TAYLOR’S CHECKERSPOT BUTTERFLY (*EUPHYDRYAS EDITHA TAYLORI*) SURVEYS IN THE SIUSLAWS NATIONAL FOREST AND SALEM AND EUGENE BLM DISTRICTS

FINAL REPORT FROM THE XERCES SOCIETY TO THE INTERAGENCY SPECIAL STATUS SENSITIVE SPECIES PROGRAM

ASSISTANCE AGREEMENT L08AC13768, MODIFICATION 8

FIELDWORK, BACKGROUND RESEARCH, AND REPORT COMPLETED BY CANDACE FALLON, SCOTT HOFFMAN BLACK, MARGO CONNER, AND SARAH FOLTZ JORDAN

THE XERCES SOCIETY FOR INVERTEBRATE CONSERVATION

JULY 17, 2013
CONTENTS

Summary ........................................................................................................................................... 3
Introduction .......................................................................................................................................... 3
Survey protocol .................................................................................................................................... 4
  Site selection ...................................................................................................................................... 4
  Survey period .................................................................................................................................... 4
  Sampling methodology ..................................................................................................................... 5
Sites surveyed and survey results ....................................................................................................... 6
  April 26, 2013: Benton County sites (Appendix IV, Figure 2) ............................................................. 6
    Site 1 - Maxfield Meadows #1 (Salem District BLM) ...................................................................... 6
    Site 2 – Maxfield Meadows #2 (Salem District BLM) ................................................................. 7
    Site 3 – Forest Peak ACEC (Salem District BLM) ....................................................................... 7
    Site 4 – Mill Creek Proposed ACEC (Salem District BLM) .......................................................... 8
  May 2, 2013: Lane & Linn County sites (Appendix IV, Figure 3) ....................................................... 8
    Site 1 – Black Canyon (Eugene District BLM) ........................................................................... 9
    Site 2 – Horse Rock Ridge ACEC/RNA (Eugene District BLM) .............................................. 9
    Site 3 – McGowan Meadow (Eugene District BLM) .................................................................. 10
  May 3, 2013: Benton County sites (Appendix IV, Figure 4) ............................................................... 10
    Site 1 – Cedar Wind Ridge (Salem District BLM) .................................................................... 11
    Site 2 – Rickreall Ridge ACEC (Salem District BLM) .............................................................. 11
  May 11, 2013: Benton County sites (Appendix IV, Figure 5) ........................................................... 12
    Site 1 – Marys Peak #1 (Siuslaw National Forest) ................................................................... 12
    Site 2 – Marys Peak #2 (Siuslaw National Forest) ................................................................... 13
    Site 3 – Marys Peak #3 (Siuslaw National Forest) ................................................................... 13
    Site 4 – Marys Peak #4 (Siuslaw National Forest) ................................................................... 14
    Site 5 – Grass Mountain (Salem District BLM) ..................................................................... 15
Acknowledgements ............................................................................................................................................15
References ..........................................................................................................................................................16
Appendix I: Historic and extant E. e. taylori records in Oregon .....................................................................17
Appendix II: All sites surveyed in 2013 .............................................................................................................18
Appendix III: Potential sites to visit in future years .........................................................................................19
Appendix IV: Maps of 2013 Survey Sites ..........................................................................................................20
SUMMARY

Candace Fallon (Xerces Society) conducted surveys for the Taylor’s checkerspot butterfly (*Euphydryas editha taylori*) in April and May 2013 in the Salem BLM District (Marys Peak Resource Area), Eugene BLM District (Upper Willamette Resource Area), and Siuslaw National Forest (Waldport Ranger District). Survey sites spanned Benton, Polk, Linn, and Lane counties in Oregon. The primary purpose of these surveys was to determine whether *E. e. taylori* occurred on Forest Service (FS) or Bureau of Land Management (BLM) land near historic or extant Oregon localities. Over a 16-day period, approximately 100 person hours were spent surveying 14 sites in appropriate grassland habitats managed by the two agencies. No *E. e. taylori* were encountered during the surveys.

Black Canyon (Eugene BLM) and Grass Mountain ACEC (Salem BLM) should be revisited in the future. Of all the sites visited, Black Canyon has the most promising combination of required habitat characteristics, including abundant *Plantago lanceolata*, the known Oregon host plant for *E. e. taylori*. This site is within three to five miles of two historic sites. In addition, several large meadows on Grass Mountain should still be checked, as this site was ranked high priority by a BLM biologist but we were unable to reach the larger meadows due to time constraints. Marys Peak, a historic site, could also be revisited later in the season when more forbs are blooming. An additional eight sites were suggested by Forest Service and BLM biologists that could not be visited this year; these could be surveyed in future years and are listed in Appendix III. Survey priorities are provided based on proximity to historic populations, habitat characteristics, and the advice of Forest Service and BLM biologists and botanists.

