

## **Golden Fleece (*Ericameria arborescens*) Site Visit**

7 October 2020

T39S R13W Sec. 15 W.M.

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### **BACKGROUND**

Golden fleece is a Bureau Sensitive special status species. It is a member of the Aster family and is endemic to California and southwest Oregon. In a report on Golden Fleece from 1993 (Zika), only three sites were known in Oregon although it is much more widespread in California. One of the Oregon sites was on BLM lands near Bosley Butte in Curry County and the other two sites were on the Rogue Siskiyou National Forest in Curry County. All plants grow on hot, dry slopes with a southeast, south or southwest aspect and are found between 1200-2650 feet. These plants usually occur on steep road banks, at the margin of chaparral or forests, both above and below the roadbed. The Bosley Butte site was probably colonized after a wildfire, when the slope was sunny and open. As the forest grew up the open habitat this species needs has shrunk and now the only remaining habitat is along the 39-14-14.0 road in a large turnout, about 0.5 miles west of the turnoff to Bosley Butte (39-14-15.0 road) in T39S R13W Sec. 15, the NE $\frac{1}{4}$  of the NW $\frac{1}{4}$ .

On 13 May 1999, in a report from Colin Dillingham from the USFS out of Brookings, two populations were noted. One was along the 39-14-14.0 road about 0.5 miles west of where the spur road (39-14-15.0 road) goes up to Bosley Butte. This population consisted of seven plants, four dead ones and three declining individuals. Another subpopulation was located along the 39-14-14.0 road further west in Section 16 (Dillingham lists these plants as 0.95 and 1.0 miles, perhaps west of the spur road to Bosley?) also along the road with two dead plants and only one live plant. Thus, the entire population was only four live plants at these two Bosley sites in 1999.

### **SITE VISITS IN 2011**

The site near Bosley Butte was visited again on 15 August 2011 by Tim Rodenkirk. The only recently known location for golden fleece is a large road turnout about 0.5 miles west of the Bosley Butte turnout. This was where seven live plants were seen in 1999. There was only a single plant at this site, and it seems to be declining but was ready to flower. No other plants were noted on that visit.

On the 14 September visit, while driving to Bosley Butte, two additional plants were found along the 39-14-14.0 road. One plant was about 100 feet east of the old landing along the 29-14-14.0 road where the single plant was seen on the August visit and the other plant was another 250 feet further east along the same road. Both plants were on edge of the roadbed on the downhill side

of the road. Blue and white polk-a-dot flagging was hung from knobcone pine trees directly adjacent to both plants.

No other plants were noted along the road. Thus, the eastern population that Colin Dillingham referred to in his 13 May 1999 report that had seven plants now has three plants. The western subpopulation that had a single live plant seems to not be existent anymore.

UTMs for the three plants (all NAD 83):

Old landing turnoff: N4672982 E398320

Site just east of old landing turnoff 100 feet or so: N4673002 E398359

Other site an additional 250 feet past the other roadside site: N4673008 E398424

In addition to the golden fleece, there were at least 20 Howell's manzanita shrubs (*Arctostaphylos hispidula*) growing in the old landing turnout area and probably another 50 to 100 in the surrounding steep, rocky area bordering the site (within ¼ mile of the old landing turnout). This is also a Bureau sensitive special status plants species.

#### SITE VISITS IN 2012

All three plants were found again in 2012 in the same locations and all three were flowering on 11 September during the visit. No new plants were located.

#### SITE VISIT IN 2013

On 6 September 2013 the site was revisited. The western most plant at the turnoff was still alive, but only the bottom of the plant was alive, the top of the plant looked as though it had died off- this plant is obviously declining in health. The plant just east of here along the road was still doing OK and was flowering. The furthest east plant along the road had unfortunately been pulled up by the roots and was long dead along the road. I speculate road grading was the culprit.

I brought a few small, artist paintbrushes with me and attempted to cross pollinate the two remaining plants. The future of these two remaining plants looks dim, given that there has been no reproduction in years and that the open habitat they seem to need has disappeared as the site has grown over with knobcone pine, manzanita and other competing herb and shrub species. I suspect that the two remaining plants will die in the not so distant future and this site will be extirpated, waiting for the next wildfire to potentially once again become established.

