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

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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 cunnicularia, 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 established a research project (Task Order 4 tiered to Cooperative Agreement KAA000009) with the Wyoming Natural Diversity Database at the University of Wyoming to survey for mountain plovers in portions of the Rawlins Field Office in spring - summer 2002. This report is intended as a companion to Keinath and Ehle (2001), which details similar mountain plover surveys performed in the Buffalo, Casper, and Newcastle Field Offices of the USDI Bureau of Land Management and was administered under the same Task Order and Cooperative Agreement.

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 Rawlins Field Office within Sweetwater and Carbon counties (Figure 1), and focused on areas within those counties that had not received substantial mountain plover survey effort in the recent past. Surveys were performed only on surface lands owned and managed by the BLM.

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; 2 in Carbon County and 5 in Sweetwater County (Figure 3; appendices A - G).
Field surveys - We conducted a total of 151.5 mi of formal mountain plover survey during this project, for an average of 21.6 mi per site.

Mountain plovers were observed at 4 of the 7 sites: SHIRLEY BASIN, SHIRLEY BASIN EAST, GREAT DIVIDE BASIN , and LOST CREEK BASIN (see Appendices A - D).

DISCUSSION

The SHIRLEY BASIN (Appendix A) survey site supported particularly extensive areas of very good habitat and relatively high numbers of mountain plovers. Note that in addition to recording 15 individuals at 10 different areas within the site during formal surveys, we opportunistically observed 7 individuals at 2 other areas during scouting trips. Relative to survey sites further west, habitat quality is especially high on SHIRLEY BASIN because grass dominates over shrubs in most areas; indeed, the Wyoming Gap Analysis Project mapped this area as one of the westernmost expressions of true grassland in the state (Merrill et al.1996).

This flat and open grassland extends to the east onto the SHIRLEY BASIN EAST (Appendix B) survey site, and from a habitat standpoint SHIRLEY BASIN EAST is simply an extension of SHIRLEY BASIN (we considered them distinct because they were separated by a swath of privately-owned land surface). The high numbers of mountain plovers on SHIRLEY BASIN, and the detection of mountain plovers at SHIRLEY BASIN EAST following only 4.0 miles of formal survey, suggest that this corner of Carbon County supports an especially important breeding concentration and could figure prominently in the recovery of the species.

We observed mountain plovers at each of the GREAT DIVIDE BASIN and LOST CREEK BASIN (Appendices C and D) survey sites. Habitat at these sites appeared to be suitable, and even good in places, but was generally not as high in quality or as extensive in coverage as at SHIRLEY BASIN. Shrubs generally dominate the vegetation at these sites, and mountain plovers were observed only where shrubs were low in both height and density. This is similar to observations made further west in the Jack Morrow Hills area (Beauvais and Smith 1999, 2003).

The remaining 3 sites (Appendices E - G) appeared to each support at least some suitable habitat, but we did not record mountain plovers at any of them. BATTLE SPRINGS FLAT (Appendix E) received only limited survey effort due to extensive areas of alkali soil that prevented vehicle travel; it may be that the vegetation supported by this soil type, although certainly sparse and low in stature, may not be conducive to mountain plover occupancy. Both COW CREEK RESERVOIR (Appendix F) and HORSESHOE BEND (Appendix G) supported rather large areas of suitable habitat. It is possible that mountain plovers already occupy these sites and our surveys failed to detect them, or that mountain plovers will expand into these sites if the regional population increases.

ACKNOWLEDGEMENTS

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recognized for assisting with the standing WYNDD record of 7 flat tires in 6 weeks of field work, including an unprecedented 5 flats in 1 week.

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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 Rawlins 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.