INTRODUCTION

The Taylor’s checkerspot (*Euphydryas editha taylori*), also known as the whulge checkerspot, is a medium-sized butterfly in the Nymphalidae family. It is characterized by orange, black, and cream checkered wings. Of the four subspecies of *E. editha* in the Pacific Northwest, it is the darkest and also one of the smallest (Pyle 2002). The species can be differentiated by the “editha line” found on the ventral hindwing, which in *E. e. taylori* is sandwiched on either side by orange cells.

This prairie species was once known from over 70 grassland sites in the Willamette Valley, Puget Sound, and south Vancouver Island (USFWS 2010). Now, the species is restricted to nine scattered populations in Washington, two in Oregon, and one in British Columbia (Foltz 2012). This decline led the butterfly to be listed as endangered in Washington state and in Canada. It has recently been proposed for listing as an Endangered Species under the US Endangered Species Act (USFWS 2012).

In Oregon, Taylor’s checkerspot was formerly known from approximately 15 locations in Benton, Lane, and Polk Counties. By the late 1980s to early 1990s, the species was thought to be extinct in Oregon, until a new population was discovered in 1999. This spurred extensive surveys in the region, with one additional population discovered in 2004. Both extant populations are located within Benton County, and do not occur on land managed by the FS or BLM. All other known historic sites in Oregon have been lost. However, this subspecies is suspected on Forest Service and Bureau of Land Management land near historic locations.

Taylor’s checkerspots are univoltine, producing one brood per year. Adults emerge in April and May to mate and lay eggs. Caterpillars at extant populations in Oregon appear to feed exclusively on non-native narrowleaf plantain (*Plantago lanceolata*); in Washington, they are known to also use members of the figwort family.
(Scrophulariaceae). Suitable habitat includes not only the larval host species but also abundant and varied nectar sources for adults (Vaughan and Black 2002).

In April and May of 2013, Candace Fallon, Scott Hoffman Black, and Margo Conner (Xerces Society), with assistance from a Eugene BLM botanist and two volunteers, surveyed potential habitat on federal land near historic localities in Benton, Polk, Linn, and Lane Counties in Oregon.

**SURVEY PROTOCOL**

**SITE SELECTION**

Sites were selected by reviewing the historic and extant localities for *E. e. taylori* in Oregon (Appendix I) and determining whether or not similar habitat exists on BLM or FS land adjacent to these localities. We reviewed the known habitat associations and requirements for this subspecies across its range (summarized in Foltz 2012) and attempted to select sites that shared these associations. We consulted with Scott Hopkins (Salem BLM), Cheshire Mayrsohn (Eugene BLM), and Marty Stein and Joni Quarnstrom (Siuslaw National Forest) to select high quality sites that may share similar habitat characteristics and had not previously been surveyed for the target species. We also used herbaria records from the Oregon Plant Atlas to determine which areas may support potential host plants within the search range. Dana Ross, a Lepidoptera specialist based in Corvallis, checked extant populations of *E. e. taylori* to determine when adults emerged this year, and provided that information to us so that we could time our surveys accordingly.

Taylor’s checkerspots are known from grassland habitats with abundant host and nectar plants. Larvae feed on figworts (including *Castilleja* spp.) as well as native and non-native plantains (*Plantago* spp.). At the two extant sites in Oregon, the nonnative *P. lanceolata* is the only documented food plant. Larval host plant associations in Washington include *Castilleja hispida*, *C. attenuata*, *Orthocarpus pusillus*, *Collinsia grandiflora*, *C. parviflora*, *Plantago lanceolata*, *P. elongata*, and *Plectritis congesta* (Stinson 2005). We thought that it was reasonable to assume that the host plants used in Washington could potentially be used by newly discovered populations in Oregon. Nectaring occurs on a variety of flowers including spring gold (*Lomatium utriculatum*), strawberry (*Fragaria* spp.), mariposa lily (*Calochortus* spp.), common dandelion (*Taraxacum officinale*), and camas (*Camassia quamash*) (Hays et al 2000, Holtrop 2010). In Oregon, strawberry is the primary nectar source at extant sites (Ross 2005). Dandelion and mariposa lily are also used when plentiful.

Based on our literature reviews and consultations, we selected 10 areas to visit (14 sites total) between approximately 950 and 4,000 feet elevation. All of these areas are within approximately 2 to 14 miles of historic locations (see Appendix I for historic locations and mapping accuracy). An additional eight areas were also identified but not visited in 2013. These additional areas are listed in Appendix III and could be visited in future years.

