

**FIELD SURVEYS FOR MOUNTAIN PLOVERS
(*Charadrius montanus*) IN THE CASPER FIELD OFFICE
REGION**

Report prepared by: Dr. Gary P. Beauvais, Director

**Wyoming Natural Diversity Database
University of Wyoming
Laramie, Wyoming**

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INTRODUCTION

The mountain plover (*Charadrius montanus*) breeds only in the short-grass prairie and adjacent shrub-steppe of North America, where it selects strongly for flat sites with relatively short and sparse vegetation (Knopf 1996, Beauvais and Smith 1999, 2003). Unlike most North American Charadriiformes, which tend to occur in close proximity to surface water, mountain plovers avoid moist sites in favor of dry uplands.

Population declines and range contractions were noted as early as 1915 (Cooke 1915) and have continued until the present. Although such declines are possibly due in part to changes in winter range (central California, northern Mexico, and southern Texas), it is generally accepted that they are primarily due to degradation of breeding habitat (Knopf 1996). The most significant factors causing the decline of mountain plovers are likely cultivation, fire suppression, and altered grazing regimes, including the widespread elimination of grazing by black-tailed prairie dogs (*Cynomys ludovicianus*), on breeding grounds (Knopf 1994, Knopf 1996). Cultivation has directly destroyed much native prairie, while alterations of fire and grazing cycles have substantially changed the amount and distribution of sparsely-vegetated sites.

Importantly, short-grass prairie and adjacent shrub-steppe in Wyoming is largely uncultivated and still supports relatively high numbers of both black-tailed prairie dogs (grasslands in the eastern third of the state) and white-tailed prairie dogs (*C. leucurus*; shrub-steppe in central and western portions of the state). Additionally, sparsely-vegetated sites in the basins of central and western Wyoming are produced by physical factors such as poor soil, chronically low precipitation, and constant wind scour, leading to increased habitat availability for mountain plovers here. The result is that although Wyoming is positioned on the western periphery of mountain plover historic range, the state clearly forms the core of the taxon's current range. As with some other vertebrates adapted to short-grass prairie (e.g., *Vulpes velox*, *Mustela nigripes*, *Athene cunicularia*, *Buteo regalis*), the mountain plover persists in somewhat of a refuge in Wyoming due to lower habitat alteration here relative to the more heavily cultivated regions to the east.

The declining status of the mountain plover prompted the USDI Fish and Wildlife Service to propose listing the taxon as Threatened under the Endangered Species Act on 16 February 1999 (U.S. Fish and Wildlife Service 1999a), making the species a management

priority for natural resource managers. On 13 June 2002 the USDI Fish and Wildlife Service made issuance of the final rule on the listing of the mountain plover a priority for 2003 (U.S. Fish and Wildlife Service 2002), further raising the degree of management concern associated with this species.

To generate data that will inform the management of this species in Wyoming, the Wyoming State Office of the USDI Bureau of Land Management (hereafter BLM) established a research project (Task Order 17 tiered to Cooperative Agreement KAA010012) with the Wyoming Natural Diversity Database at the University of Wyoming to survey for mountain plovers in portions of the Casper Field Office in late spring and early summer 2002.

The objective of this project was to survey the most suitable patches of mountain plover habitat on BLM surface lands for presence of the species during the 2002 nesting season.

STUDY AREA

The study area encompassed the portion of the BLM Casper Field Office within Platte and Goshen counties, and Natrona and Converse counties south of Interstate Highway 25 and north of the hydrological divide of the Laramie Mountains (Figure 1). Surveys were performed only on surface lands owned and managed by the BLM, and focused on sites that had not received substantial mountain plover survey effort in the 3 years prior to this project.

METHODS

Survey site selection - We used a mountain plover habitat model developed by Beauvais and Smith (1999, 2003) to help locate survey sites within the study area. By extrapolating this model over the study area we identified all BLM-owned surface with >80% predicted probability of mountain plover occurrence (Figure 2a). Then, using documented locations of mountain plovers and mountain plover surveys on file at the Wyoming Natural Diversity Database (University of Wyoming, Laramie, Wyoming), we further reduced this set of potential survey sites by selecting sites where mountain plovers had not been documented in the past (Figure 2b; Figure 3).

Field surveys - Field surveys followed a slightly modified version of the protocol developed by the USDI Fish and Wildlife Service (U.S. Fish and Wildlife Service 1999b). Briefly, we first scouted each survey site (Figure 2) by vehicle in order to locate effective survey transects.

Based on scouting observations we established survey transects along publicly-maintained road segments that bisected the majority of suitable habitat on the site. Surveys were performed along each transect between dawn and 1000 hours, and 1700 hours to dusk. Surveys consisted of 2 observers scanning by eye and binocular from a vehicle. In addition to scanning while driving, the observers stopped every 0.5 mi along the transect and broadcast 3-4 cycles (approximately 40 sec) of a mountain plover breeding call, followed by at least 5 minutes of stationary scanning from the vehicle prior to moving to the next broadcast station. The geographic coordinates of all broadcast stations were located via global positioning system. When mountain plovers were observed, the birds were observed long enough to document number of individuals and any breeding behavior. In some cases the breeding call was played again to lure birds closer for better observation.

