

DRAFT 2014 Golden Paintbrush Population Extent

Survey & Mapping



Christina Hersum

NAVFAC NW

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Abbreviations & Acronyms

ft	foot/feet
GIS	Geographic Information System
GPS	Global Positioning System
INRMP	Integrated Natural Resource Management Plan
NAVFAC NW	Naval Facilities Engineering Command Northwest
NASWI	Naval Air Station Whidbey Island
SCA	Student Conservation Association
USFWS	U.S. Fish & Wildlife Service

1.0 Introduction

This survey and mapping project is intended to help preserve the endangered plant species, Golden Paintbrush (*Castilleja levisecta*), at Naval Air Station Whidbey Island (NASWI) by providing a representation of its geographic extent. Mapping allows for comparisons of the extent to be made over time, supporting the NASWI Integrated Natural Resource Management Plan (2013) Golden Paintbrush Special Management and Protection Requirements criteria. Additionally, both manual and digital methods were used in this mapping project to compare accuracy and effectiveness.

Mapping data of golden paintbrush was taken in the field at Forbes Point in May 2014 by NAVFAC NW staff Sara Street, Terri Jones, and Michael Bianchi assisted by Student Conservation Association (SCA) interns Christina Hersum and Jamie Wasielewski.

1.1 Species account

Golden paintbrush is a short-lived perennial herb occurring in Puget Trough open grasslands and/or upland prairies (USFWS, 2004). Surrounding vegetation in these habitats commonly include Idaho fescue (*Festuca idahoensis*), red fescue (*Festuca rubra*), or other weed-like species. Several populations have been extirpated due to the conversion of habitat for agriculture, residential, and commercial development (USFWS 2000). Eleven known populations remain in the world today, with nine occurring in Washington State. On NASWI only one population is known to occur at Forbes Point of the Seaplane Base. The largest threats to the Forbes Point population include human foot traffic, herbivory, and competing vegetation of native and non-native species (NAVFAC, 2013).

2.0 Methods

Manual and digital mapping was completed on the ground by surveyors at Forbes Point, following established methods from past year's mapping surveys. Following these methods, golden paintbrush individuals were both manually and digitally measured closest and farthest (to the nearest 0.1') to a perpendicular line every 3 feet along an established primary transect line within the Forbes Point enclosure. Digital measurements were entered into a Trimble GPS device. Both digital and manual measurements were then used in ArcGIS to plot and map the population perimeter extent.

3.0 Results

Several maps were created to compare manual and digital representations of the golden paintbrush extent at Forbes Point. Overall, both representations illustrate a consistent shape for the extent (Figure 1). On the other hand, there was some variance in data point location for the closest and furthest extent of the population between manual and digital data sets (Figure 2). The range of variance was 0.5-5.4 feet between data set point locations.