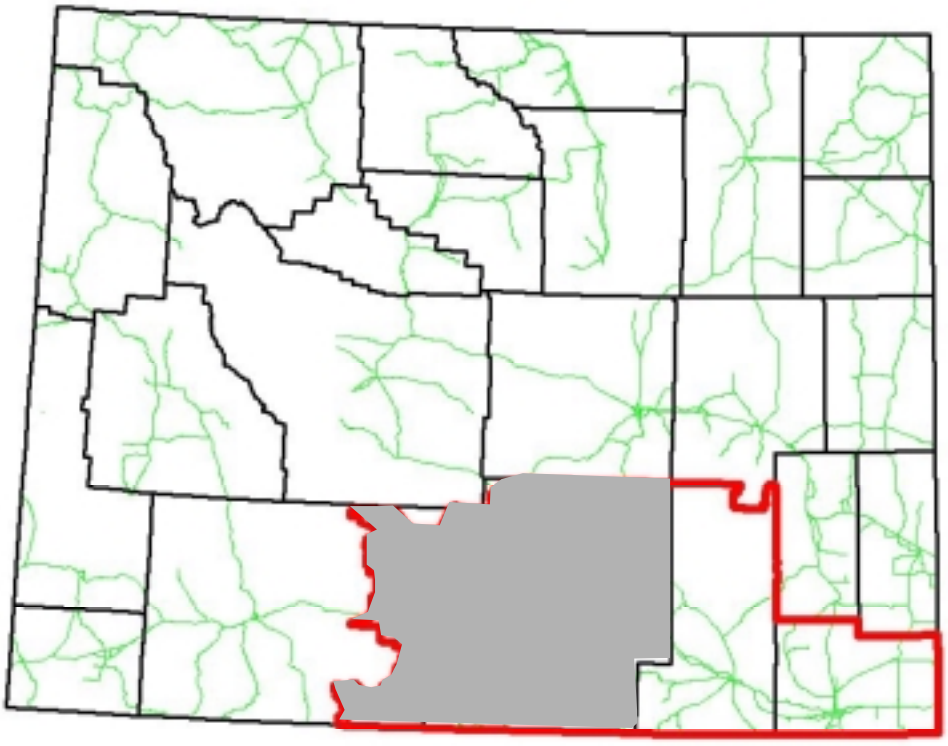


Figure 2a. Predicted probability of occurrence of mountain plovers in the breeding season within the boundary (bold red line) of the Rawlins Field Office (Wyoming) of the USDI Bureau of Land Management. Probabilities were determined via Beauvais and Smith 1999 (see also Beauvais and Smith 2003). Black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

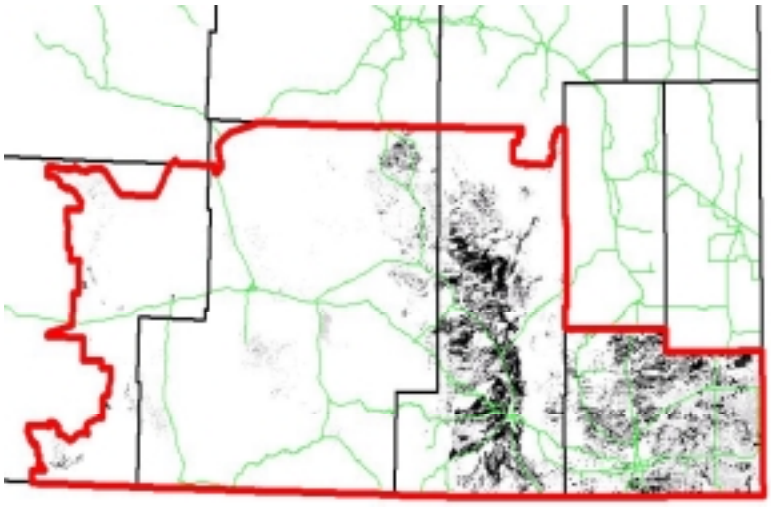


Figure 2b. Observations of mountain plovers in the breeding season within the boundary (bold red line) of the Rawlins Field Office (Wyoming) of the USDI Bureau of Land Management. Black lines show county boundaries; green lines show major roads. Blue dots show mountain plovers observed prior to March 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.

