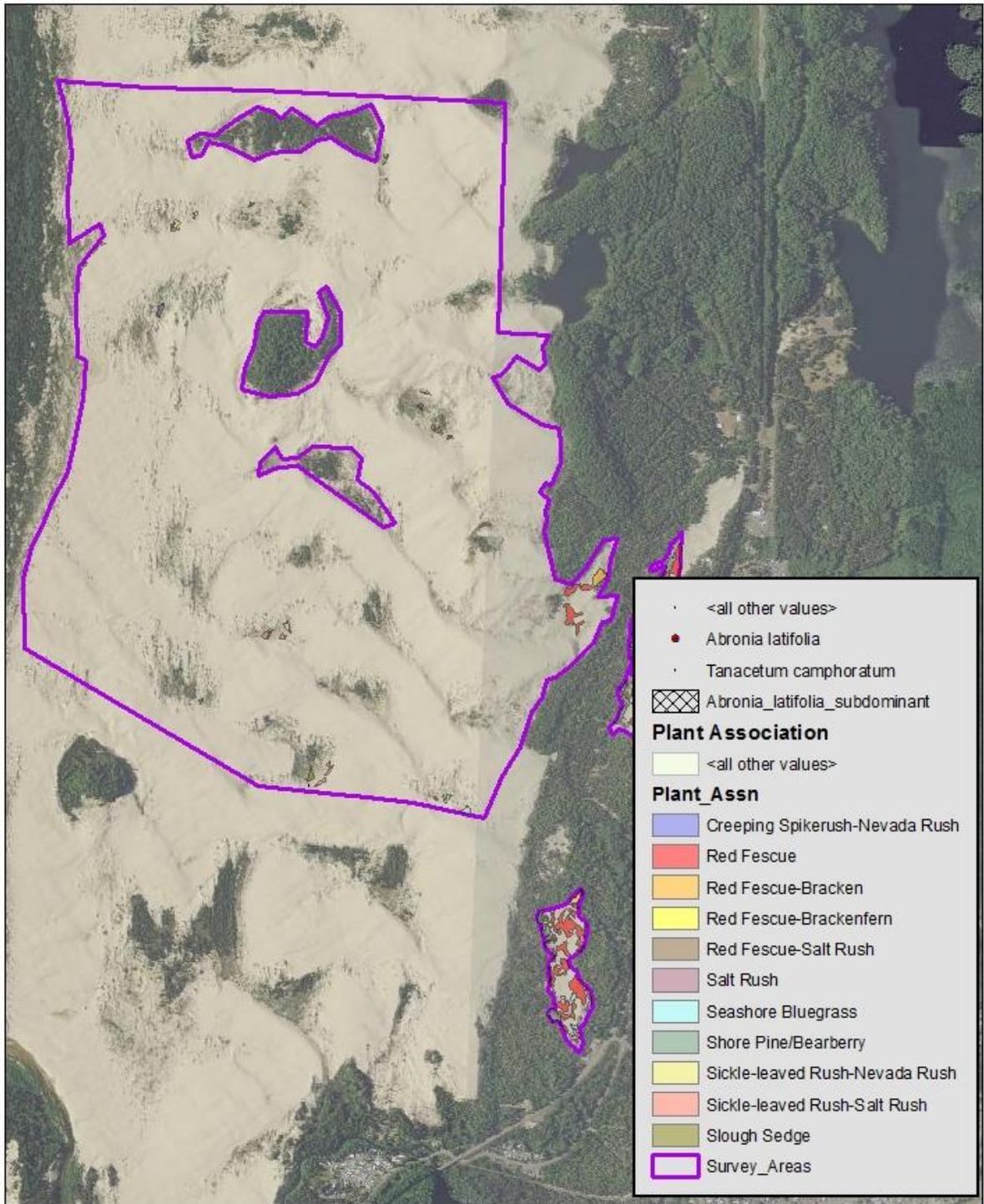
**Appendix A – MAPPED PLANT COMMUNITIES AND TIGER BEETLE HABITAT**