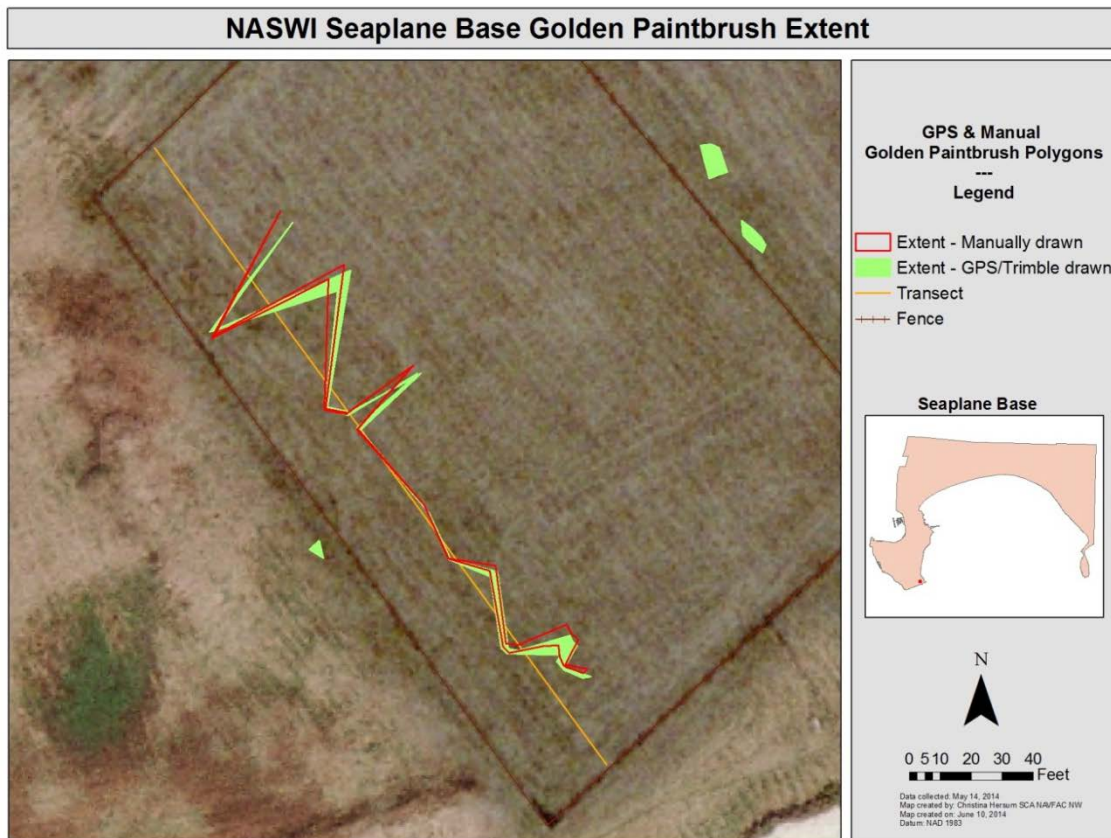


Figure 1. NASWI seaplane base golden paintbrush extent, manually and digitally drawn polygons.

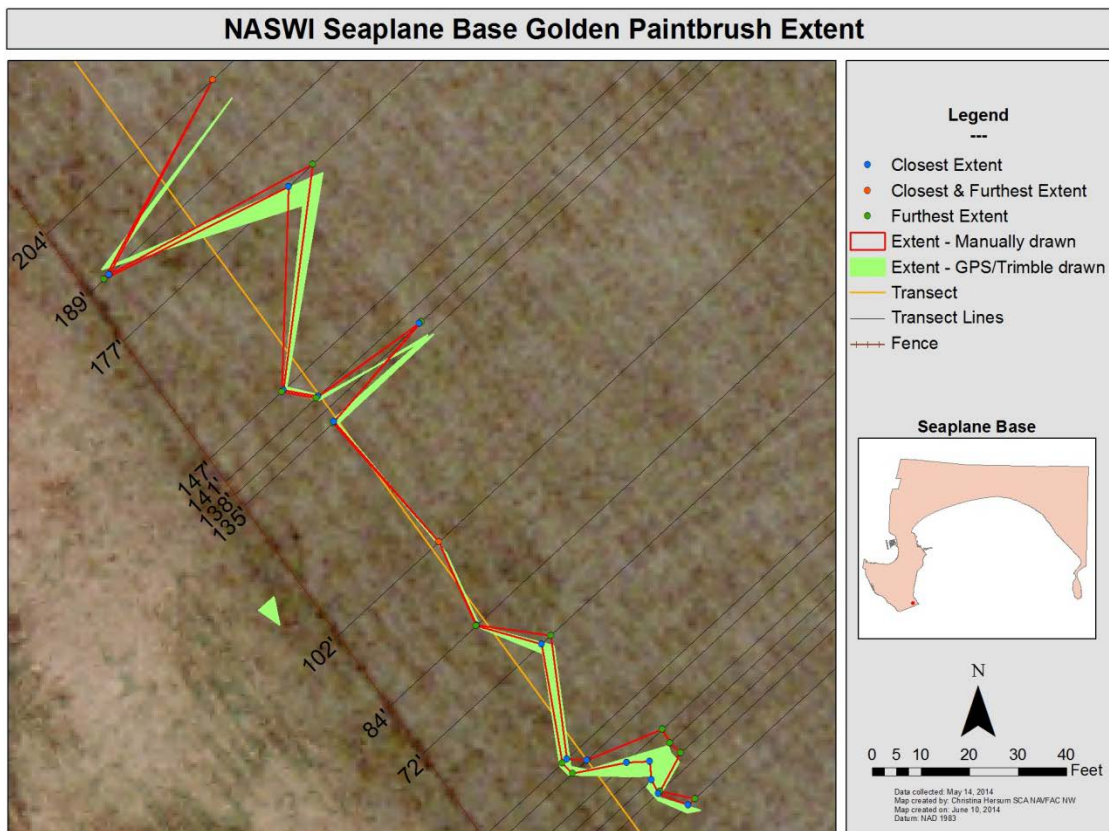


Figure 2. NASWI seaplane base golden paintbrush extent with manual and digital data points and polygons.