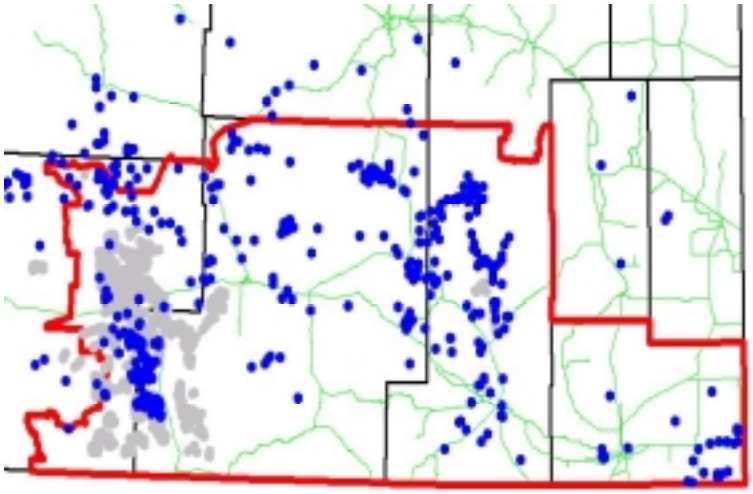
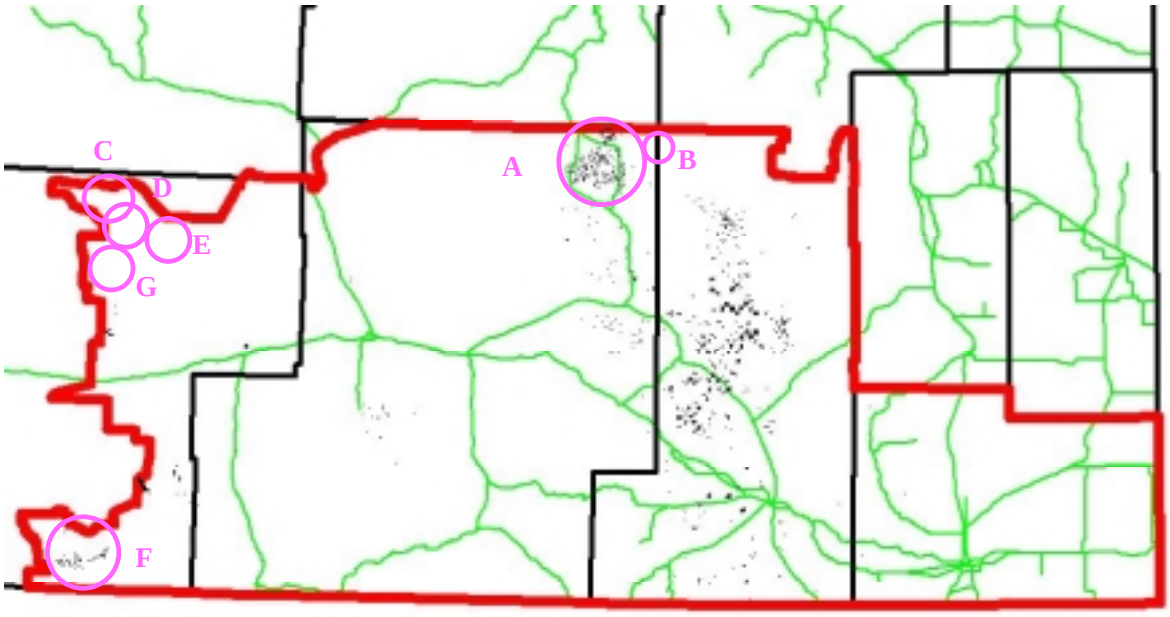


Figure 3. Land surface managed by the Rawlins Field Office (Wyoming) of the USDI Bureau of Land Management (boundary shown in red) with >80% probability of occurrence of mountain plovers (see Figures 1 and 2). Purple lines encompass areas surveyed during this project. Letters match descriptions in appendices.



APPENDICES

Appendix A. Mountain plover survey area A – **SHIRLEY BASIN**, Rawlins Field Office (Wyoming) of the USDI Bureau of Land Management. Approximately 24 miles NNW of the town of Medicine Bow; see Figure 3.

