

Progress Report to Willapa National Wildlife Refuge 2006
EFFECTS OF EARLY HERBICIDE TREATMENT ON THE MUDFLAT
FUNCTIONALITY FOR SHOREBIRDS IN THE SEASON FOLLOWING
TREATMENT.

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Introduction.

Timing of herbicide applications to control *Spartina* can affect several important parameters. Early season applications before the plant has had a chance to grow and form thick stems could result in short stubble in the spring and facilitate more shorebird usage. A study was conducted to test this hypothesis.

Methods.

Habitat at 6pt/ac was sprayed in three 100x100' blocks in the middle of a previously untreated large meadow located at the Porter Point Unit of the Willapa National Wildlife Refuge. Treatments were made May 12, 2005. *Spartina* averaged 18" in height at the time of application. Applications were made by hand gun by staff of the Refuge under guidance from Kim Patten. Areas immediately adjacent to the treatment site were treated with a similar rate of Habitat in July 2006 by helicopter. On April 5, 2006 (11 months after treatment), these areas were assessed for live *Spartina* stem density, dead *Spartina* stubble height and shorebird footprint density along 3 transects within each plot and the adjacent later treated sites. Data were collected from 30 1 m² quadrats. Data are presented as means and standard errors in Figure 1. Photos of the sites are also presented.

Results.

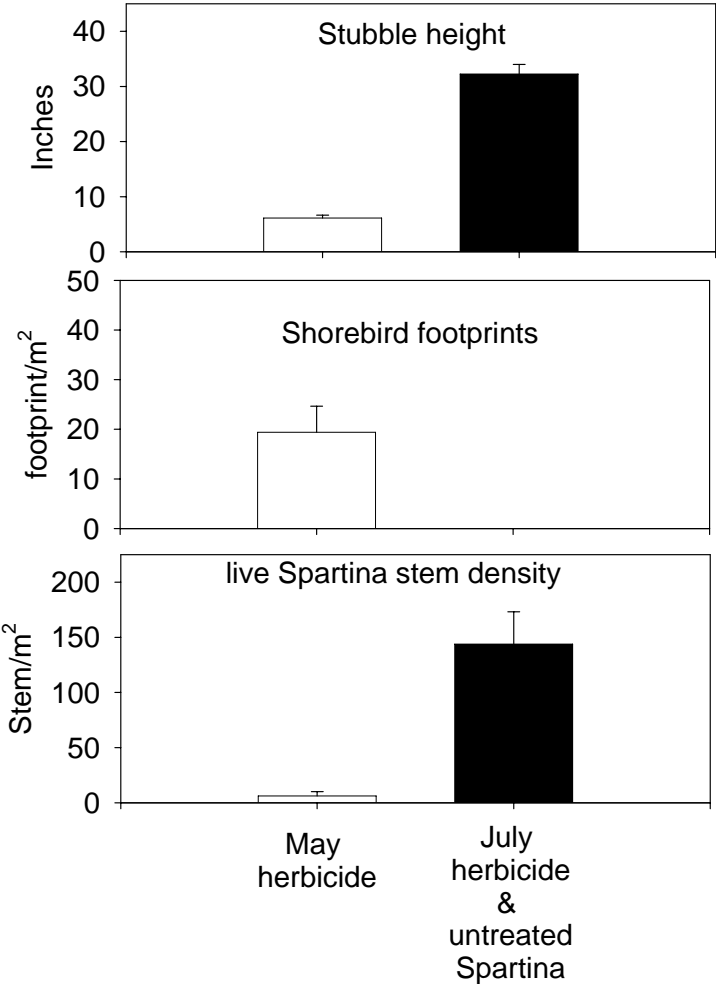
Application of herbicide in early May resulted in a reduction of live stem density compared to mid-summer applications. This comparison in efficacy, however, may not be valid. The adjacent sites treated in mid-summer by the Refuge appeared to have some skips where the boom sprayer didn't spray. Areas immediately to the north had excellent efficacy, while areas to the east were skipped. Efficacy data from both sites were merged.

The most dramatic effect of early herbicide applications was the difference in stubble height and shorebird usage (as indicated by footprint density) compared to the traditional summer treatment. No footprints were observed outside the early treated area and stubble height was 6 inches compared to 32 inches. The short stubble apparently allowed for ease of access by shorebirds, compared to the dense thick stubble that occurs when a meadow is sprayed mid-season (see photos).

Conclusion.

Although efficacy data in this study is not reliable, the effect of early herbicide application on stubble height in winter and spring immediately following treatment suggests that it could be advantageous for shorebirds.

Figure 1. Comparison of early vs. mid summer herbicide application on Spartina stems density and stubble height and shorebird usage the following spring in a dense Spartina meadow at Porter Point Unit of the Willapa National Wildlife Refuge.





Samples of standing stubble collected April 2006 from mid-summer treated (left) vs. May treated Spartina (right).



Standing stubble on April 2006 – left is mid-summer herbicide treated; right is May herbicide treated.