RESULTS

Survey site selection - We identified 7 sites in which to survey for mountain plovers during this project; 1 in Goshen County and 6 in Platte County (Figure 3; appendices A - G). Because BLM ownership is rather fragmented in this area, large blocks of suitable BLM-managed habitat were extremely rare. In addition to these 7 formal survey sites, we reconnoitered the Torrington Sand Hills region to assess its suitability for mountain plovers.

Field surveys - We conducted a total of 54.5 mi of formal mountain plover survey during this project (not including travel to site, scouting forays, or travel between survey routes), for an average of 7.8 miles per site.

Mountain plovers were observed at only one of the 6 survey sites (WHEATLAND NORTH; see appendix A). Three individuals were observed at this site on 29 April 2002. A pair of birds approached the survey vehicle together, in response to the playback call, and remained together during the observation period. A third individual flew into the area during the observation period. A pair of mountain plovers, again traveling together, was observed responding to the playback call at another broadcast station in the same general area again on 30 April 2002.

DISCUSSION

The best mountain plover habitat we observed during this project was on the WHEATLAND NORTH survey site (Appendix A), which was the only site at which mountain plovers were observed. There were extensive flat areas with dry, sparse, and low vegetation here. The presence of a small but active black-tailed prairie dog colony, as well as rather high numbers of cattle, likely contributed to the low stature of the vegetation on the site. The WHEATLAND SOUTH (Appendix B) survey site appeared to support similarly good habitat, but not in the amount present on WHEATLAND NORTH. WHEATLAND SOUTH was also somewhat more topographically rough.

The TABLE MOUNTAIN (Appendix C) survey site was generally poor quality habitat for mountain plovers, primarily due to active habitat management aimed at increasing game bird populations. Tall and dense vegetation, along with rather extensive surface irrigation, effectively remove this area from consideration as mountain plover habitat. In contrast, the Torrington Sand Hills (Appendix C) reconnaissance site was dry, but the generally rolling topography here reduced its potential to support mountain plovers.

All remaining survey sites (Appendices D - G) supported generally low quality habitat, although an accurate assessment of habitat quality was hampered by the degree of ownership fragmentation in the area. Surface lands managed by the BLM are typically small and isolated in much of this area, making it difficult to assign habitat observations to particular parcels. This fragmented pattern also caused difficulty in performing mountain plover surveys as well; field crews were forced to deviate somewhat from the standard survey protocol and scan more by eye and binocular from a stationary vehicle. The GUERNSEY RESERVOIR (Appendix D) survey site was the only remaining site with relatively contiguous BLM holdings; habitat quality was generally poor, however, due to rolling topography and dense vegetation.

ACKNOWLEDGEMENTS

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FIGURES

Figure 1. Study area, within the state of Wyoming. Black lines show county boundaries; green lines show major roads. The bold red line is the boundary of the Casper Field Office of the USDI Bureau of Land Management; the gray polygon shows that portion of the field office within which mountain plover surveys were performed.

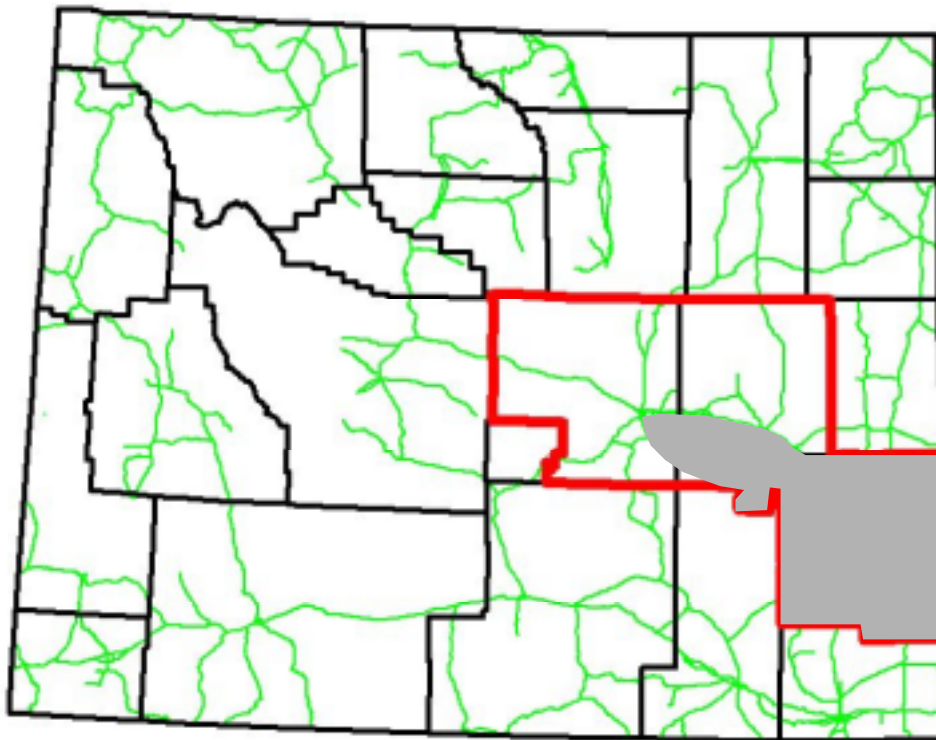


Figure 2a. Predicted probability of occurrence of mountain plovers in the breeding season within the boundary (bold red line) of the Casper Field Office (Wyoming) of the USDI Bureau of Land Management. Probabilities were determined via Beauvais and Smith 1999 (see also Beauvais and Smith 2003). Black lines show county boundaries; green lines show major roads. White = predicted probability <50%; gray = predicted probability 50% - 80%; black = predicted probability >80%.