Road
State
BLM
Private
BLM lands w/ >80% predicted probability of mtn. plover occurrence
Mtn. plover sightings from this study
Broadcast stns. w/ no mtn plover sightings from this study

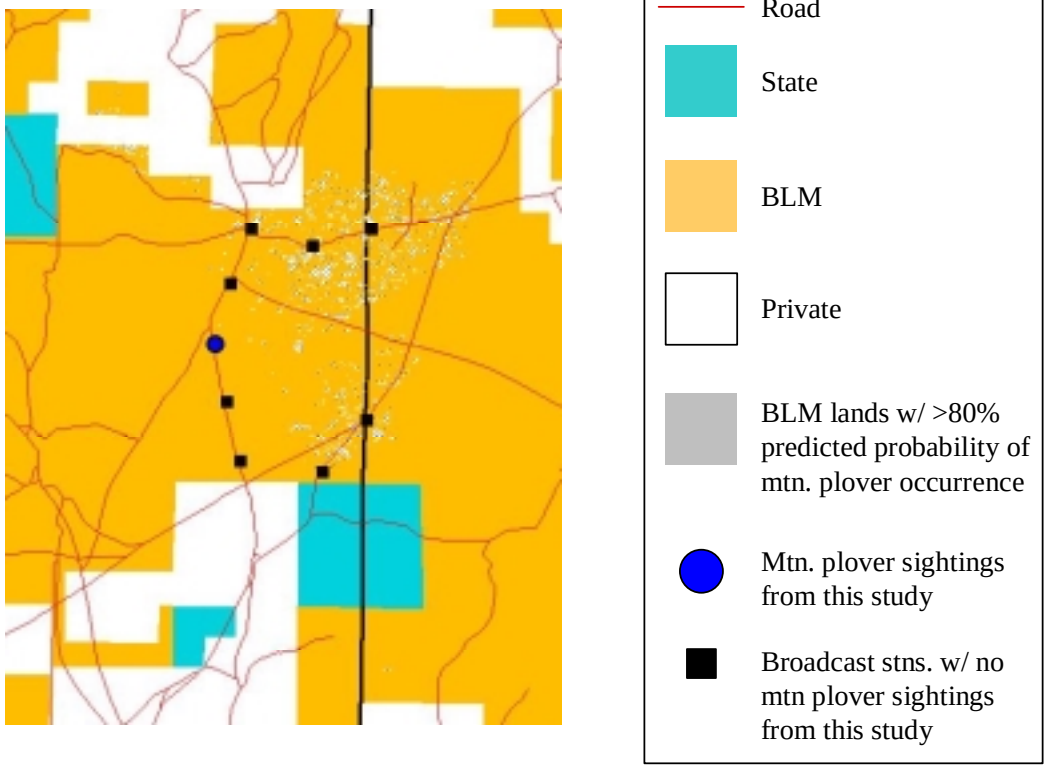
DATE OF SURVEY	MILES OF FORMAL SURVEY PERFORMED	# LOCATIONS WHERE MTN PLOVERS SEEN	# MTN PLOVERS SEEN
6 May 2002	8.5	1	1
7 May 2002	15.5	2	3
9 May 2002	22.0	2	3
10 May 2002	10.0	2	4
17 May 2002	9.0	3	4

NOTES: 7 May 2002 – 2 mountain plovers observed at 1 location on site during scouting.
9 May 2002 – 5 mountain plovers observed at 1 location on site during scouting.

Appendix A: continued. Photographs of mountain plover habitat on survey area A – **SHIRLEY BASIN.** Each photograph shows an area where mountain plovers were observed.

Appendix A: continued. Photographs of mountain plovers observed on survey area A – **SHIRLEY BASIN.** .