**SURVEY PERIOD**

The flight period of *E. e. taylori* in Oregon generally occurs from early April to late May, with a peak flight in late April or very early May (Ross 2010), although each year’s climate, as well as elevation, influences the precise timing of the adult flight period for this and other butterfly species. This butterfly has been found at a wide range of elevations (from nearly sea level to 4000 ft.) across its range. To determine the best time to start surveying for the
species, we consulted with local lepidopterist Dana Ross to determine when *E. e. taylori* were flying at the two extant Oregon sites. Taylor’s checkerspots were first seen at Fitton Green (elevation ~560 ft.) on April 16 and at Beazell (elevation ~625 ft.) on April 18, 2013. However, the two extant sites are significantly lower in elevation than the lowest sites that we selected to survey (950-1680 ft.). Given the lower elevation of these sites, the weather patterns varying from very warm days to cool and rainy days, and our desire to survey during the peak flight period, we decided to begin surveying our lowest elevation sites ten days later, on April 26, 2013. Four days were spent surveying potential sites during our estimate of the peak adult flight period. Our final survey day was May 11, 2013, at the highest elevation sites (3500-4000 ft.).

**SAMPLING METHODOLOGY**

Candace Fallon (Xerces Society) completed surveys for *E. e. taylori* between April 26 and May 11, 2013, with the help of Scott Hoffman Black and Margo Conner (Xerces Society), Cheshire Mayrsohn (Eugene District BLM), and two volunteers (Ramona Flatz and Lara Drizd). At each site, there were between two and three surveyors.

We followed the general Lepidoptera and species specific survey protocols for *E. e. taylori* developed by Foltz (2012). Surveys took place between the hours of 10am and 6pm on sunny, still days with minimum temperatures above 15.5 °C (60 °F). Once we arrived at the meadow or grassy bald, we looked for key habitat characteristics such as available host plants (*Plantago* or *Castilleja*), potential nectar species (including *Fragaria*, *Calochortus*, and *Lomatium*), and short-stature grasses (such as fescue). We spent a minimum of 20 minutes (except at one small site, at which we spent 10 minutes) slowly walking through each site, determining whether it had the appropriate plant communities and looking for adult butterflies. Any suspected Taylor’s checkerspots were netted for identification. Survey times varied depending on the size of each site, ranging from 10 minutes to nearly two hours.
A summary table of historic and extant *E. e. taylori* localities in Oregon is provided in Appendix I. See Appendix II for a table of 2013 survey sites and Appendix IV for maps of each survey area. Below, we provide photos and a description of each site visited.

**APRIL 26, 2013: BENTON COUNTY SITES (APPENDIX IV, FIGURE 2)**

On April 26, C. Fallon and S. H. Black surveyed the lower elevation sites (between 950 and 1680 feet) in Benton and Polk Counties.

**SITE 1 - MAXFIELD MEADOWS #1 (SALEM DISTRICT BLM)**

**SURVEY TIME: 11:00 AM – 11:50 AM.**

At Maxfield Meadows #1, we searched an expanse of dry, steep meadows. Plants in bloom included buttercup, *Lomatium* (sparse), and *Camassia* spp. Approximately five *Plectritis congesta* plants were found at the base of the meadow where the soil was moister. Thistle was abundant at the top of the hill, by the tree line. The only butterflies seen were silvery blues (*Glucopsycha lygdamus*). No Taylor’s checkerspots were observed and the only potential host plants found were the five *Plectritis congesta*. There are additional meadow areas to the west of our survey site that could be checked in the future, but at this time we do not think a revisit to this site is necessary.
SITE 2 – MAXFIELD MEADOWS #2 (SALEM DISTRICT BL)M

SURVEY TIME: 12:00 PM – 12:10 PM.

We searched an additional small meadow at Maxfield Meadows (#2) that was surrounded by Douglas-fir and maples. This site was quite moist and supported native blackberry, borage, wild cucumber, buttercup and miner’s lettuce. Several blues, one white (likely a cabbage white, *Pieris rapae*), and numerous tiger moth larvae were seen. No Taylor’s checkerspots or potential host plants were observed, and we do not recommend revisiting this site.

SITE 3 – FOREST PEAK ACEC (SALEM DISTRICT BL)M
SURVEY TIME: 1:10 PM – 1:35 PM.

Forest Peak ACEC comprises several very steep south-facing meadows bordered by Oregon white oak and conifers. Few forbs were found on-site, although yarrow, manroot, and non-blooming buckwheat were present. The site was very dry and no potential host plants were found to support *E. e. taylori*. Strawberry (*Fragaria* spp.) was blooming along the trail to the meadow, but not found in the meadow itself. The lowest reaches of the meadow were inaccessible due to the steep nature of the slopes and could not be surveyed. Due to the lack of host plants, nectar plants, and the target species, we do not recommend further surveys at this site.