**Horsfall Survey Area - 88 Acres**



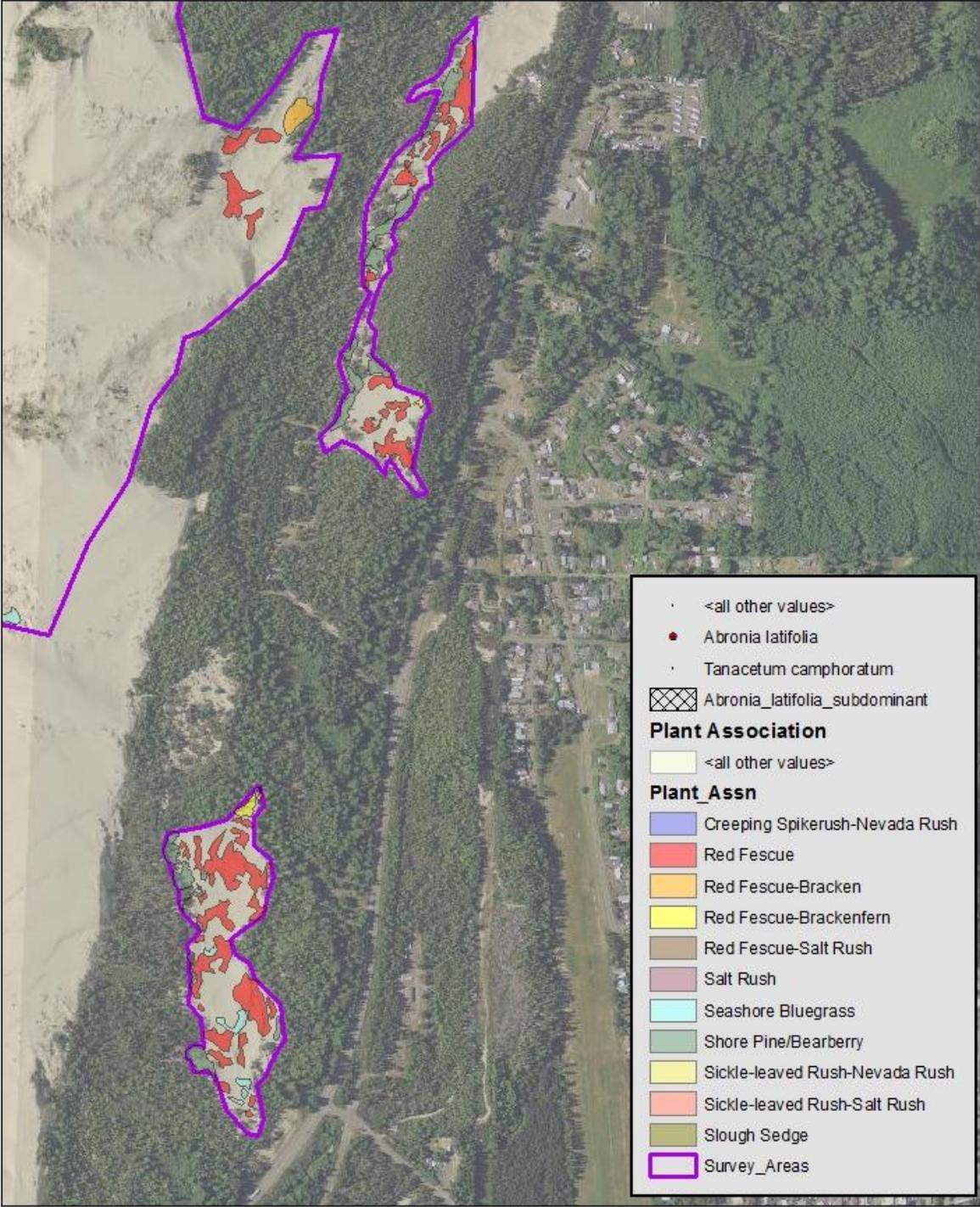
0 0.05 0.1 0.2 0.3 0.4 Miles

# Ten Mile Survey Area - 978 