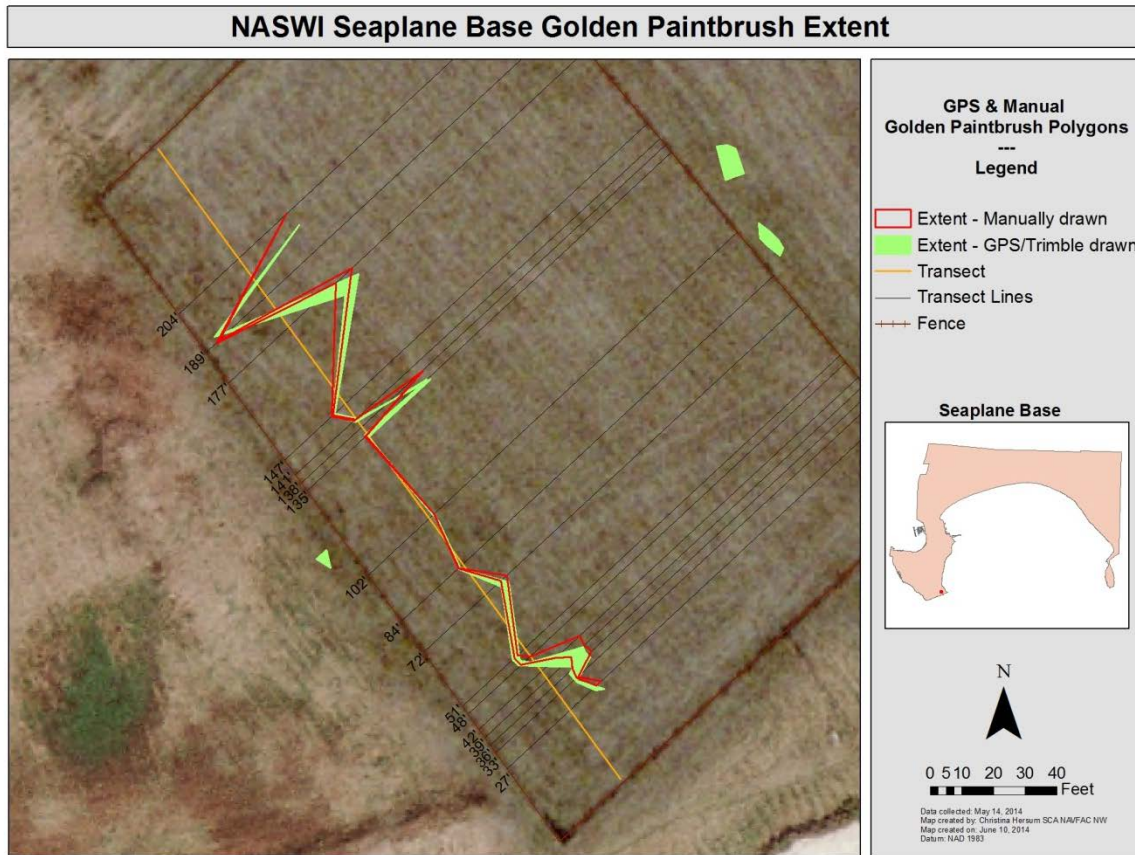


Figure 3. NASWI seaplane base golden paintbrush extent with manually and digitally drawn polygons with transect lines illustrated.

4.0 Discussion & recommendations

The mapping effort to define the geographic extent of golden paintbrush at Forbes Point on NASWI seaplane base helps support land management and protection applications. While this report is not the sole source for any final land management or monitoring effort decisions, this discussion provides potential areas for further examination.

In prior mapping surveys the extent of golden paintbrush was collected strictly by hand. During this mapping survey extent data was collected both manually and digitally. The resulting maps demonstrated slight variances between the two methods. Although the extent boundaries created by these methods did not align completely, the general shapes of extent were comparable for monitoring the population's health. In fact, compared to a map of the population's extent from 2004, this year's map illustrates a significantly reduced area of extent (NAVFAC, 2013). This indicates that the population of golden paintbrush is declining. A suggested prescription for increasing its number and area is a controlled burn that will also help control competing vegetation. Additionally, for future monitoring a GPS device is recommended to map the population's extent for added accuracy and efficiency.