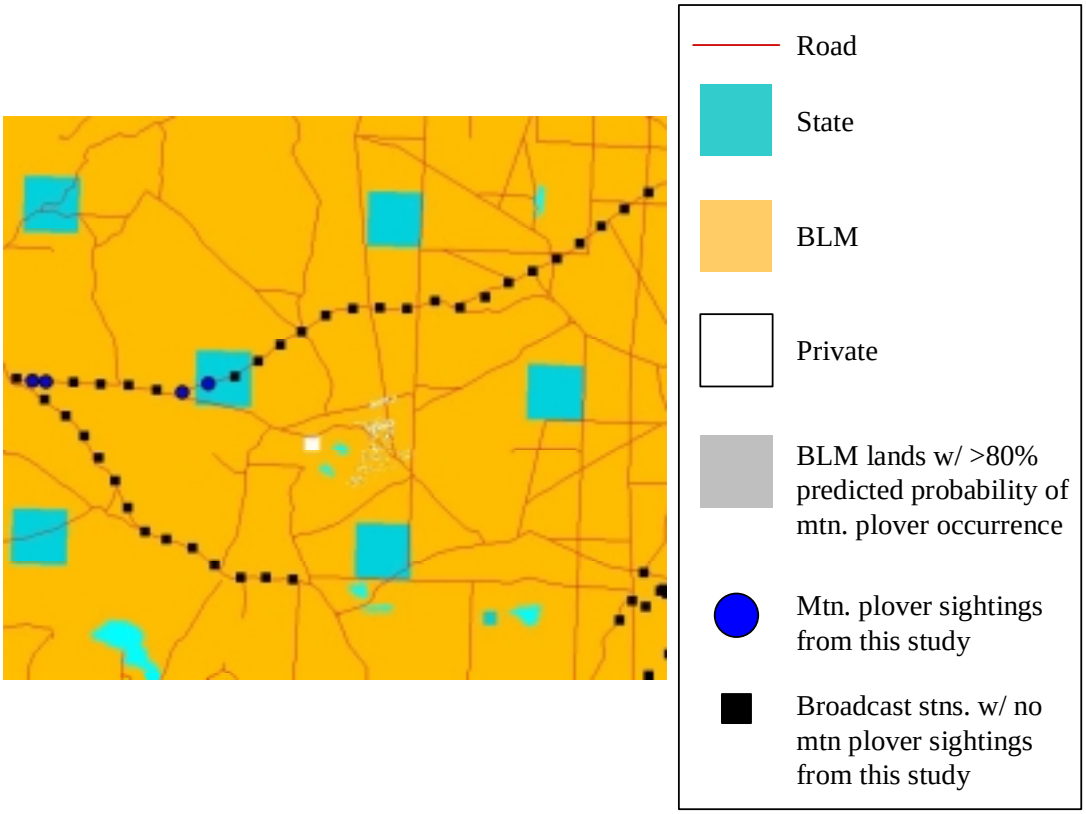
Appendix B. Mountain plover survey area B – **SHIRLEY BASIN EAST**, Rawlins Field Office (Wyoming) of the USDI Bureau of Land Management. Approximately 10 miles NNE of the town of Medicine Bow; see Figure 3.



DATE OF SURVEY	MILES OF FORMAL SURVEY PERFORMED	# LOCATIONS WHERE MTN PLOVERS SEEN	# MTN PLOVERS SEEN
16 May 2002	4.0	1	1

NOTES: Somewhat more topographic relief here than on SHIRLEY BASIN site.

Appendix C. Mountain plover survey area C – **GREAT DIVIDE BASIN**, Rawlins Field Office (Wyoming) of the USDI Bureau of Land Management. Approximately 28 miles SE of South Pass City; see Figure 3.

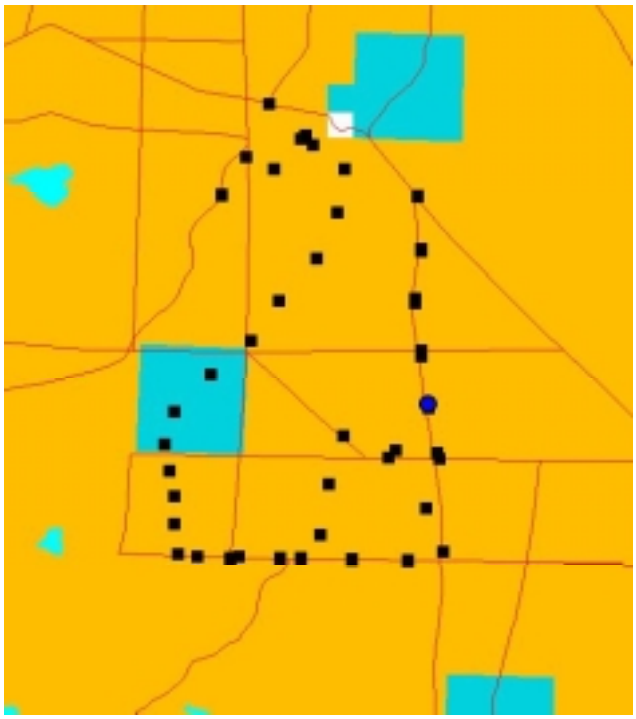


DATE OF SURVEY	MILES OF FORMAL SURVEY PERFORMED	# LOCATIONS WHERE MTN PLOVERS SEEN	# MTN PLOVERS SEEN
20 May 2002	8.5	1	1
21 May 2002	10.5	3	10

