**Supplemental File S1: Poppy Detection Protocol Examples**

The Poppy Detection Protocol is based on the following criteria (as described in the methods):

1) color—having a distinct blue-green color typical of poppy; 2) shape—round and mound-like form; and 3) size—plants 6-30 cm in diameter.

In the 50-m imagery (2.32 GSD), each potential poppy plant was marked with a green, orange, or red point depending on how many criteria of the protocol were met. A green point would be marked if it met all three of the criteria and looked like an “obvious” poppy. An orange point met two of the three criteria and a red point met one of the three criteria. The protocol was applied only to plants that appeared reasonably similar in color, shape, and size to poppy. For example, we did not mark shrubs that were a meter in diameter even if perfectly round or the correct blue-green color. When poppies were within the detectable size range (>6 cm), the blue-green color was the most accurate indicator for detection.

A picture containing ground

Description automatically generated

Example of marked plants confirmed as poppies in 0.73 GSD imagery (1/15 scale). Poppies measured 6 cm (left), and 7 cm (right) diameter.

A picture containing bear, teddy

Description automatically generated



Example of plants marked in census-level 50-m imagery (2.32 GSD; above) and confirmed in 15-m validation imagery (0.73 GSD; below). White papers were used as additional verification of some poppies, as part of the informal ground truthing process at the Tonaquint area.

A picture containing ground

Description automatically generated

A picture containing ground, outdoor, building

Description automatically generated

Examples of commission and omission error. Plants marked in 50-m imagery (2.32 GSD; above), but not confirmed to be a poppy in 15-m imagery (0.73 GSD; below) were errors of commission (right: red dot not paired with blue dot). Poppies found in 15-m imagery, but not detected in 50-m imagery are errors of omission (yellow dots). White papers used as additional on-the-ground verification of some poppies at Tonaquint area.

**Table S1:** Individual Validation Plot numbers at White Dome (top) and Tonaquint (bottom). Each plot was scored using the poppy detection protocol described in the methods section of the main text. Plants were marked first in the 50-m imagery (2.32 GSD) over the validation plot, and then scored as “confirmed” poppy or “missed” poppies in the 15-m imagery (0.76 GSD).

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **White Dome Plot#** | | **1** | | **22** | | **23** | | **24** | | **25** | | **28** | | **29** | **30** | **31** | **All** | **Std. Error** |
| Marked Green | | 27 | | 3 | | 12 | | 6 | | 11 | | 5 | | 5 | 4 | 7 | 80 | - |
| Marked Orange | | 31 | | 7 | | 14 | | 7 | | 11 | | 2 | | 3 | 9 | 12 | 96 | - |
| Marked Red | | 57 | | 16 | | 48 | | 20 | | 35 | | 13 | | 27 | 24 | 13 | 253 | - |
| Marked Total | | 115 | | 26 | | 74 | | 33 | | 57 | | 20 | | 35 | 37 | 32 | 429 | - |
| Confirmed Green | | 27 | | 3 | | 12 | | 6 | | 11 | | 5 | | 5 | 4 | 7 | 80 | - |
| Confirmed Orange | | 29 | | 6 | | 12 | | 5 | | 9 | | 2 | | 3 | 6 | 11 | 83 | - |
| Confirmed Red | | 43 | | 6 | | 27 | | 8 | | 23 | | 8 | | 18 | 17 | 5 | 155 | - |
| Confirmed Total | | 99 | | 15 | | 51 | | 19 | | 43 | | 15 | | 26 | 27 | 23 | 318 | - |
| Missed Total | | 107 | | 25 | | 33 | | 19 | | 42 | | 25 | | 29 | 26 | 33 | 339 | - |
| Actual Total | | 206 | | 40 | | 84 | | 38 | | 85 | | 40 | | 55 | 53 | 56 | 657 | - |
| % Confirm Not Red | | 0.57 | | 0.60 | | 0.47 | | 0.58 | | 0.47 | | 0.47 | | 0.31 | 0.37 | 0.78 | 0.51 | - |
| EOC Green | | 1.000 | | 1.000 | | 1.000 | | 1.000 | | 1.000 | | 1.000 | | 1.000 | 1.000 | 1.000 | 1.000 | 0.000 |
| EOC Orange | | 0.935 | | 0.857 | | 0.857 | | 0.714 | | 0.818 | | 1.000 | | 1.000 | 0.667 | 0.917 | 0.863 | 0.039 |
| EOC Red | | 0.754 | | 0.375 | | 0.563 | | 0.400 | | 0.657 | | 0.615 | | 0.667 | 0.708 | 0.385 | 0.569 | 0.049 |
| EOC ALL | | 0.861 | | 0.577 | | 0.689 | | 0.576 | | 0.754 | | 0.750 | | 0.743 | 0.730 | 0.719 | 0.711 | 0.030 |
| EOO ALL | | 2.081 | | 2.667 | | 1.647 | | 2.000 | | 1.977 | | 2.667 | | 2.115 | 1.963 | 2.435 | 2.172 | 0.115 |
| Net Error | | 1.791 | | 1.538 | | 1.135 | | 1.152 | | 1.491 | | 2.000 | | 1.571 | 1.432 | 1.750 | 1.540 | 0.095 |
|  | |  | |  | |  | |  | |  | |  | |  |  |  |  |  |
| **Tonaquint Plot #** | **1** | | **2** | | **3** | | **4** | | **All** | | **Std. Error** | |
| Marked Green | 1 | | 1 | | 3 | | 3 | | 8 | | - | |
| Marked Orange | 5 | | 4 | | 3 | | 4 | | 16 | | - | |
| Marked Red | 13 | | 14 | | 12 | | 11 | | 50 | | - | |
| Marked Total | 19 | | 19 | | 18 | | 18 | | 74 | | - | |
| Confirmed Green | 1 | | 1 | | 3 | | 3 | | 8 | | - | |
| Confirm Orange | 4 | | 4 | | 1 | | 1 | | 10 | | - | |
| Confirmed Red | 6 | | 11 | | 8 | | 9 | | 34 | | - | |
| Confirmed Total | 11 | | 16 | | 12 | | 13 | | 52 | | - | |
| Missed | 22 | | 6 | | 19 | | 14 | | 61 | | - | |
| Actual Total | 33 | | 22 | | 31 | | 27 | | 113 | | - | |
| % Confirm Not Red | 0.45 | | 0.31 | | 0.33 | | 0.31 | | 0.35 | | - | |
| EOC Green | 1.000 | | 1.000 | | 1.000 | | 1.000 | | 1.000 | | 0.000 | |
| EOC Orange | 0.800 | | 1.000 | | 0.333 | | 0.250 | | 0.625 | | 0.181 | |
| EOC Red | 0.462 | | 0.786 | | 0.667 | | 0.818 | | 0.680 | | 0.081 | |
| EOC ALL | 0.579 | | 0.842 | | 0.667 | | 0.722 | | 0.702 | | 0.055 | |
| EOO ALL | 3.000 | | 1.375 | | 2.583 | | 2.077 | | 2.259 | | 0.350 | |
| Net Error | 1.737 | | 1.158 | | 1.722 | | 1.500 | | 1.529 | | 0.135 | |

EOC= Error of commission (confirmed/marked); EOO= Error of omission (actual/confirmed); Net Error= EOC\*EOO; % Confirm Not Red= (confirmed green + confirmed orange)/confirmed total; Actual= confirmed + missed.