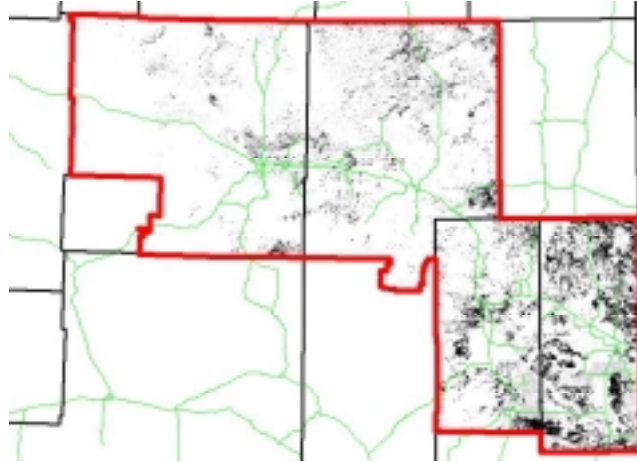


Figure 2b. Observations of mountain plovers in the breeding season within the boundary (bold red line) of the Casper Field Office (Wyoming) of the USDI Bureau of Land Management. Black lines show county boundaries; green lines show major roads. Blue dots show mountain plovers observed prior to March 2002; gray dots show mountain plover survey routes / points that failed to record the species prior to March 2002. All data on file at the Wyoming Natural Diversity Database at the University of Wyoming, Laramie, Wyoming.