NOTES: - none -

Appendix C: continued. Photographs of mountain plover habitat, survey area C – **GREAT DIVIDE BASIN.** Each photograph shows an area where mountain plovers were observed.

Appendix D. Mountain plover survey area D – **LOST CREEK BASIN**, Rawlins Field Office (Wyoming) of the USDI Bureau of Land Management. Approximately 35 miles SE of South Pass City; see Figure 3.

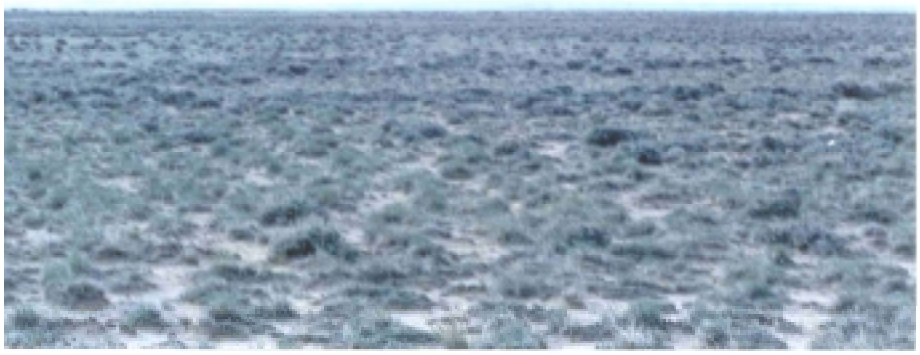


Road
State
BLM
Private
BLM lands w/ >80% predicted probability of mtn. plover occurrence
Mtn. plover sightings from this study
Broadcast stns. w/ no mtn plover sightings from this study

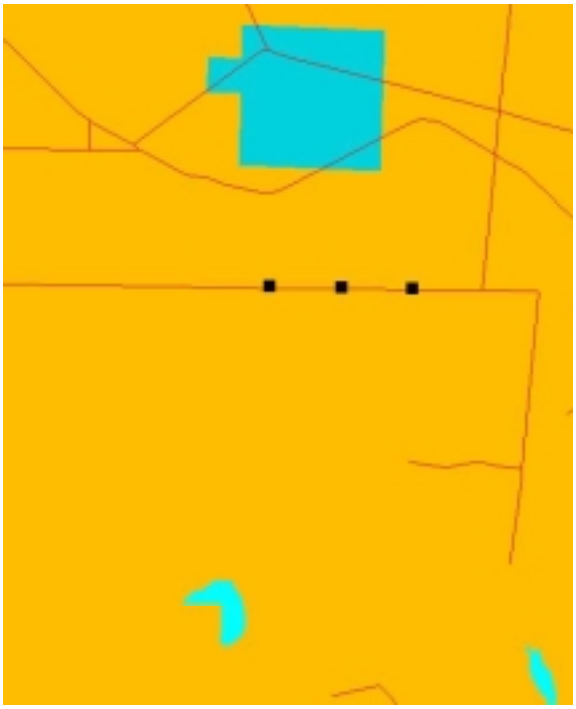
DATE OF SURVEY	MILES OF FORMAL SURVEY PERFORMED	# LOCATIONS WHERE MTN PLOVERS SEEN	# MTN PLOVERS SEEN
21 May 2002	6.0	0	0
22 May 2002	6.0	0	0
29 May 2002	9.5	1	1

