

# **INVENTORY OF *CRYPTANTHA LEUCOPHAEA* IN THE JUNIPER DUNES, FRANKLIN COUNTY, WA**

## **Report to the Interagency Special Status/Sensitive Species Program for FY06**

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*Cryptantha leucophaea* (gray cryptantha) is a regional endemic, known from the Columbia and lower Yakima Rivers in the western Columbia Basin, from Wenatchee, WA to The Dalles, OR. In WA, the species is currently known from Benton, Franklin, Grant, Kittitas, Walla Walla, and Yakima counties and historically Douglas County. It occurs in the Columbia Basin physiographic province. The taxon is basically restricted to sand dunes that have not been completely stabilized, i.e., areas where there is still some movement of sand. It would appear to be dependent on the strong winds of the region and the availability of open sand. The narrow habitat requirements and the loss of habitat (including the potential future loss) are primary factors in the status of this species. The plant is a State Sensitive, and a USFWS Species of Concern.

Estimates of the abundance of *C. leucophaea* in the Juniper Dunes have varied. A report in April-May 1978 described it as “locally abundant”, occurring “sporadically over most of the Juniper Forest exclosure and on adjacent land outside the exclosure” (Stockdale 1978). Three years later, a survey by a BLM botanist resulted in sightings of fewer than 100 plants (Camp 1981). However, in 1991, a survey reported that the plant “occurs in small isolated groups of 20-100 plants and also in large groups of several hundred plants” (Mastrogiuseppe 1992). Our own surveys in 2003 found fewer than 100 plants, generally in groups of 1-4, with occasional patches of 6-11. In addition, most populations were associated with “skeletons” recognizable as dead gray cryptantha plants.

It appears that the plant may be declining in the Juniper Dunes Wilderness, one of the few (if not the only) places that it receives some protection. The Wilderness is fenced, and disturbances by livestock and OHVs (Off-Highway Vehicles), common outside the Wilderness, are largely absent within its boundaries. Our objectives for the 2006 study were to attempt to locate as many of the historic (1981 and 1991) records as possible, revisit the sites recorded in 2003, and permanently mark sites for an ongoing monitoring program.

### **METHODS**

Field visits to the Juniper Dunes Wilderness in Franklin County, WA, were made on April 24 (which turned out to be too early for flowering), May 15-17 and May 22-24, 2006. Visits were limited to the northern end of the Wilderness, as the majority of *Cryptantha leucophaea* sites reported for the Juniper Dunes are located in that area. Twenty historic site records came from Washington Natural Heritage Program data; thirteen of those were reported in 1981, four in 1991, and the date was unknown for the

other three sites. Thirty-one sites were recorded by the investigators during their 2003 visit.

In 2006, we attempted to locate sixteen of the historic WNHP records, based on estimated GPS coordinates, because the locations were originally recorded on a topographic map. Four other historic sites were not visited because of time constraints. All 31 of the sites recorded in 2003 were visited in 2006.

When *C. leucophaea* plants or skeletons were found, we first determined the general extent of the site. The site was marked with a white fiberglass stake, driven well into the ground, and an aluminum tag indicating the site number was attached to the stake. We recorded compass direction and distance from the stake to one or more nearby landmarks such as juniper trees or large shrubs. Another aluminum tag with the site number was attached to one such landmark at each site. Each site was also photographed, with the stake included in the photograph; where feasible, a recorded landmark was also included in the photo. Compass orientation of the photograph was noted. A GPS unit was used to determine the coordinates of each stake and of the “corners” of a polygon delineating the extent of the cluster of plants. We attempted to use a Trimble GeoXM to collect GPS data, but because of technical difficulties, some data were collected with a Garmin eMap GPS unit.

At each site, all living *C. leucophaea* plants and all dead plants that were identifiable as *C. leucophaea* “skeletons” were counted. The live plant that was the furthest from the stake was determined, and its distance and direction from the stake were recorded. Associated plant species were listed, and cover classes for overall vegetative cover, *C. leucophaea* cover, and bare ground were estimated. Landform, slope, and aspect were recorded. The data were entered into an Access database, and into GeoBOB.