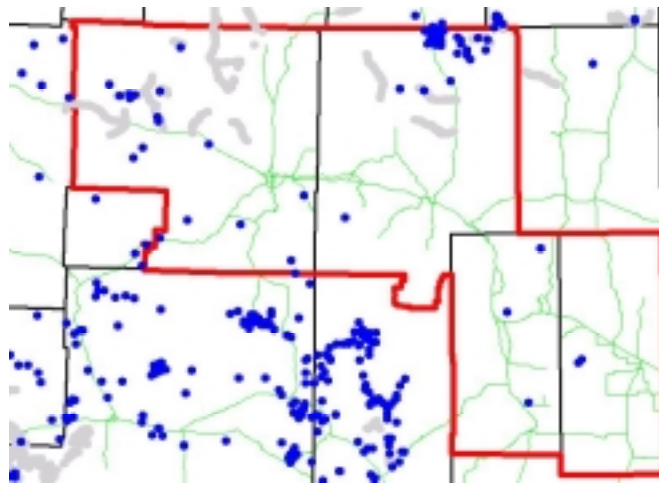
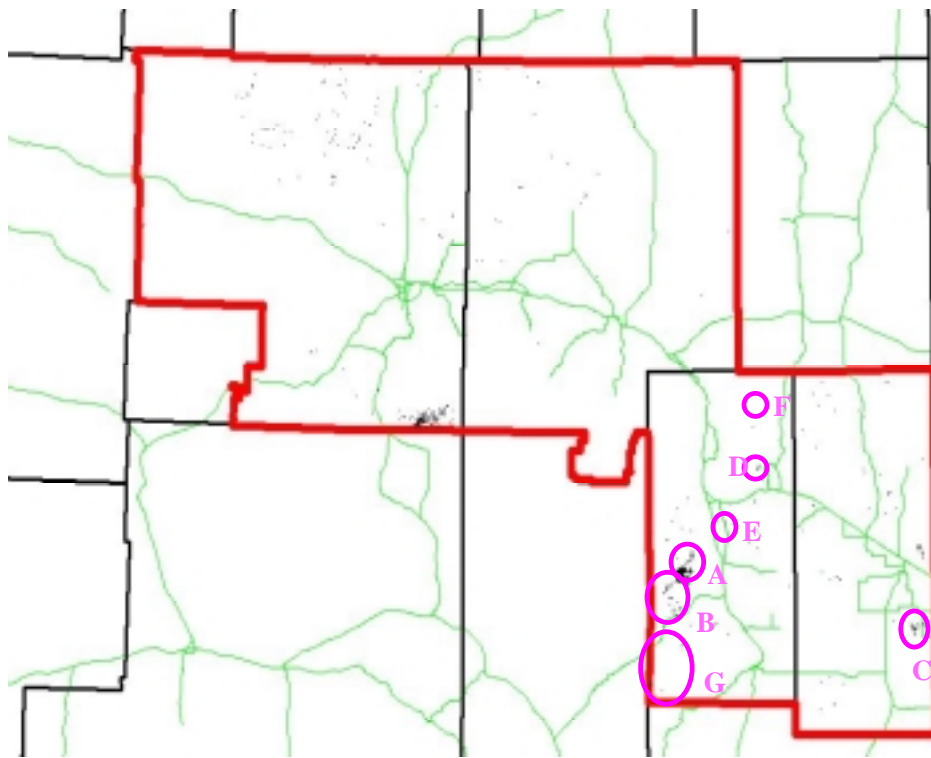
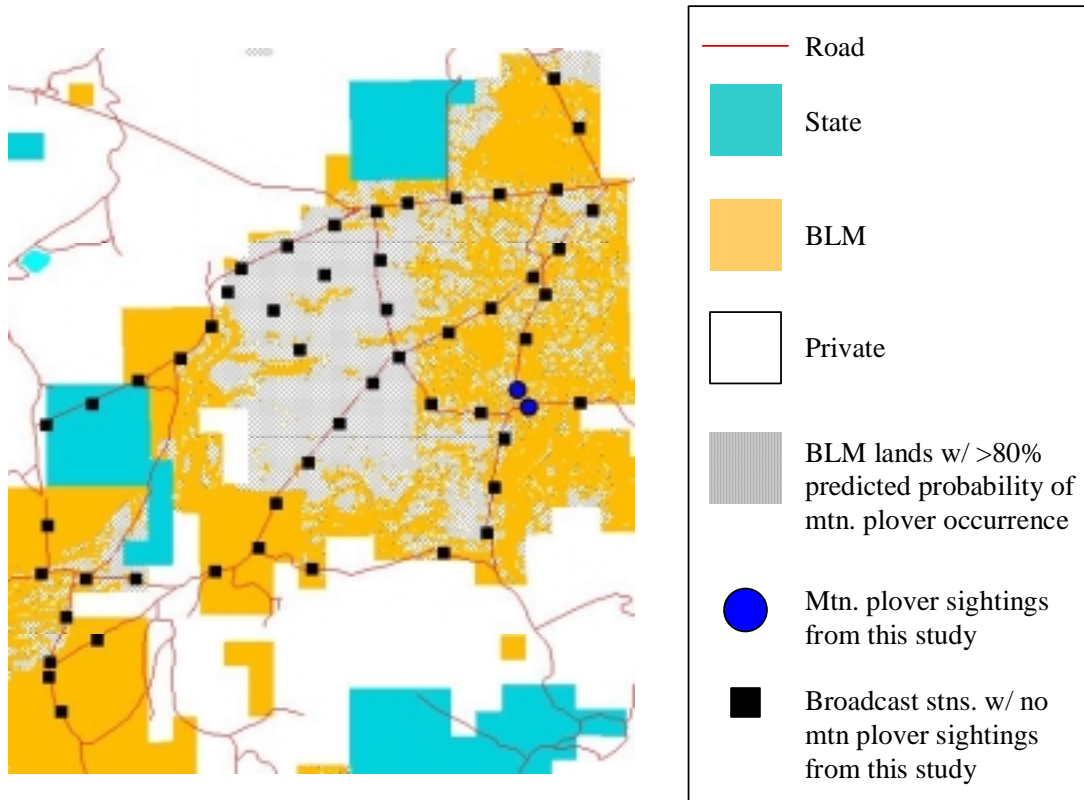


Figure 3. Land surface managed by the Casper Field Office (Wyoming) of the USDI Bureau of Land Management (boundary shown in red) with >80% probability of occurrence of mountain plovers (see Figures 1 and 2). Purple lines encompass areas surveyed during this project. Letters match descriptions in appendices.



APPENDICES

Appendix A. Mountain plover survey area A - **WHEATLAND NORTH**, Casper Field Office (Wyoming) of the USDI Bureau of Land Management. Approximately 10 miles WSW of the town of Wheatland; see Figure 3.