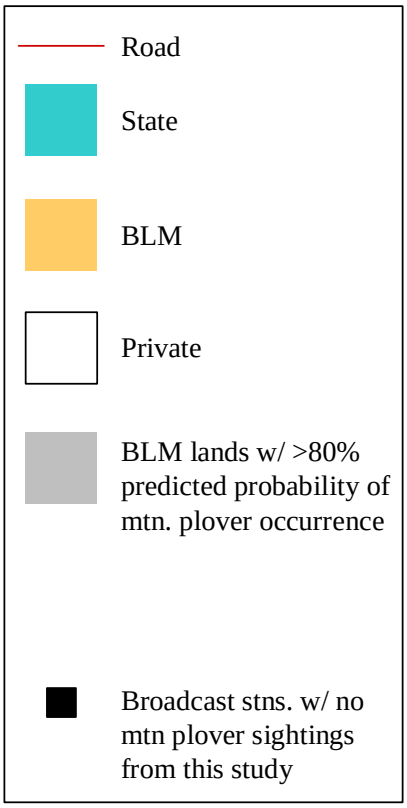
NOTES: - none-

Appendix D: continued. Photographs of mountain plover habitat on survey area D – **LOST CREEK BASIN.** Mountain plovers were observed in the area shown in the top photograph.



Appendix E. Mountain plover survey area E – **BATTLE SPRINGS FLAT**, Rawlins Field Office (Wyoming) of the USDI Bureau of Land Management. Approximately 40 miles SE of South Pass City; see Figure 3.

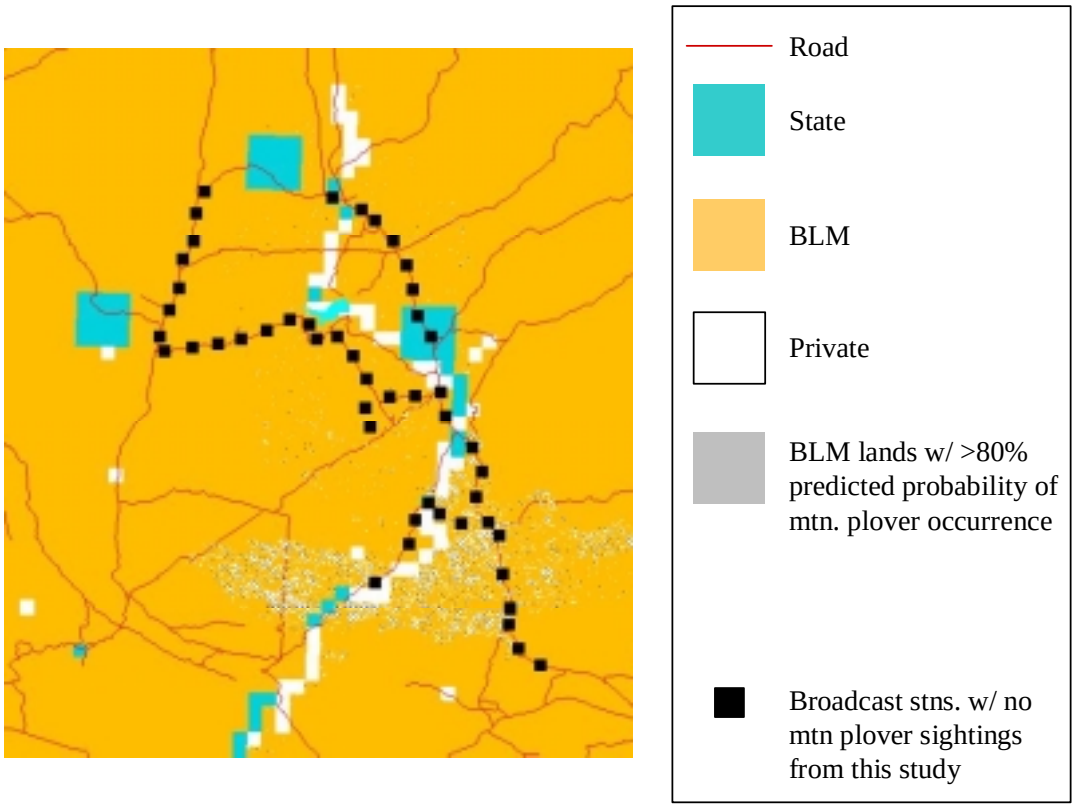




DATE OF SURVEY	MILES OF FORMAL SURVEY PERFORMED	# MTN PLOVER OBSERVED
22 May 2002	1.0	0

NOTES: - none-

Appendix F. Mountain plover survey area F – **COW CREEK RESERVOIR**, Rawlins Field Office (Wyoming) of the USDI Bureau of Land Management. Approximately 40 miles W of the town of Baggs; see Figure 3.