SITE 4 – MILL CREEK PROPOSED ACEC (SALEM DISTRICT BLM)

SURVEY TIME: 4:55 PM – 5:35 PM.

This site is comprised of very steep meadows with oak, madrone, and poison oak scattered throughout. Rocky protrusions with wet seeps are common. Short stature grasses and rock moss are the predominant ground cover with *Mimulus* spp. abundant near wet seeps. *Castilleja* (pictured), borage, and yellow composites were found blooming in the oak understory, but not in open areas. Many Sara’s orangetips (*Anthocharis sara*) and blues were in flight, but no Taylor’s checkerspots. This site could potentially host *E. e. taylori* and has characteristics similar to the extant site at Beazell (steep moist meadows, high percentage of moss ground cover, potential host plants). It could be revisited in the future.

MAY 2, 2013: LANE & LINN COUNTY SITES (APPENDIX IV, FIGURE 3)

On May 2, 2013, we continued surveys at low to mid-elevation sites (1300 to 2550 feet) in the Coburg Hills region on the eastern edge of the Willamette Valley outside of Eugene/Springfield. C. Fallon and R. Flatz surveyed all three sites, with BLM botanist C. Mayrsohn joining at Black Canyon.
SITE 1 – BLACK CANYON (EUGENE DISTRICT BLM)

SURVEY TIME: 10:12 AM – 11:10 AM.

Black Canyon is a small restored meadow with many native wildflower species, including *Plectritis*, *Delphinium*, *Lomatium*, *Mimulus*, *Elymus*, *Balsamorhiza*, *Plantago*, *Nemophila menziesii*, and *Camassia*. The meadow is ringed by Douglas-fir and cedar and contains scattered rocky outcroppings and wet seeps covered in *Bryum miniatum* and *Racomitrium* mosses. *Plectritis congesta* is abundant, as is *Plantago lanceolata* (pictured). *Castilleja* seed pods from the previous year were also observed but could not be identified to species. Butterflies observed in the area included blues and numerous duskywings (*Erynnis* spp.). This is a high quality site with the appropriate larval host plants and abundant nectar sources. It should be surveyed again in the future.

SITE 2 – HORSE ROCK RIDGE ACEC/RNA (EUGENE DISTRICT BLM)

SURVEY TIME: 1:35 PM – 3:30 PM.

Horse Rock Ridge ACEC is an expansive 378-acre area hosting a mosaic of open grasslands and conifer forests. An extensive meadow interspersed with rocky outcroppings covers the ridgeline and descends down its south-facing flanks, with numerous smaller meadows ringed with Douglas-fir, western hemlock, and madrone scattered
Manzanita and poison oak are common near the tree line. *Castilleja* spp. (pictured) was abundant in rocky areas, as were thick carpets of rock moss (*Racomitrium* spp.). Flowering species included buttercup, *Fritillaria*, *Lomatium*, *Dodecatheon*, *Lithophragma*, *Plectritis*, *Saxifrage*, *Delphinium*, *Mimulus*, and *Collinsia*.

Because this site is so large, we decided to focus on areas with abundant nectar and potential host plants, including *Castilleja*, *Collinsia*, and *Plectritis*. From our entrance point into the meadow, we walked west along the lower part of the slopes, looking for the target species and moving to areas of high flowering. We continued until we reached a high ridge, then turned back and surveyed the upper portions of the meadows we had just walked through. No *Plantago* was seen at the site. Butterfly species seen included blues, Sara’s orangetips (*Anthocharis sara*), and duskywings (*Erynnis* spp.), but no *E. e. taylori*. This large site should be revisited in the future, when more time can be devoted to searching all the meadows.

**SITE 3 – MCGOWAN MEADOW (EUGENE DISTRICT BLM)**

**SURVEY TIME: 3:53 PM – 4:20 PM.**

This site was our lowest priority for the area, but it was visited because of its proximity to a historic Coburg Ridge locality and proximity to other sites that we were visiting. It is a small wet meadow dominated by thick grasses and rose with few other forbs. No potential host plants were seen. Sara’s orangetips (*Anthocharis sara*) were abundant (males and females) as were blues. A single *Euphydryas chalcedona* larva and a single pupa were found on snowberry (*Symphoricarpos* spp.) and rose, respectively, along the southern meadow margin (photos). This site seems unlikely to host *E. e. taylori* due to the thick ground cover and lack of host or nectar plants and is not a priority for future surveys.