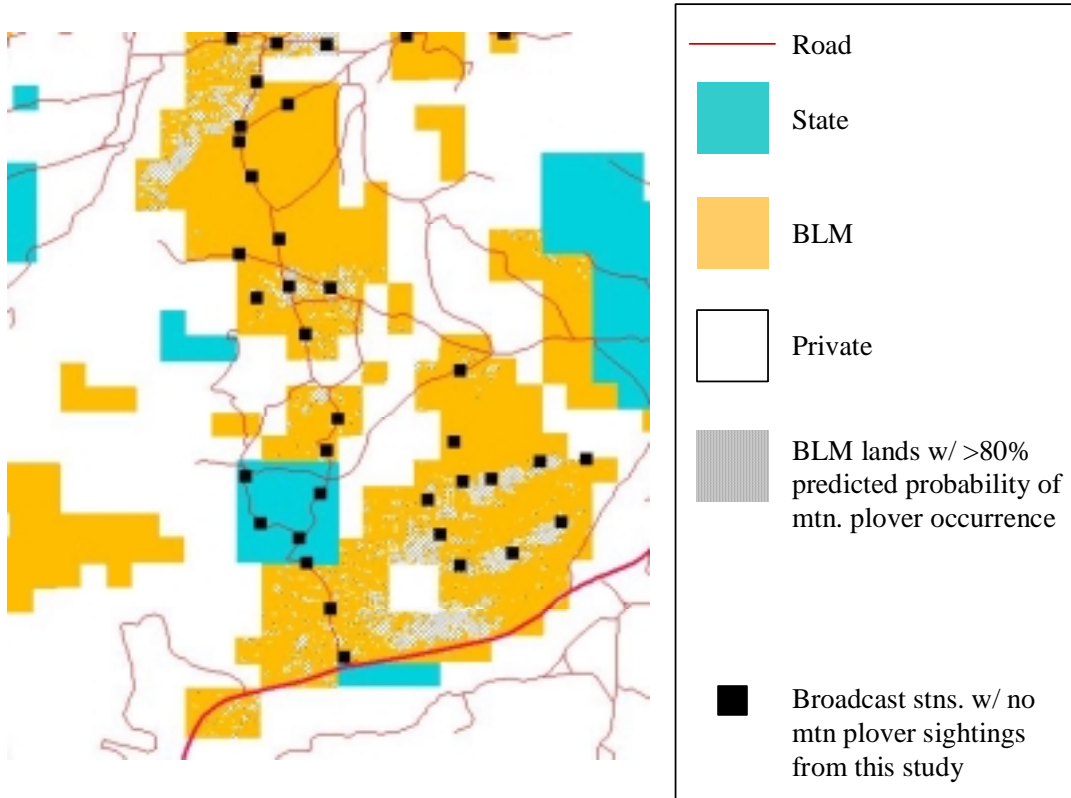
<u>DATE OF SURVEY</u>	<u>MILES OF FORMAL SURVEY PERFORMED</u>	<u># LOCATIONS WHERE MTN PLOVERS SEEN</u>	<u># MTN PLOVERS SEEN</u>
29 April 2002	4.5	1	3
30 April 2002	16.5	1	2
2 May 2002	2.5	0	0

NOTES : There is a small, occupied black-tailed prairie dog (*Cynomys ludovicianus*) colony in the vicinity of the mountain plover locations.

Appendix A: continued. Photographs of mountain plover habitat, survey area A – **WHEATLAND NORTH**. Each photograph shows an area where mountain plovers were observed.



Appendix B. Mountain plover survey area B - **WHEATLAND SOUTH**, Casper Field Office (Wyoming) of the USDI Bureau of Land Management. Approximately 13 miles SW of the town of Wheatland; see Figure 3.



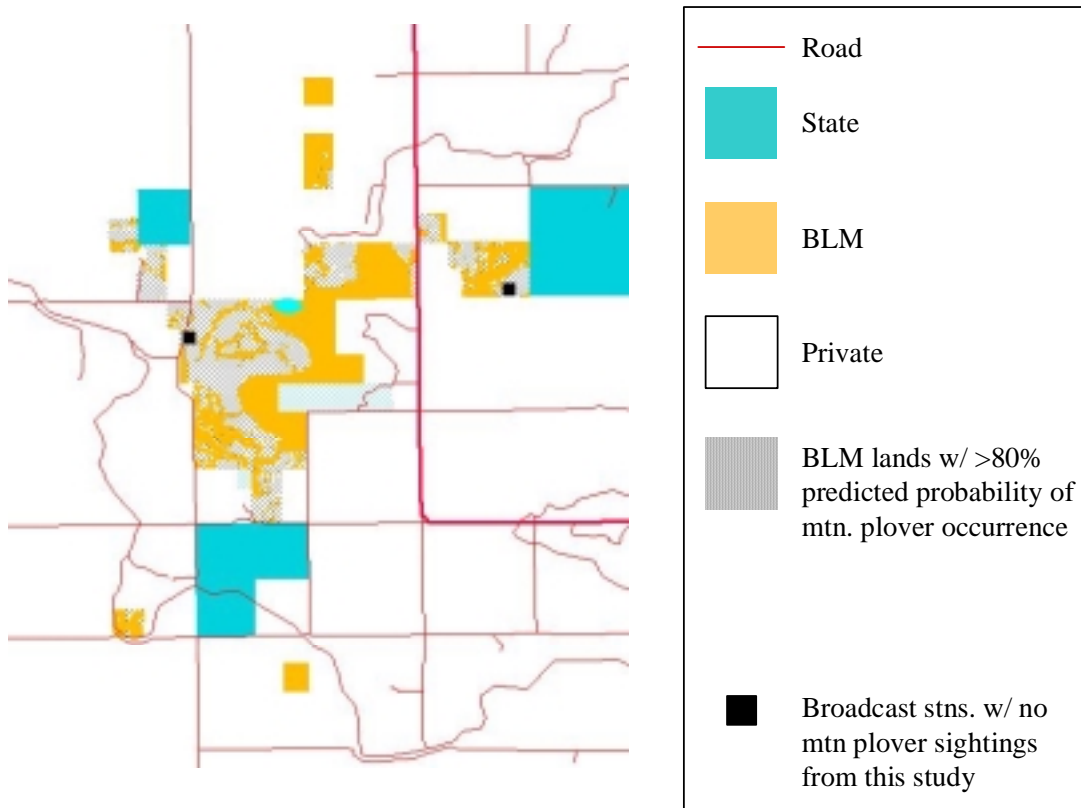
<u>DATE OF SURVEY</u>	<u>MILES OF FORMAL SURVEY PERFORMED</u>	<u># LOCATIONS WHERE MTN PLOVERS SEEN</u>	<u># MTN PLOVERS SEEN</u>
2 May 2002	11.0	0	0
3 May 2002	7.0	0	0

NOTES : Habitat on WHEATLAND NORTH appears better than here.

