Hay at P Ranch
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Appendix K

Wet Meadow Treatment Ratios

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K.1 Wet Meadow Treatment Ratios by Area

As discussed under Objective 4a in Chapter 2, the initial ratio of wet meadows receiving haying and rake-bunch grazing treatments on an annual basis to those left idle will be 60:40 (±10 percent). This translates to 12,000 to 15,000 of 20,000 to 25,000 acres being treated in a given year[1]. This figure is based on the sound professional judgment of seven past and present Refuge wildlife biologists with 50 collective years of experience managing Refuge meadows. This ratio is relevant only when considering all wet meadows within the Refuge and differs across fields and area-specific management units. The needs of focal species, the suite of wildlife they represent, and the nature of habitats they depend on determines the use and extent of these tools in realizing or maintaining attributes identified under Objective 4a.

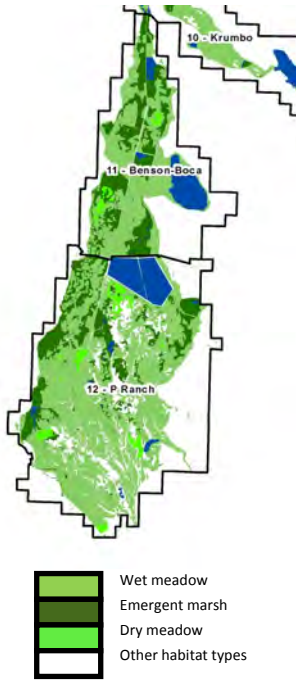
The purpose of this appendix is to provide an overarching rationale behind the initial 60:40 ratio by highlighting four major areas (southern, central, and northern Blitzen Valley and Double-O Unit) and identifying associated needs for treated and/or untreated acres for wet meadow focal species (i.e., bobolink, greater sandhill crane, and cinnamon teal). It is not intended to replace established Refuge management units, but is designed specifically to facilitate greater understanding of how management needs change as one moves across the Refuge landscape.

K.1.1 South Blitzen Valley

Total wet meadow area: Out of 20,300 total acres in this management area, 8,000 will be occupied by wet meadow habitat.

Focal species as identified in the CCP for wet meadow habitats[2]:

- **Bobolink:** Concentrated populations are found in mesic wet meadows, totaling approximately 3,500 acres. Nesting/feeding habitat is dependent on short vegetation heights achieved via treatments (populations decrease substantially under non-treated status). The Blitzen Valley hosts the largest bobolink population west of the Great Plains and has over 90 percent of the bobolinks that breed in Oregon. They only occur at approximately six other sites supporting numbers of less than 20 individuals (Marshall et al. 2006). Approximately 85 percent of the Refuge bobolinks are found in this area (2,471 out of 2,902, Refuge unpublished data).



[1] Acreage ranges exist to provide needed flexibility to account for (1) acreage refinement as the Refuge's GIS layers become more precise, (2) the possible need of reclassifying some acreages as inventory and monitoring data continues to be collected (e.g., existing emergent marsh that has resulted from cattail encroachment into wet meadow), and (3) climatic conditions or other unforeseen restraints that may hinder the Refuge's ability to treat all targeted acres.

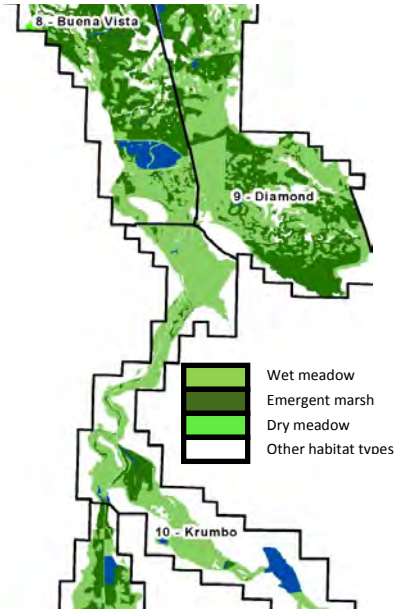
[2] Basic habitat principles discussed in regard to the southern Blitzen Valley generally apply to all units.

- **Greater sandhill crane:** A 1999 Refuge summary report found 99 out of 235 pairs (42 percent) using this area. Nesting occurs in adjacent emergent marsh vegetation. Crane pairing and young-rearing takes place on approximately 6,000 acres of meadows with an overall treated vegetation height of <6 inches. Acreage overlaps bobolink use areas.
- **Cinnamon teal**: Primarily dry meadow habitats and secondarily, upland habitats provide a majority of this species' nesting habitat in this area. Mallards, which are represented by this focal species, do commonly nest in emergent marsh habitat. Mesic wet meadows less prone to flooding provide suitable nesting habitat (approximately 800 acres) for some waterfowl species. Areas susceptible to nest loss via water management are treated to provide waterfowl pairing/pre-nesting habitat (overlap above treated acreages).