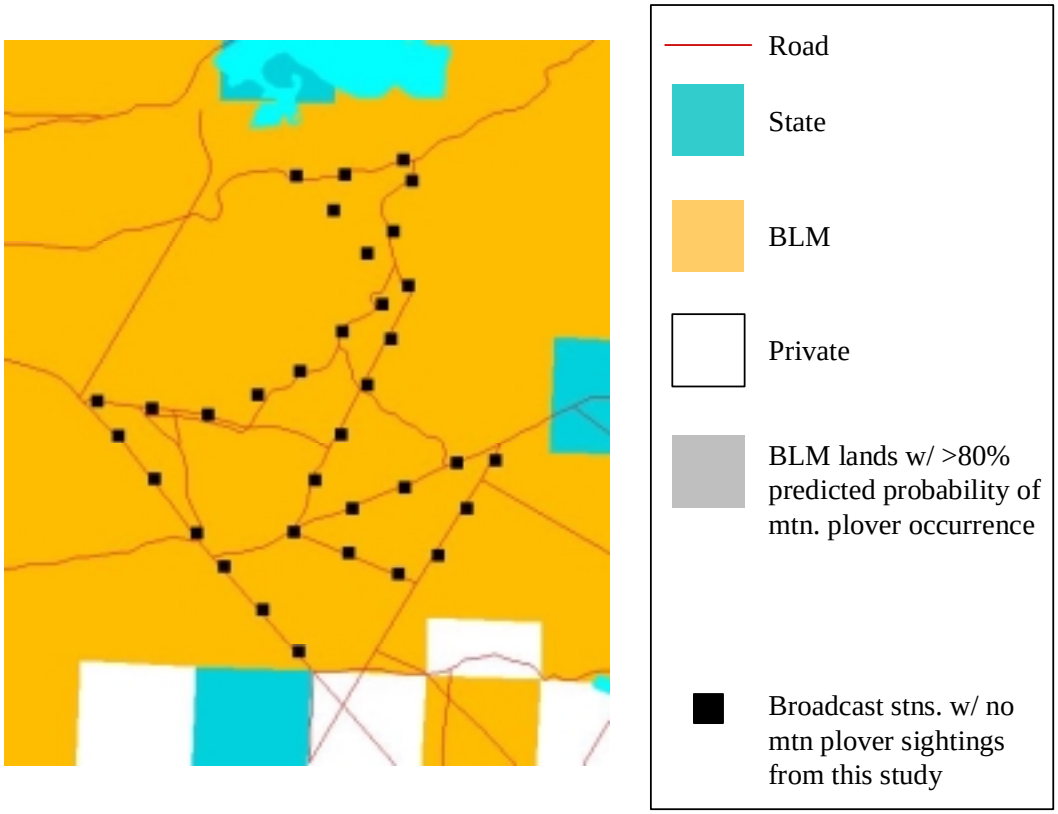


DATE OF SURVEY	MILES OF FORMAL SURVEY PERFORMED	# MTN PLOVER OBSERVED
23 May 2002	10.5	0
30 May 2002	5.0	0
31 May 2002	9.5	0

NOTES: - none-

Appendix F: continued. Photograph of potential mountain plover habitat on survey area F – **COW CREEK RESERVOIR.** No mountain plovers were observed here.

Appendix G. Mountain plover survey area G – **HORSESHOE BEND**, Rawlins Field Office (Wyoming) of the USDI Bureau of Land Management. Approximately 40 miles SE of South Pass City; see Figure 3.



DATE OF SURVEY	MILES OF FORMAL SURVEY PERFORMED	# MTN PLOVER OBSERVED
29 May 2002	8.5	0
30 May 2002	7.5	0

NOTES: - none-