Appendix B: continued. Photograph of potential mountain plover habitat on survey area B – **WHEATLAND SOUTH**. No mountain plovers were observed here.



Appendix C. Mountain plover survey area C – **TABLE MOUNTAIN**, Casper Field Office (Wyoming) of the USDI Bureau of Land Management. Approximately 16 miles S of the town of Torrington; see Figure 3.



<u>DATE OF SURVEY</u>	<u>MILES OF FORMAL SURVEY PERFORMED</u>	<u># LOCATIONS WHERE MTN PLOVERS SEEN</u>	<u># MTN PLOVERS SEEN</u>
13 May 2002	1.5	0	0

NOTES : Much potential habitat of low quality due to irrigation and habitat improvement for game birds. This site was scouted extensively prior to formal survey.

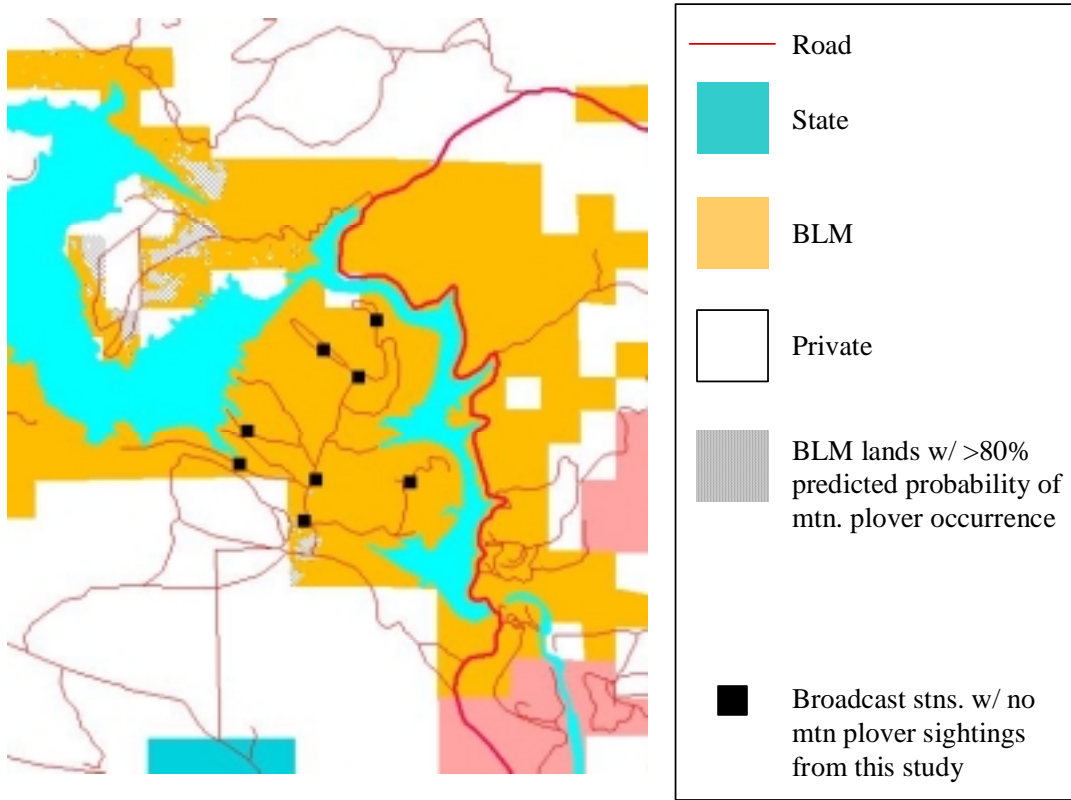
Appendix C: continued. Photographs of potential, but low quality, mountain plover habitat on survey area C – **TABLE MOUNTAIN**. No mountain plovers were observed here.



Appendix C: continued. Photograph of potential, but low quality, mountain plover habitat scouted in the **TORRINGTON SAND HILLS** north of survey area C – **TABLE MOUNTAIN**. No formal survey was performed here, nor were any mountain plovers observed.