**MAY 3, 2013: BENTON COUNTY SITES (APPENDIX IV, FIGURE 4)**

On May 3, 2013, C. Fallon and M. Conner continued surveys at mid elevation sites (2240 to 2720 feet) in Benton County.
SITE 1 – CEDAR WIND RIDGE (SALEM DISTRICT BLM)

SURVEY TIME: 11:40 AM – 12:18 PM.

The dry rocky hillside at Cedar Wind Ridge supports numerous grasses, rock moss, and assorted forbs, including Lomatium, Balsamorhiza, Fragaria, and manroot. Tree and shrub species include Oregon white oak, Douglas-fir, maple, madrone, Holodiscus discolor, and Amelanchier spp. Some ferns were also present. Butterflies seen included spring azures (Celastrina argiolus), Sara’s orangetips (Anthocharis sara), and green hairstreaks (Callophrys spp., see photo), but no E. e. taylori. This site has some appropriate nectar species and several Castilleja plants, and could be revisited in the future.

SITE 2 – RICKREALL RIDGE ACEC (SALEM DISTRICT BLM)

SURVEY TIME: 3:42 PM – 4:25 PM.
At Rickreall Ridge ACEC we surveyed several small south-facing meadows bordered by upland coniferous forests and a very dry bald rocky outcropping. Rock moss was dominant. The upper parts of the ridge were characterized by thin soils and short stature grasses. The mosses in these areas were very dried out and crispy underfoot. In moist areas near the bottoms of the meadows we found scattered *Mimulus, Delphinium*, and approximately 15 *Plectritis congesta* plants. Several *Castilleja* were also found. No Taylor’s checkerspots were seen, but other butterfly species observed include: swallowtails, green hairstreaks (*Callophrys* spp.), and numerous Sara’s orangetips (*Anthocharis sara*). This site has some nectar and potential host plants and may be suitable for *E. e. taylori*, although none were found during this survey. It could be surveyed again in the future.

Note: We had some trouble with our GPS unit at this site, and while we thought we were surveying only BLM land, it appears we conducted approximately 60% of the survey on BLM land and the other 40% on adjacent private property. We did not have time to survey all meadow habitats within the ACEC.

**MAY 11, 2013: BENTON COUNTY SITES (APPENDIX IV, FIGURE 5)**

On May 11, 2013, C. Fallon and L. Drizd concluded surveys at the highest elevation sites (3500-4000 feet) in Benton County. Because one of these sites (Marys Peak) is a historic locality, we spent the majority of the day surveying potential meadow habitats at this site.

**SITE 1 – MARYS PEAK #1 (SIUSLAW NATIONAL FOREST)**

SURVEY TIME: 11:00 AM – 11:43 AM.

We surveyed a large grassy meadow on the northern slopes of Marys Peak’s summit. This site was under a light dusting of snow at least as of April 26, 2013. While some small pockets of snow remained by the tree lines on the day we surveyed, the majority of the meadows were snow-free. However, when we visited this site it had only recently begun spring growth, with the majority of ground cover being long dead grasses from the previous season (as can be seen in the photo). New growth of grasses and forbs was in progress but with limited flowering other than abundant carpets of yellow *Viola*. Pre-bloom lupine was also present in the meadow, with dandelion, phlox, *Delphinium*, and *Lomatium* found along trail edges and rocky areas. No Taylor’s checkerspots were observed. This site should be surveyed later in the season, when more forbs are in bloom.
SITE 2 – MARYS PEAK #2 (SIUSLAW NATIONAL FOREST)

SURVEY TIME: 12:17 PM to 12:43 PM.

C. Fallon and L. Drizd surveyed another large grassy meadow on the south-facing side of Marys Peak’s summit. This side was considerably farther along in terms of plant growth and blooms, with a wide variety of forbs present and flowering. This site was considerably rockier than our other Marys Peak sites. Phlox was abundant, with scattered *Lomatium* and *Castilleja* just beginning to bloom. Lupine and yarrow were abundant pre-bloom. Flowering Oregon grape (*Berberis nervosa*), *Delphinium*, and prostrate *Amelanchier* were also present. Yellow composites were prevalent, although most were pre-bloom (large buds evident). Spring azures (*Celastrina argiolus*) and numerous micromoths were found throughout the site but no *E. e. taylori*. This area could be surveyed again when the other Marys Peak sites are visited.

SITE 3 – MARYS PEAK #3 (SIUSLAW NATIONAL FOREST)
SURVEY TIME: 1:24 PM – 1:53 PM.

This meadow to the west of the summit parking lot was the least promising site we surveyed on Marys Peak. As can be seen in the photo, new spring growth was just emerging from last year’s dead grasses, and the only flowering plant seen was an abundant yellow Viola spp. No butterflies were seen flying in this meadow. Very little nectar and no host plant species were found. This site would be best surveyed later in the season.