Acres



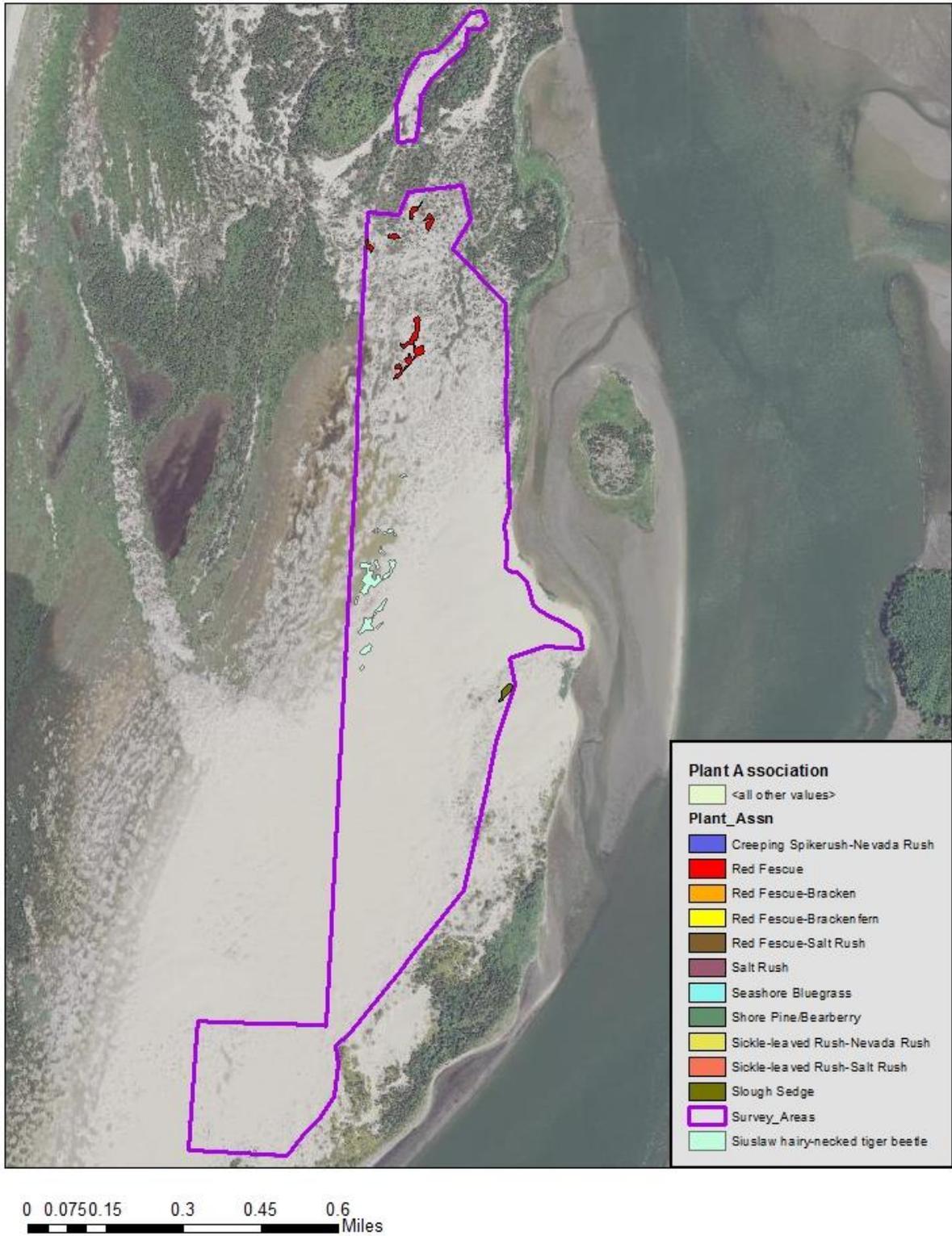
0 0.1 0.2 0.4 0.6 0.8 Miles

# Eel Creek Survey Areas - 28 Acres

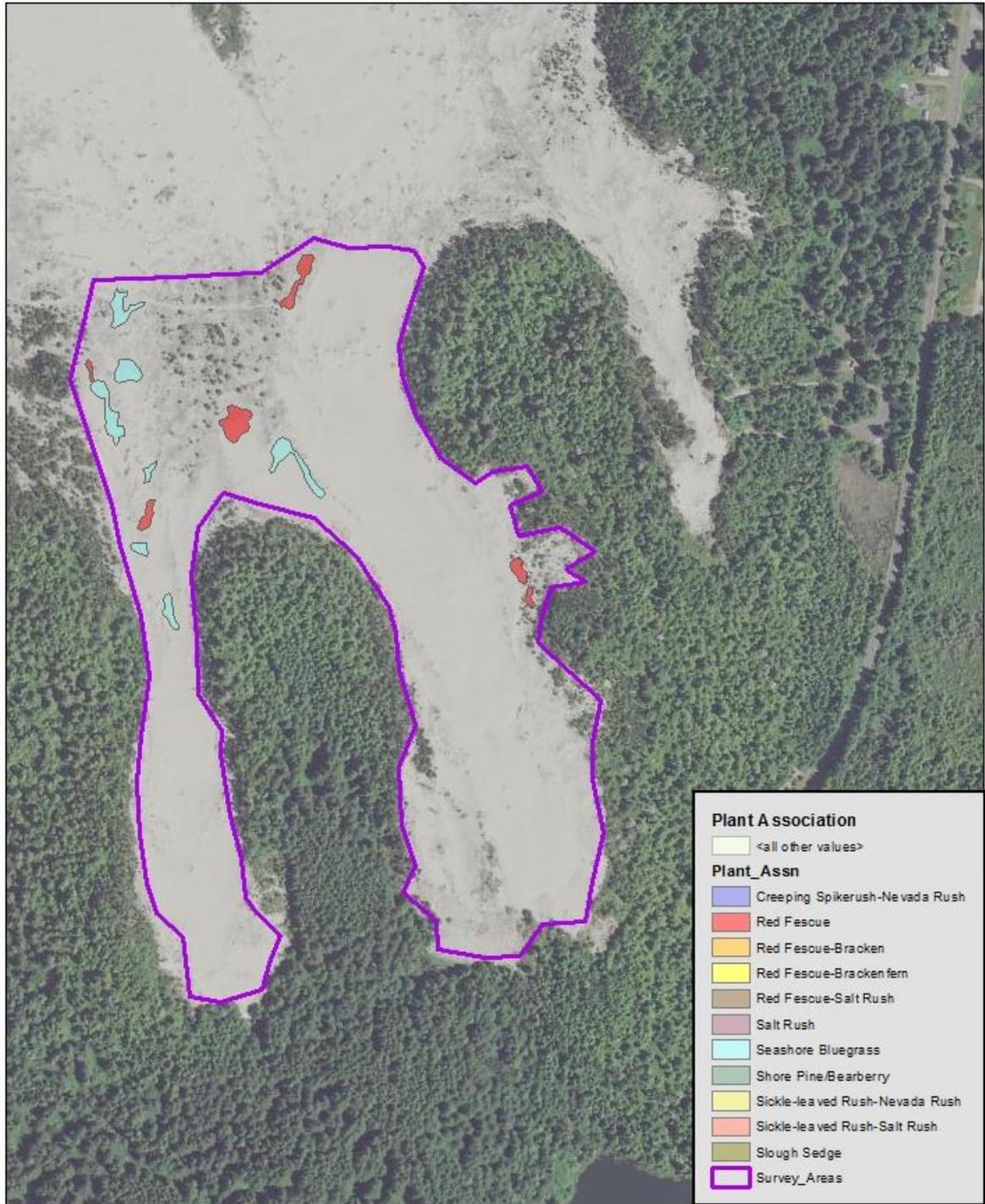