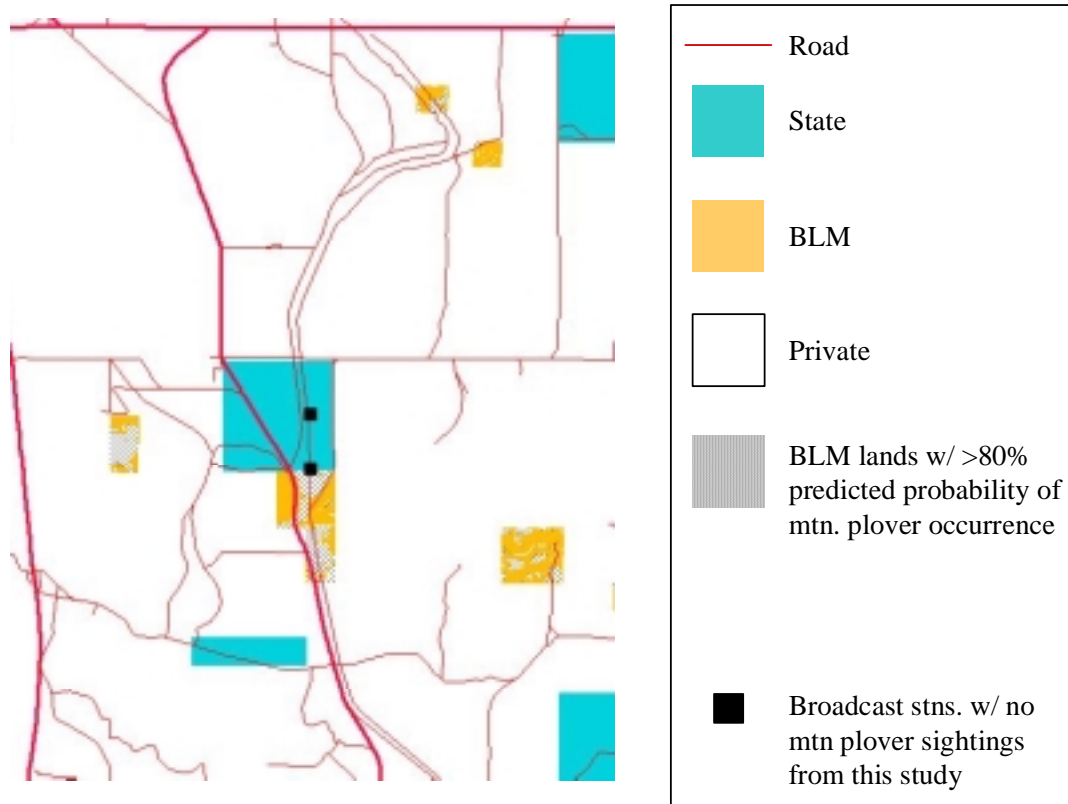
Appendix D. Mountain plover survey area D – **GUERNSEY RESERVOIR**, Casper Field Office (Wyoming) of the USDI Bureau of Land Management. Approximately 5 miles NW of the town of Guernsey; see Figure 3.



<u>DATE OF SURVEY</u>	<u>MILES OF FORMAL SURVEY PERFORMED</u>	<u># LOCATIONS WHERE MTN PLOVERS SEEN</u>	<u># MTN PLOVERS SEEN</u>
14 May 2002	3.5	0	0

NOTES : Habitat was generally poor here.

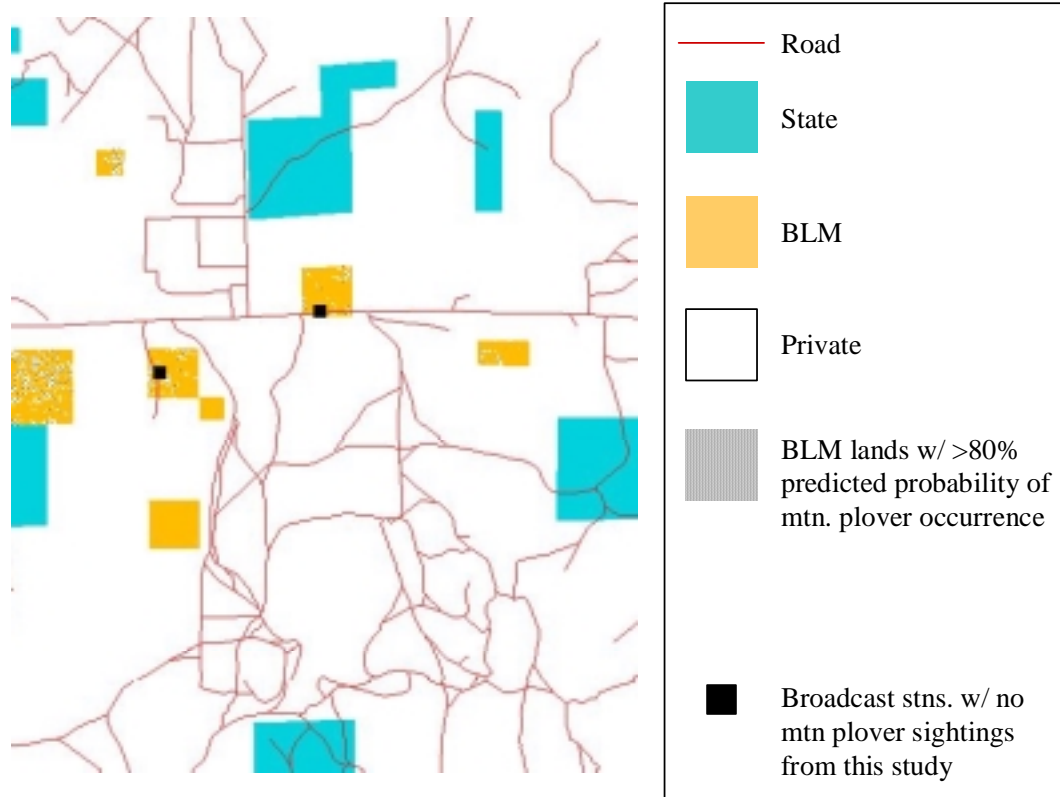
Appendix E. Mountain plover survey area E – **DWYER JUNCTION**, Casper Field Office (Wyoming) of the USDI Bureau of Land Management. Approximately 8 miles N of the town of Wheatland; see Figure 3.