SITE 4 – MARYS PEAK #4 (SIUSLAW NATIONAL FOREST)

SURVEY TIME: 2:10 PM – 2:43 PM.

This open grassy meadow adjacent to private property hosted abundant yellow Viola spp., Viola adunca, Fritillaria, Fragaria, native blackberry, yellow composites, and Delphinium. The northern and eastern edges are lined with conifers including noble fir and hemlock. This site was moister than the other three Marys Peak sites with much more nectar. It also had a higher level of butterfly activity, with numerous western meadow fritillaries (Boloria ephithore) and silvery blues (Glaucopsyche lygdamus, pictured). Taylor’s checkerspots were not seen, nor did we find any potential host species. However, this site could be revisited during other surveys on Marys Peak.
SITE 5 – GRASS MOUNTAIN (SALEM DISTRICT BLM)

SURVEY TIME: 4:30 PM – 5:01 PM.

We surveyed this open grassy south-facing meadow with abundant yellow lupine in the upper portion of BLM Section 21. The meadow is dry toward the upper knob and more mesic at the base. A thick Douglas-fir and true fir forest to the south and east give way to clear cuts to the north. Yarrow, Delphinium, slender-tubed iris (Iris chrysophylla), and large patches of creeping Oregon grape (Berberis nervosa) were in bloom. Many blues were seen chasing, basking, and flying through the site. In addition, there were numerous western meadow fritillaries (Boloria epithore) and Propertius duskywings (Erynnis propertius). No Plantago, Plectritis, or Castilleja were seen and Taylor’s checkerspots were not observed. The site has abundant Anemone spp. (both pre-bloom and blooming), Viola adunca, and yellow Viola spp. We were unable to visit the larger meadows in the lower portion of the Section (inside the actual ACEC) due to time constraints. Those meadows should be surveyed in future years.

ACKNOWLEDGEMENTS

We are very grateful to Scott Hopkins (Salem District BLM) and Cheshire Mayrsohn (Eugene District BLM) for their help in selecting sites to survey, providing maps and directions, and arranging gate access. Cheshire Mayrsohn led us out to two of the Eugene sites and assisted with surveys at Black Canyon. Marty Stein, Cindy McCain, Joni Quarnstrom, and Doug Glavich (Siuslaw National Forest) were also helpful in identifying potential sites on their lands. We also thank our volunteers Ramona Flatz (population geneticist) and Lara Drizd (wildlife biologist) for their help in the field. In addition, we thank Dana Ross for his invaluable notification of when Taylor’s checkerspots were flying at the extant sites so that we could start our surveys at the appropriate time.
REFERENCES