Treated:Untreated ratio for this area: 90:10 for wet meadow, 35:65 for total area

K.1.2 Mid-Blitzen Valley

Total wet meadow area: Out of 19,600 total acres, 6,400 will be occupied by wet meadow habitat.



Focal species as identified in the CCP for wet meadow habitats:

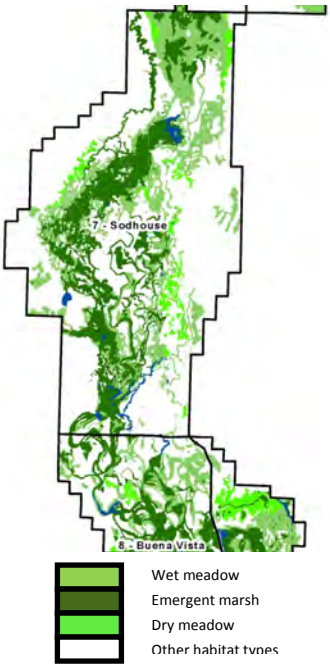
- **Bobolink**: Approximately 50 to 100 acres of suitable, used mesic wet meadow habitat are known to exist in this area. Less than 1 percent of Refuge bobolinks are found in this area (14 out of 2,902, Refuge unpublished data).
- **Greater sandhill crane:** Concentrations of greater sandhill crane territories remain high, but are a little lower in this area compared to the south Blitzen Valley (62 out of 235 pairs, or 26 percent). Approximately 4,000 acres of wet meadow are treated to provide crane pairing/pre-nesting habitat.
- **Cinnamon teal:** Approximately 2,300 acres of mesic wet meadow is left untreated to provide nesting habitat.

An increase in reed canarygrass dominance in many meadows greatly minimizes their value in regard to waterfowl nesting habitat and overall wildlife use if left untreated. Currently approximately 4,000 acres (out of approximately 6,000 total acres) of reed canarygrass is located in this area.

Treated:Untreated ratio for this area: 64:36 for wet meadow, 21:79 for total area.

K.1.3 North Blitzen Valley

Total wet meadow area: Out of 24,000 total acres, 4,600 will be occupied by wet meadow habitat.



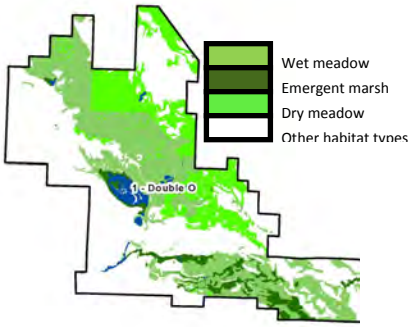
Focal species as identified in the CCP for wet meadow habitats:

- **Bobolink**: The use of this species is focused on expansive wet meadows on the north end of this area (approximately 600 acres). Approximately 14 percent of the Refuge bobolinks are found in this area (417 out of 2,902, Refuge unpublished data).
- **Greater sandhill crane:** Crane territories are less concentrated in this area (28 out of 235 pairs, or 12 percent) so approximately 1,200 acres of treatment are targeted for pairing/pre-nesting habitat.
- **Cinnamon teal:** Many wet meadow communities in this area are very small and less prone to extensive nest flooding because of the prevailing dichotomy of elevations found throughout its fields and the greater edge of surrounding dry meadow nesting habitats. Approximately 3,200 acres of the area's wet meadows are left untreated to provide nesting habitat.

Treated:Untreated ratio for this area: 30:70 for wet meadow, 6:94 for total area.

K.1.4 Double-O

Total wet meadow area: Out of 20,000 total acres, 4,600 will be occupied by wet meadow habitat.



Focal species as identified in the CCP for wet meadow habitats:

- **Bobolink**: 0 acres.
- **Greater sandhill crane:** Crane territories concentrate in the southern fields where water is provided by Double-O Spring as well as the northwestern meadows maintained by Silver Creek. Approximately 2,000 acres are treated for pairing and young-rearing. Twenty percent, or 46 out of 235 crane pairs use this area
- **Cinnamon teal:** 300 acres of wet meadow areas north and east of the central ponded area (Martha, Warbler, and Derrick ponds) are managed primarily for waterfowl nesting.

Treated:Untreated ratio for this area: 40:60 for wet meadow, 10:90 for total area.

Total Treated:Untreated ratio across all habitat types within the Refuge: **8:92**

K.2 References

Marshall, D.B., M.G. Hunter, and A. Contreras. 2006. Birds of Oregon: a general reference. Corvallis, O: Oregon State University Press 752 pp.