## SITE VISIT IN 2014

On 4 August the site was revisited. The western most plant was still alive and beginning to flower. The top of the plant is dead as noted in 2013. The plant just east of here was flowering and looked healthy. No other plants were found.

As mentioned in 2013 report, with only these two plants remaining, the species has a very low probability of surviving for many more years at the site. The plants do not seem to be reproducing and the open habitat these plants once had has become overgrown with various shrub and tree species. This species likely became established after a fire in the past and would need another fire to open up habitat and stimulate reproduction. Given the proximity of the communication site, and the mid-slope location of the habitat, a prescribed fire in the area is not an option. Thus, it appears that this species will likely die out at the site.

## SITE VISIT IN 2015

The site was visited later this year, on 10 October 2015. Both plants from 2014 were still alive. In addition, they were both flowering and appeared to have seed on many of the flower heads. Since this species has not successfully reseeded in many years, I decided to collect seed heads from the two remaining plants. I spread the seed in open areas near the existing plants, mainly along the uphill road cut and in the turnoff area where the one plant is located. We'll see in following years if any additional plants re-sprout. Without new recruitment, these two plants will eventually die, and this species would be extirpated from the site.

## SITE VISIT IN 2016

The site was visited on 9 September 2016. Both plants were still alive. I saw no sign of any reproduction at the site although I had scattered seed from both plants in October 2015. I expect without recruitment or a wildfire, this species will likely die out at the site within a few years.

## SITE VISIT IN 2017

In late August of 2017, the Chetco Bar Fire, located within the Kalmiopsis Wilderness, blew up and made a 100,000+ acre run to the west in just two days and burned over Bosley Butte (very close to this site) and the area where the golden fleece was located. On the 1 November 2017 site visit there was no sign of either of the two remaining golden fleece plants and the area had been completely burned over. As discussed in past reports, there has been no sign of recruitment (young plants) from the two remaining plants in many years. These two plants would have likely died out in a few years and so the wildfire, while a tragedy for many people in this area, was perhaps a blessing for this tiny golden fleece population which was on the edge of extirpation. The Siskiyou National Forest has used control burns to help increase their populations of this

species, perhaps this wildfire will have the same effect on the (former) population at this site. In the next few years, the area in and around this site should be closely checked for young plants.

#### SITE VISIT IN 2018

The site was visited on 27 and 28 September. Much to my shock, there were over 500 plants at the site- ranging in size from a centimeter to about 50 cm in height, some of which were even beginning to flower! Most of the regeneration occurred right next to where the two remaining plants were burned over during the Chetco Bar fire in 2017. The location of the regeneration is as follows:

At the far end of the road turnoff where one of the two remaining plants was before the 2017 Chetco Bar wildfire there were approximately (ocular estimate) 475 young plants ranging in size from one cm to about 15cm. This patch of young plants was about 20 meters by 4 meters. UTM's (all NAD 83): N4672976 E398317, elevation 2,620 feet.

Below the main road, just east of the turnout was a single plant. UTM's: N4672996 E398339, elevation 2,630 feet.

Where the other surviving plant along the road was located in 2016 there were approximately 65 plants (Figures 6-7). Three large plants (20+ cm) were located on the cut bank below road, 37 were just off the road, and 25 were located on edge of road or were actually growing in road- these in-the-road/roadside plants will likely be killed by vehicular traffic or road grading (the latter which occurs irregularly and is the reason a plant was killed back in 2013). This patch of young plants was about 10 meters long and two meters wide. Two of the larger plants (20+ cm tall) had small flower heads forming. UTM's: N4672998 E398351, elevation 2,630 feet.

Another small single plant (just a few cm in size) was located on the edge of the road further east. UTM's: N4673008 E398420, elevation about 2,650 feet. This is close to where a third plant was located in 2012 that was found dead in 2013 (see 2013 summary above).

Another larger, single (over 10 cm) was found above the road just past the last single. UTM's: N4673017 E398433, also about 2,650 feet in elevation.

A second single plant was located above the road at UTM's: N4673005 E398403, elevation around 2,650 feet. This plant was small and only about a centimeter in height.