## APPENDIX I: HISTORIC AND EXTANT *E. E. TAYLORI* RECORDS IN OREGON

<table>
<thead>
<tr>
<th>Population Site Name</th>
<th>County</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Accuracy Code</th>
<th>Land Owner</th>
<th>Status (as of Jan 2012)</th>
</tr>
</thead>
<tbody>
<tr>
<td>McDonald Forest: Oak Creek Gate</td>
<td>Benton</td>
<td>44.603302</td>
<td>-123.332863</td>
<td>MAN6</td>
<td>Unknown/Not assessed</td>
<td>Extirpated</td>
</tr>
<tr>
<td>Corvallis</td>
<td>Benton</td>
<td>44.565768</td>
<td>-123.265915</td>
<td>VAGUE</td>
<td>Unknown/Not assessed</td>
<td>Presumed Extirpated</td>
</tr>
<tr>
<td>Alsea River</td>
<td>Benton</td>
<td>44.364299</td>
<td>-123.708973</td>
<td>MAN6</td>
<td>Unknown/Not assessed</td>
<td>Extirpated</td>
</tr>
<tr>
<td>McDonald Forest: Sulphur Springs</td>
<td>Benton</td>
<td>44.630734</td>
<td>-123.276300</td>
<td>MAN6</td>
<td>Unknown/Not assessed</td>
<td>Extirpated</td>
</tr>
<tr>
<td>Mary’s Peak</td>
<td>Benton</td>
<td>44.504249</td>
<td>-123.551259</td>
<td>MAN6</td>
<td>NF or BLM</td>
<td>Extirpated</td>
</tr>
<tr>
<td>Cardwell Hill (aka Fitton Green Site)</td>
<td>Benton</td>
<td>44.579097</td>
<td>-123.372688</td>
<td>MAN6</td>
<td>Private</td>
<td>Extant</td>
</tr>
<tr>
<td>Beazell Memorial Forest</td>
<td>Benton</td>
<td>44.652597</td>
<td>-123.426118</td>
<td>MAN2</td>
<td>County</td>
<td>Extant</td>
</tr>
<tr>
<td>Eugene</td>
<td>Lane</td>
<td>44.055025</td>
<td>-123.088760</td>
<td>VAGUE</td>
<td>Unknown/Not assessed</td>
<td>Presumed Extirpated</td>
</tr>
<tr>
<td>Coburg Ridge</td>
<td>Lane</td>
<td>44.120620</td>
<td>-122.998037</td>
<td>MAN4</td>
<td>Unknown/Not assessed</td>
<td>Extirpated</td>
</tr>
<tr>
<td>Coburg Ridge-McKenzie River</td>
<td>Lane</td>
<td>44.112856</td>
<td>-123.011684</td>
<td>MAN6</td>
<td>Unknown/Not assessed</td>
<td>Extirpated</td>
</tr>
<tr>
<td>Kings Valley Road/PeDee</td>
<td>Polk</td>
<td>44.754657</td>
<td>-123.413200</td>
<td>MAN6</td>
<td>Unknown/Not assessed</td>
<td>Extirpated</td>
</tr>
<tr>
<td>Dunn Forest Ridge</td>
<td>Polk</td>
<td>44.729845</td>
<td>-123.331404</td>
<td>MAN6</td>
<td>State Forest</td>
<td>Extirpated</td>
</tr>
<tr>
<td>Josiah Wills Rd</td>
<td>Polk</td>
<td>44.830065</td>
<td>-123.413715</td>
<td>MAN6</td>
<td>Unknown/Not assessed</td>
<td>Extirpated</td>
</tr>
<tr>
<td>Rickreall Creek</td>
<td>Polk</td>
<td>44.920388</td>
<td>-123.304625</td>
<td>MAN6</td>
<td>Unknown/Not assessed</td>
<td>Extirpated</td>
</tr>
<tr>
<td>TNC’S Wren Prairie, S of Wren</td>
<td>Benton</td>
<td>44.580442</td>
<td>-123.420925</td>
<td>MAN3</td>
<td>The Nature Conservancy</td>
<td>Presumed Extirpated</td>
</tr>
<tr>
<td>Bald Hill</td>
<td>Benton</td>
<td>44.568092</td>
<td>-123.330975</td>
<td>MAN6</td>
<td>Unknown/Not assessed</td>
<td>Extirpated</td>
</tr>
<tr>
<td>Chip-Ross Park</td>
<td>Benton</td>
<td>44.607702</td>
<td>-123.283081</td>
<td>MAN6</td>
<td>Unknown/Not assessed</td>
<td>Extirpated</td>
</tr>
</tbody>
</table>
### APPENDIX II: ALL SITES SURVEYED IN 2013

<table>
<thead>
<tr>
<th>Survey Date</th>
<th>County</th>
<th>Survey site</th>
<th>Elev. (feet)</th>
<th>Forest or District</th>
<th>Latitude (N)</th>
<th>Longitude (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>26-Apr-13</td>
<td>Benton</td>
<td>Maxfield Meadows #1</td>
<td>1600</td>
<td>Salem BLM</td>
<td>44.69329000</td>
<td>-123.35091000</td>
</tr>
<tr>
<td>26-Apr-13</td>
<td>Benton</td>
<td>Maxfield Meadows #2</td>
<td>1660</td>
<td>Salem BLM</td>
<td>44.69359000</td>
<td>-123.34569000</td>
</tr>
<tr>
<td>26-Apr-13</td>
<td>Benton</td>
<td>Forest Peak ACEC</td>
<td>1750</td>
<td>Salem BLM</td>
<td>44.67220000</td>
<td>-123.32980000</td>
</tr>
<tr>
<td>26-Apr-13</td>
<td>Polk</td>
<td>Mill Creek Proposed ACEC</td>
<td>1000</td>
<td>Salem BLM</td>
<td>44.98810000</td>
<td>-123.43520000</td>
</tr>
<tr>
<td>2-May-13</td>
<td>Linn</td>
<td>Black Canyon</td>
<td>1430</td>
<td>Eugene BLM</td>
<td>44.09956000</td>
<td>-122.97936000</td>
</tr>
<tr>
<td>2-May-13</td>
<td>Linn</td>
<td>Horse Rock Ridge ACEC</td>
<td>2380</td>
<td>Eugene BLM</td>
<td>44.29848300</td>
<td>-122.88011300</td>
</tr>
<tr>
<td>2-May-13</td>
<td>Lane</td>
<td>McGowan Meadow</td>
<td>1960</td>
<td>Eugene BLM</td>
<td>44.17682600</td>
<td>-122.99651600</td>
</tr>
<tr>
<td>3-May-13</td>
<td>Polk</td>
<td>Cedar Wind Ridge</td>
<td>2260</td>
<td>Salem BLM</td>
<td>44.94790000</td>
<td>-123.51520000</td>
</tr>
<tr>
<td>3-May-13</td>
<td>Polk</td>
<td>Rickreall Ridge ACEC</td>
<td>2650</td>
<td>Salem BLM</td>
<td>44.92120000</td>
<td>-123.54020000</td>
</tr>
<tr>
<td>11-May-13</td>
<td>Benton</td>
<td>Marys Peak #1</td>
<td>3900</td>
<td>Siuslaw NF</td>
<td>44.50485000</td>
<td>-123.55269000</td>
</tr>
<tr>
<td>11-May-13</td>
<td>Benton</td>
<td>Marys Peak #2</td>
<td>4000</td>
<td>Siuslaw NF</td>
<td>44.50336000</td>
<td>-123.55328000</td>
</tr>
<tr>
<td>11-May-13</td>
<td>Benton</td>
<td>Marys Peak #3</td>
<td>3700</td>
<td>Siuslaw NF</td>
<td>44.50993000</td>
<td>-123.55331000</td>
</tr>
<tr>
<td>11-May-13</td>
<td>Benton</td>
<td>Marys Peak #4</td>
<td>3500</td>
<td>Siuslaw NF</td>
<td>44.50681000</td>
<td>-123.56708000</td>
</tr>
<tr>
<td>11-May-13</td>
<td>Benton</td>
<td>Grass Mountain</td>
<td>3150</td>
<td>Salem BLM</td>
<td>44.42110000</td>
<td>-123.67590000</td>
</tr>
</tbody>
</table>
# APPENDIX III: POTENTIAL SITES TO VISIT IN FUTURE YEARS