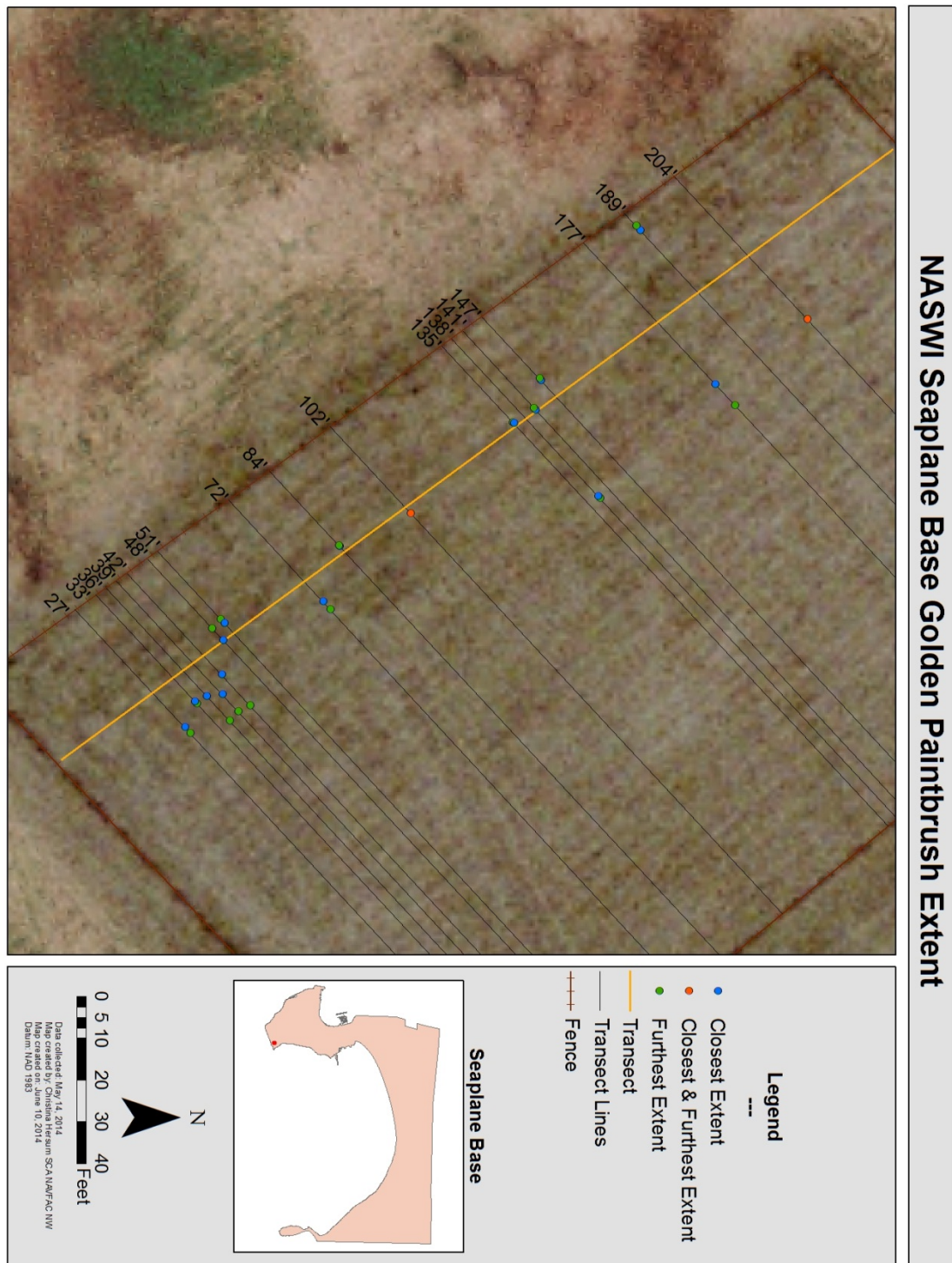
5.0 Literature Cited

Naval Facilities Engineering Command Northwest (NAVFAC NW). 2013. Naval Air Station Whidbey Island Integrated Natural Resource Management Plan.

U.S. Fish & Wildlife Service. 2000. Recovery Plan for the Prairie Species of Western Oregon and Southwestern Washington.

Appendix A: GIS Maps of Golden Paintbrush Extent at NASWI Seaplane Base

1. Manual data points of the furthest and closest golden paintbrush plants



2. Manually and digitally drawn polygons showing golden paintbrush extent