## **RESULTS**

### Revisits to Historic (Pre-2003) Sites

Living *C. leucophaea* plants, eighteen in all, were found at, or near, four of the historic sites. Three of those sites also had one or more *C. leucophaea* skeletons. Twelve of the historic sites had no plants and no skeletons. Two of those historic locations were noted as lacking suitable habitat (vegetation very dense) and one of them had habitat only in small patches, although the habitat may have been more open at the time these sites were originally reported (1991). Four historic sites were not visited because they were too distant to be reached in the time available.

### Revisits to 2003 Sites

Twenty-five of the thirty-one sites recorded in 2003 were found to have living *C. leucophaea* plants and/or *C. leucophaea* “skeletons”. In two instances, two records were very close together, and were combined into a single site at this revisit, leaving 29 sites. Fifteen of those sites had living plants present; nine had only skeletons. The other five had neither plants nor skeletons; three were located in areas of what appeared to be appropriate habitat, and the remaining two were in areas that lacked appropriate habitat.

Of the 29 sites that were visited in both 2003 and 2006 (including those that had neither plants nor skeletons present in 2006), 21 showed a decrease in the number of living plants, five showed an increase, and three sites had the same number of plants in both years (a single plant, in each case). A nonparametric sign test for paired data showed that the difference between the two years is significant at  $p=0.01$ . The total number of living plants found in 2006 at those sites was 41, compared to 93 in 2003.

#### New Sites

Thirteen new *C. leucophaea* sites with one or more living plants were found, which included a total of 51 plants. These are not necessarily newly colonized sites; they may have been occupied in 2003 (and prior years) but were not previously encountered by the surveyors.

In all, 41 locations were marked, and a total of 110 living gray cryptantha plants were observed in 2006.

#### Habitat Characteristics

*C. leucophaea* plants were found on slopes ranging from 2 to 68%. Plants occurred on all aspects. North facing slopes were slightly favored (14 of 41 sites); east, south, and west facing slopes were represented nearly equally (8, 9 and 10 sites respectively). With a single exception, the sites occurred on upper slopes and ridgetops, rather than lower slopes.

*C. leucophaea* cover was less than 1% at all sites. Total vegetative cover fell most frequently (24 sites) into the 6-10% class; twelve sites had 11-25% total cover. All but three sites had 76-100% bare ground, and only one site had over 1% cover of soil crusts.

The plant species most commonly associated with *C. leucophaea* was *Achillea millefolium* (34 of 41 sites). *Comandra umbellata* occurred on 20 sites and could be considered a more meaningful indicator than the ubiquitous *A. millefolium*. Other common associates included *Bromus tectorum* (23 sites, though not at high density), *Chrysothamnus viscidiflorus* (22 sites), *Koeleria micrantha* (20 sites), an annual *Festuca* (18 sites), *Poa secunda* (17 sites), and *Rumex venosus* (16 sites). *Purshia tridentata* shrubs frequently occurred on or near the sites, and juniper trees were often present downslope from *C. leucophaea* patches.

### **DISCUSSION**

Observations of skeletons in 2003 led us to consider whether the *C. leucophaea* population in the Juniper Dunes Wilderness was declining. Data from 2006 appear to support that hypothesis, but additional data over a period of years are needed to determine if that is truly the case. Although Hitchcock *et al.* (1959) describe it as a perennial, there is no information available on the lifespan of individual plants. A number of perennial plants also exhibit "prolonged dormancy", producing no aboveground growth for one or more years, then reappearing in a subsequent year (Lesica and Steele 1994). It is possible that *C. leucophaea* populations have a rapid turnover of individuals, or that the plants experience prolonged dormancy; either could result in high year-to-year

variation in the number of individuals observed. The establishment of monitoring sites in 2006 provides an opportunity for further study of the Juniper Dunes population. We will not be able to monitor it every year, but are hoping to revisit the sites every two or three years, and perhaps enlist the assistance of volunteers in a monitoring program.

## **REFERENCES**

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Juniper Dunes Wilderness *Cryptantha leucophaea* locations through 2006.