No live plants had been observed above the road since the 1999 report by Colin Dillingham (see background section).

## SITE VISIT IN 2019

The many plants found in 2018 after the site was burned over in 2017 by the Chetco Bar fire were doing quite well. An ocular estimate of the site found a whopping 691 plants, an increase of almost 200 from last year. The majority of the plants were not flowering, however; there were some huge plants (up to 60 cm tall) that were flowering.

The location of the plants is as follows:

At the far end of the turnout (the western most plant location) there were approximately 600 plants over a very large area of 60 meters by 10 meters. Most plants were not reproductive- about 20 were flowering. The main axis of this ellipse shape is straight east/west and it runs from the back of the turnout down a ridgeline with the furthest plant 60 meters out and flowering! The further out plants are growing underneath the totally scorched knobcone pine forest which has already started to grow back and will eventually overtop and kill the golden fleece. The plants in the turnout area had no tree cover so this area will likely harbor plants longer if the site is protected from other disturbances. The bulk of the 600 plants are at the back of the turnout area though which is on the east end of this ellipse shaped population. UTM: N4672998 E398351, elevation 2,630 feet at the back of the turnout area.

Below the main road, just east of the turnout was a single plant. UTM: N4672996 E398339, elevation 2,630 feet. This plant is large and was flowering.

Just past this plant is a large group of plant about 30 meters long by two meters wide, many of the plants growing on or next to edge of the main road. There were 83 plants counted- 75 on or adjacent to edge of road and eight below the road. 15 of the 83 plants were reproductive (flowering). The road here has not been graded in years. If and when it gets its next grading, many of these plants will be killed unless somehow protected from the grading. UTM: N4672998 E398351, elevation 2,630 feet.

Where a small single plant (just a few cm in size) was located on the edge of the road further east in 2018 there were two large, reproductive plants. UTM: N4673008 E398420, elevation about 2,650 feet. Both these plants would also likely be killed if the road was graded.

Two new plants were located a little further east, one large and reproductive below the road and the other smaller and on edge of road and not reproductive, UTM: N4673008 E398428. The plant off the road is safe from grading but the one on the edge of the road is not.

Where a single large (over 10 cm) plant was found above the road in 2018 there were now two plants- one reproductive and one not. UTM: N4673017 E398433, also about 2,650 feet in elevation. These plants are on the cut bank out of the range of any road grading.

Another plant that was located above the road in 2018 was doing OK but not reproductive at UTM's: N4673005 E398403, elevation around 2,650 feet.

In summary, 691 plants were counted using an ocular estimate. About 5% of the population was reproductive. It will be interesting to see if these plants can successfully reproduce in the next few years or if they mainly do only after fire? Knobcone pine regeneration is thick so many of these plants will have a limited life span as they get more and more crowded out by a new, young knobcone pine forest. The other threat is the location of many of the plants- along the edge of the road where a road grader could kill them easily. Obviously, this fire dependent species has a cyclic population, peaking after fire, then slowly dying out but depositing many seeds in the soil which may wait many years to germinate until the next fire comes through.

On 8 November I revisited the site and put in seven fence post, three with sensitive plant habitat signs, to protect this species from inadvertent damage. The many plants located at the back end of the turnout could inadvertently be destroyed if this area was used as a waste site from a road renovation project, so I put up a sign there. I also put six more signposts along the road. This are close enough to the edge to not be hit by passing vehicular traffic but will alert a roadside grader to stay away from this portion of the road if and when the road gets some improvement again in the future. This portion of the road use to be used a lot to access the Bosley Butte Communication Site (the turnoff to the spur road up to that site is just a half mile east of this site), but now most people access the Bosley Butte Communication site from the east side (Hazel Camp Road off of Gardner Ridge Road) and forego travel on this deteriorating road to the west of the Bosley Butte turnoff. I highly recommend getting to the golden fleece site from the Hazel Camp side since the road to the west is in such poor shape.

## **SITE VISIT IN 2020**

The many plants observed in 2019 were doing quite well. Many of the smaller plants had merged into larger clumps making a population estimate difficult. However, the entire population looked like it was doing great and several new plant locations were discovered so I expect the population may have actually increased since 2019. That means that the total population is 700+ plants. Many of the plants had grown large and had flowered- about a quarter to half of the population.

