

2010 STATUS OF THE FENDER'S BLUE BUTTERFLY (*Icaricia icarioides fenderi*) IN LANE COUNTY, OREGON: POPULATION ESTIMATES AND SITE EVALUATIONS

AND

DOCUMENTING FENDER'S OBSERVER AND DETECTION ERROR RATES

Executive Summary

Although precipitation during the growing period and crop year was reasonably good, the weather conditions in 2010 during the Fender's blue butterfly flight period were some of the worst we have seen except for 2008 which had the foulest conditions yet. All the important weather parameters that help insure good butterfly conditions and therefore good population counts of Fender's blue butterflies (e.g. near normal precipitation and temperature and minimum number of rainy days and cloudy days) were all less than ideal. The cooler temperatures and higher than normal number of rainy days and cloudy days in May and June presented unfavorable weather conditions for butterfly nectaring and egg laying, and the conditions also made it very difficult to census the butterflies on a regular basis. Based solely on the weather conditions in 2010 one would expect that the Fender's blue butterfly numbers should be low. However this was not the case for some sites in the southern Willamette Valley.

Overall, the Fender's blue butterfly population estimate at Willow Creek, Coburg, and BLM sites totaled 1631 butterflies in 2010. This total was about 32% greater than the five year average between 2005 and 2010 (excluding 2008 due to insufficient number of censuses). It was estimated that about 1417 Fender's blue butterflies were at Willow Creek in 2010 (95% Confidence Interval = 976-1873, Table 2 & 3). This is the highest number of butterflies since 2002 when 2040 Fender's blue butterflies were observed. The population of Fender's blue butterflies at Fir Butte was estimated to be 103 (95% confidence Interval = 71-136) in 2010 compared to 346 in 2009. At Oxbow West in 2010, there was an estimated 13 Fender's blue butterflies (95% Confidence Interval = 9-17) compared to 74 in 2009.

The most likely reason for the higher than expected number of Fender's blue butterflies at Willow Creek despite the bad weather conditions, is because there was a different observer than previous years who used noticeably different methods for counting butterflies. Possible reasons for the higher than expected Fender's estimates include:

1. The new observer used a voice recorder rather than using a paper datasheet to record individual Fender's butterfly sightings.
2. The new observer made a point of observing and recording perched Fender's blue butterflies in addition to ones that are flying. In the past, observers would count butterflies that were perched but did not make a point of searching for these butterflies. Counts were mostly based on butterflies that were actively flying.
3. During the first census (out of four counts) the new observer waved a net across the transect to flush Fender's blues from the vegetation.

Although the population estimates at Coburg seem to be low, I suspect the actual numbers are higher than what is being reported. At Coburg, the 2010 Fender's blue population was estimated to be 98. The geometric mean indicates the population has declined from 341 during the early period 1993-1997 to 114 during the period 2005-2010. I believe that the lower than expected Fender's estimates over the last few years is not an actual decline in the population but is probably due to poor weather condition during Fender's counts and the fact that the site is at a higher elevation and somewhat remote. The higher elevation makes it difficult to gage the weather conditions at the site and the remoteness makes it difficult and too costly to re-census if the weather conditions are less than ideal (the site requires close to a full day to census including travel time). Another reason I believe the counts are suspect is because of the fact that there has been a tremendous amount of habitat improvements done over the last 5-8 years, and all indications are that improvements at other sites have led to larger number of Fender's blue butterflies not fewer.

One of the problems with the present censusing method is that up to this point it has been impossible to measure observer and detection error rates due to lack of comparison data. To rectify this, a small study was done where two experienced observers censused the Main Area at Willow Creek four different times in May and June, on the same days, and during the same time period. The estimated number of Fender's blue butterflies for Observer1 was 613 and for Observer2 it was 382. There were discrepancies during the first two census dates in the number of Fender's blues observed and a difference in the ratio of Fender's to Silvery blues. The estimated ratio of Fender's to Silvery blues and the number of Fender's blue butterflies recorded by Observer1 were both higher than for Observer2 during all the census dates (the Fender's to Silvery blue ratio was 100% for the last two census dates). There were no noted discrepancies for the last two census dates and the estimated number of Fender's blue butterflies for Observer1 (184) was 31% higher than for Observer2 (140).