<table>
<thead>
<tr>
<th>County</th>
<th>Survey site</th>
<th>Elevation (feet)</th>
<th>Forest/District</th>
<th>Priority</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Habitat Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benton</td>
<td>Pioneer Butte Prairie</td>
<td>1285</td>
<td>Siuslaw NF</td>
<td>Moderate</td>
<td>44.53810000</td>
<td>-123.47740000</td>
<td>Small scattered meadow openings in a conifer forest</td>
</tr>
<tr>
<td>Benton</td>
<td>Prairie Mountain Meadows</td>
<td>3200</td>
<td>Salem BLM</td>
<td>Low</td>
<td>44.28690000</td>
<td>-123.53880000</td>
<td>Two natural meadows</td>
</tr>
<tr>
<td>Lane</td>
<td>Eagle's Rest</td>
<td>2400</td>
<td>Eugene BLM</td>
<td>Moderate</td>
<td>43.86225000</td>
<td>-122.76077000</td>
<td>Upland prairie remnant in a forest opening.</td>
</tr>
<tr>
<td>Lane</td>
<td>Prairie Creek Meadows</td>
<td>2700</td>
<td>Salem BLM</td>
<td>Low</td>
<td>44.27040000</td>
<td>-123.62280000</td>
<td>Series of meadows, upslope meadows on private land</td>
</tr>
<tr>
<td>Lane</td>
<td>Twin Prairie Butte</td>
<td>1700</td>
<td>Eugene BLM</td>
<td>Moderate</td>
<td>43.69123300</td>
<td>-123.02951900</td>
<td>Upland prairie</td>
</tr>
<tr>
<td>Polk</td>
<td>Little Grass Mountain</td>
<td>2691</td>
<td>Salem BLM</td>
<td>Moderate</td>
<td>44.73920000</td>
<td>-123.58770000</td>
<td>High elevation grassy opening on Little Grass Mountain</td>
</tr>
<tr>
<td>Polk</td>
<td>Monmouth Peak (Bald Mountain)</td>
<td>3150</td>
<td>Salem BLM</td>
<td>High</td>
<td>44.79940000</td>
<td>-123.54720000</td>
<td>High elevation grassy opening on Monmouth (Bald) Peak</td>
</tr>
<tr>
<td>Polk</td>
<td>South Slope Dorn Peak</td>
<td>1750</td>
<td>Salem BLM</td>
<td>Moderate</td>
<td>44.97290000</td>
<td>-123.54690000</td>
<td>Midslope grassy opening, other small openings upslope north</td>
</tr>
</tbody>
</table>
APPENDIX IV: MAPS OF 2013 SURVEY SITES

Figure 1. All sites surveyed for E. e. taylori relative to historic and extant records, April 26 - May 11, 2013.
Figure 2. April 26, 2013 survey locations.
Figure 3. May 2, 2013 survey locations.
Figure 4. May 3, 2013 survey locations
Figure 5. May 11, 2013 survey locations.