0 0.05 0.1 0.2 0.3 0.4 Miles

# North Spit Umpqua Survey Areas - 325 Acres

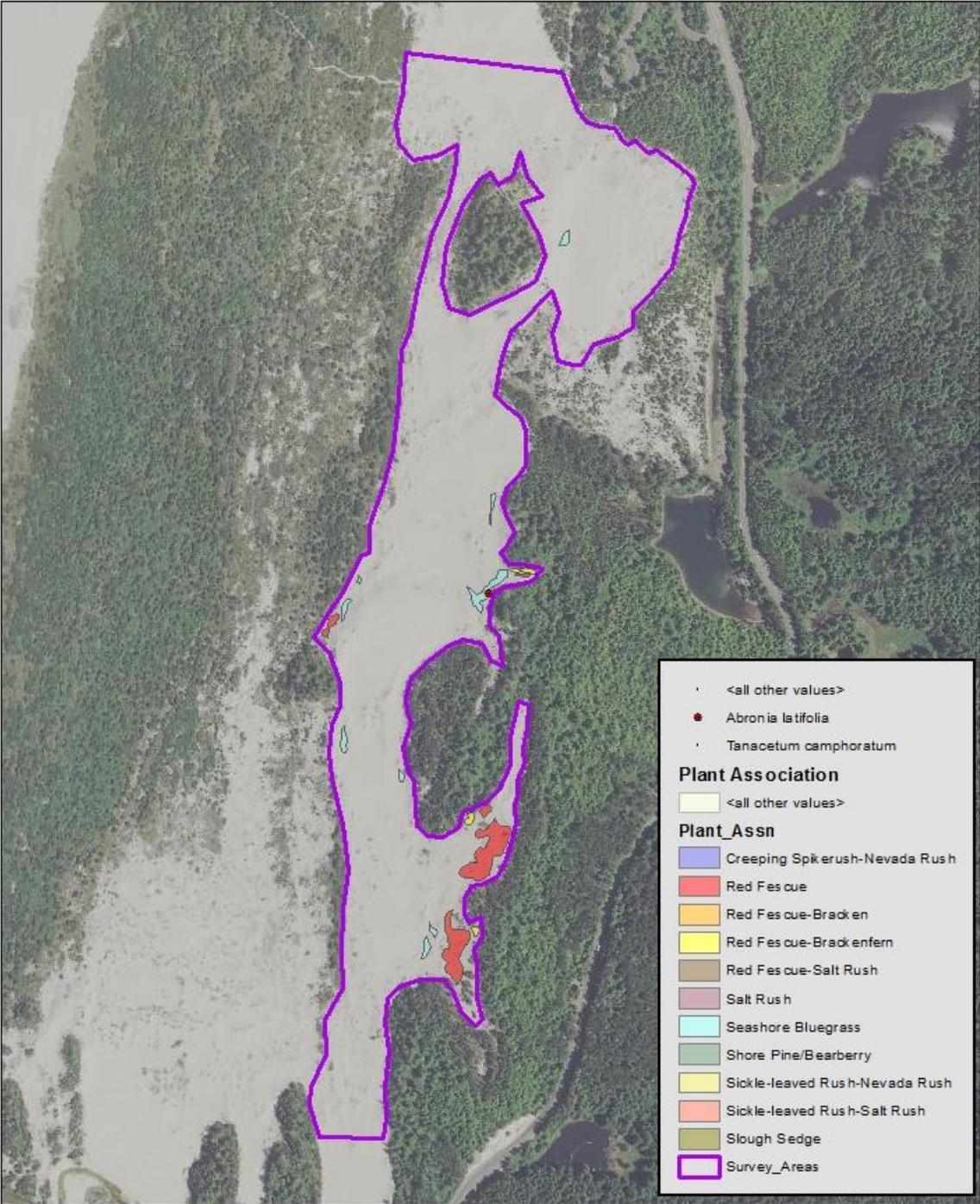


# Tahkenitch Survey Area - 65 Acres



0 0.035 0.07 0.14 0.21 0.28 Miles

# Overlook Survey Area - 90 Acres



0 0.05 0.1 0.2 0.3 0.4 Miles