<u>DATE OF SURVEY</u>	<u>MILES OF FORMAL SURVEY PERFORMED</u>	<u># LOCATIONS WHERE MTN PLOVERS SEEN</u>	<u># MTN PLOVERS SEEN</u>
14 May 2002	3.0	0	0

NOTES : Extremely small and fragmented patches of BLM-managed surface in this area. Observers scanned some remote patches with binoculars and spotting scope.

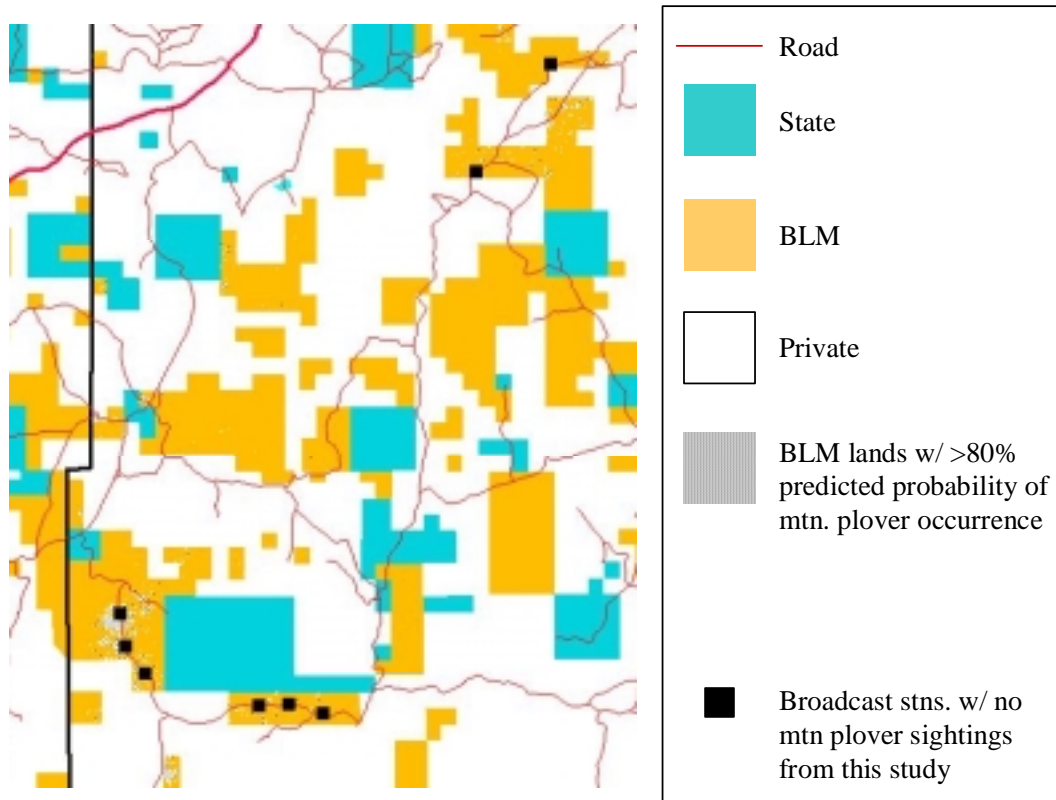
Appendix F. Mountain plover survey area F - **GLENDO**, Casper Field Office (Wyoming) of the USDI Bureau of Land Management. Approximately 19 miles N of the town of Guernsey; see Figure 3.



<u>DATE OF SURVEY</u>	<u>MILES OF FORMAL SURVEY PERFORMED</u>	<u># LOCATIONS WHERE MTN PLOVERS SEEN</u>	<u># MTN PLOVERS SEEN</u>
15 May 2002	1.0	0	0

NOTES : Extremely small and fragmented patches of BLM-managed surface in this area. Observers scanned some remote patches with binoculars and spotting scope.

Appendix G. Mountain plover survey area G – **SHEEP MOUNTAIN**, Casper Field Office (Wyoming) of the USDI Bureau of Land Management. Approximately 20 miles W of the town of Chugwater; see Figure 3.



<u>DATE OF SURVEY</u>	<u>MILES OF FORMAL SURVEY PERFORMED</u>	<u># LOCATIONS WHERE MTN PLOVERS SEEN</u>	<u># MTN PLOVERS SEEN</u>
15 May 2002	4.0	0	0

NOTES : Fragmented patches of BLM-managed surface in this area; access to remote patches difficult.