The location of the plants is as follows:

At the far end of the turnout (the western most plant location) there were approximately 600 plants in 2019 over a very large ellipse-shaped area of 60 meters by two to 10 meters. Most plants were not reproductive in 2019 but about ¼ of these plants were flowering this year. Many of the smaller plants in the back of the turn off had grown together and there are now quite a few

larger clumps that have grown together- most of which were flowering (**Figure 1 & 2**). In addition, just to the south of the back end of the turnout, down a steep hill, there were at least three, large flowering plants growing in a draw with the furthest plants about 20 meters down the draw (**Figure 3**). The population includes the entire back end of the road turn off and runs 60 meters southwest in a narrow band of just a couple meters wide along a ridgeline. Much of this ridgeline area and the steep downhill area behind the turnoff is in an old, forested area and will likely quickly become overgrown with young knobcone pine in the next five to 10 years. UTM: N4672998 E398351, elevation 2,630 feet at the back of the turnout area.

Below the main road, just east of the turnout was a single plant. UTM: N4672996 E398339, elevation 2,630 feet. This plant is large and was flowering (**Figure 4**).

Just past this plant is a large group of plants about 30 meters long by two meters wide, many of the plants growing on or next to edge of the main road (**Figure 5**). There were 83 plants counted- 75 on or adjacent to edge of road and eight below the road in 2019. Many of these smaller plants had merged into larger clumps so an exact population number was impossible to determine. The road here has not been graded in years. If and when it gets its next grading, many of these plants could be killed unless somehow protected from the grading. That is why five fence posts were put in this area along the edge of the road in November of 2019. Two of the signposts were missing and there was no evidence of what happened to them (they could not be located downhill). The three remaining signposts still offer protection from future road grading if it were to occur. UTM: N4672998 E398351, elevation 2,630 feet.

Where two large, reproductive plants were located in 2019 there was also a smaller nonreproductive plant. UTM: N4673008 E398420, elevation about 2,650 feet. These plants would also likely be killed if the road was graded so the nearby signposts should help prevent injury.

Further east there is one large flowering plant below the road and another smaller plant on edge of road, UTM: N4673008 E398428. These are in the same location as 2019. The plant off the road is safe from grading but the one on the edge of the road is not.

A new large flowering plant was found just off the edge of the road, UTM N46703015 E398436. There is a fence post here which should help protect it from a road grader (**Figure 6**).

A new plant was located **above the road** at UTM: N4673025 E398456 and was large and had flowered (**Figure 7**).

Two new plants were observed **above the road** at UTM's N4673021 E398446, both were flowering. The top plant was about 10 feet above the road on flatter ground on the top edge of the road cut bank.

The two plants located **above the road** in 2019 at UTM's: N4673017 E398433 were both large and reproductive. These plants are on the cut bank and thus out of the range of any road grading but could be harmed if there was roadside brushing (**Figure 8**).

The plant **above the road** in 2019 located at UTM's N4673005 E398403 was now large and had flowered.

A series of 14 new plants were found **above the road** at UTM's N4673011 E398344. They run up the hill about 10 meters. About 10 of these were larger and had flowered.

In summary, all the plants seen in 2019 were doing well. In addition, five new plant sites were located along the 39-14-14.0 road east of where the turn off is- the same general area plants were located at in 2018 and 2019. Many more plants were reproductive in 2020, with  $\frac{1}{4}$  to  $\frac{1}{2}$  of the population flowering this year. Knobcone pine regeneration is thick off the road and turn off where some of the golden fleece plants are located. so many of these plants will have a limited life span as they get more and more crowded out by a new, young knobcone pine forest. The other threat is the location of many of the plants- along the edge of the road where a road grader could kill them easily. Hopefully, the fence posts will help protect these roadside plants. The 39-14-14.0 road west of the Bosley Butte Road (39-14-15.0 Road) is not used much anymore and is in a state of disrepair. There are plants coming up in the road, many rocks on the road, dead trees that have fallen across the road (and been removed), as well as lots of ruts and holes. Because of this, the main access to Bosley Butte Communication site is from the east end of the road instead of the west end. Coming into this site is thus best from the longer east side access on the 39-14-14.0 road.

Of the seven fence posts installed in November of 2019, five remained. More may have to be installed in 2021 if any of these five posts disappear.

Obviously, this fire dependent species has a cyclic population, peaking after fire, then slowly dying out but depositing many seeds in the soil which may wait many years to germinate until the next fire comes through. Those areas along the 39-14-14.0 road and in the large road turnout at the site will remain open longer and will be where this species persist the longest, until the next fire comes through. On the 7 October 2020 survey visit I pulled or cut as many small knobcone pines as I could in the road turn off and along the 39-14-14.0 road where they were close to golden fleece plants. Removal of tree and competing veg species should be done at each visit in these areas to maintain the open habitat that the golden fleece needs. Of course, off the

road and outside the turn off site, the forest and competing shrubby vegetation will quickly overtake and kill off the golden fleece plants- probably within just a few years.

## **RECOMMENDATIONS**

- Monitor this site annually for the next few year's carefully recording plant numbers and looking for additional reproduction. The plants growing on or directly adjacent to the edge of the road may not survive long particularly if the road is graded (it has not been in several years). Those off the road, either above the road or a little way downslope from the edge of the road, will likely have a better chance for survival but face competition from competing vegetation. Plants above the road could be impacted if the road was brushed at some future point (seems unlikely now).
- Completing monitoring visits in September when plants are flowering and easier to see, or in early October when they are still flowering and may have seed heads present. The bright yellow flowers make finding plants easier. This was also recommended by the Zika report from December of 1993.
- As other plants begin to grow back at the golden fleece sites remove competing vegetation as needed so that the golden fleece plants thrive. This will likely include removing young knobcone pine seedlings/saplings close to the golden fleece. There were thousands of knobcone seedlings in the burn area around the golden fleece sites on the 2020 visit. Many seedlings were pulled or cut on the 2020 visit. Competing vegetation removal should be done each year as needed in the turnout area and along the road.
- Document and remove any invasive plants noted in the area. No invasives were noted on the 2020 monitoring visit.

## **DIRECTIONS TO SITE**

From Hwy 101 in Brookings turn onto the North Bank of the Chetco River road. Follow this 5.0 miles and turn left onto the Gardner Ridge Road. Follow this 6.9 miles and turn left off the pavement onto the graveled Hazel Camp Road. Follow this 3.4 miles to a 5-way intersection. Take the road with a gate (South Coast Gate Key needed). Follow this steep uphill 1.3 miles and stay right at intersection. Continue 0.1 miles to the Bosley Butte road turnoff but stay left on the 39-14-14.0 road. Continue 0.5 miles to turn off on the left- park here. The back of the turn off here is the heart of the population.



**Figure 1-** All the larger, bright green small plants in this photo are golden fleece plants. The photo is looking east to west across the back end of the turnout area. This is where one of the two remaining plants was located prior to the wildfire in 2017. The blackened trees in background are knobcone pines that were completely killed during the 2017 wildfire. Reproduction from these trees is also “thick” but many were hand-pulled from the turnout area on the 7 October 2020 visit. Also growing mixed in with the golden fleece are small hairy manzanita, yerba santa, and poison oak plants.



**Figure 2-** Another photo of the thick mat of golden fleece in the back end of the road turnout area on 7 October 2020 visit. In 2019 there were several hundred small plants in this area which have since grown larger and merged into these larger mats of golden fleece.



**Figure 3-** Plants growing south of the road turnout downhill in a small draw.



**Figure 4-** A large reproductive plant below the road where it is safe from road grading but will eventually have a lot of competition from the resprouting knobcone pine forest.



**Figure 5-** Remaining signposts protecting plants along the 39-14-14.0 road. In the background, the road turnoff is just downhill to the left of the truck.



**Figure 6-** A golden fleece plant located on edge of road behind a signpost.



**Figure 7-** One of the new plants discovered above the road- this is the furthest east plant. This plant was covered by yerba santa and hairy manzanita which was cut and removed.



**Figure 8-** One of the largest plants above the road. All the larger plants had or were flowering.