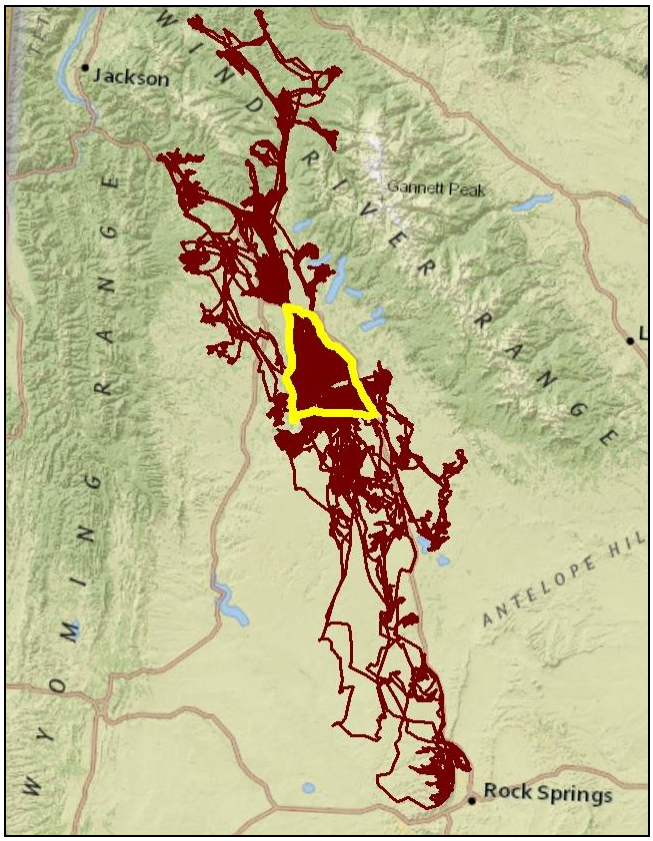
Pronghorn Migration Supplement for the Pinedale Anticline Project Area

2015 Annual Report



Prepared for:

Pinedale Anticline Project Office (PAPO)

PO BOX 768
Pinedale, WY 82941

Prepared by:

Chad LeBeau and Patrick Rodgers

Western EcoSystems Technology, Inc.
415 West 17th Street, Suite 200
Cheyenne, Wyoming 82001

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OVERVIEW

As part of the PAPO wildlife monitoring, we maintained a sample of Global Positioning System (GPS)-collared pronghorn (*Antilocapra americana*) to monitor winter distribution as it relates to gas development and annual winter occupancy counts. The GPS data provide additional opportunity to better understand the seasonal movements and migration patterns of the animals in the region. Here, we use GPS data collected from 66 individual animals across four years to illustrate the variable movement and migration expanses found in the Pinedale Anticline Project Area (PAPA) and Bench Corral (BC) study area populations. These variable and unpredictable movement patterns make it difficult to accurately estimate pronghorn abundance and make meaningful comparisons between study areas, as outlined in the WMMM.

METHODS

We mapped pronghorn movement and migration patterns from winter 2011-12 through winter 2014-15. Our previous analyses were based on one-year periods which rendered an insufficient amount of data for recognizable movement patterns to form. In order to increase the chances that highly frequented areas and movement patterns would be identifiable, we grouped GIS data into two-year periods, 2011-13 and 2013-15 – pronghorn were captured and collared during late December or early January during the study period. Our analysis of migration routes prior to 2012 used Brownian bridge movement models (BBMM), but because pronghorn seasonal ranges and migratory routes are often indistinct, or more typically, non-existent, we simply mapped GPS collected data for individual animals.

RESULTS

Pinedale Anticline Project Area

A total of 19 pronghorn from the PAPA provided location data in the 2011-13 study period, and an additional 19 pronghorn provided location data for the 2013-15 study period. Pronghorn migrated as far north as Buckskin Ridge in the Wind River Range (~25 miles west of the town of Dubois) to as far south as Pilot Butte (~2 miles west of the town of Rock Springs; Figure 1). Pronghorn tended to travel greater distances in 2011-13 than in 2013-15. The first example of this is linear pronghorn distribution, which covered approximately 145 and 108 miles in the 2011-13 and 2013-15 study periods, respectively. In addition, the area that pronghorn covered collectively was greater in 2011-13 ($A \approx 2{,}510$ mi^2) than in 2013-15 ($A \approx 1{,}728$ mi^2). A final example is the number of individuals that migrated substantially large distances south of the PAPA boundary outlined in the WMMM. In 2011-13, 17% of animals migrated anywhere between approximately 68 to 76 miles south of the PAPA; most of these individuals traveled to the White Mountain area (Figure 1). In 2013-15, 21% of pronghorn migrated large distances (~10 to 30 mi), but these distances were much less than the previous two-years; most of these individuals moved to the Stud Horse Butte area (Figure 1).

Bench Corral Study Area

A total of 16 pronghorn captured in the Bench Corral study area provided GPS location data in the 2011-13 study period, and an additional 12 pronghorn provided location data for the 2013-

15 study period. As in the PAPA, pronghorn distribution was greater in 2011-13 (~97 miles) than in 2013-15 (~50 miles). Pronghorn migrated as far north as Bondurant and as far south as Eighteenmile Canyon (~16 miles east of Fontenelle). The area that pronghorn covered collectively in 2011-13 was 1,449 mi^2, decreasing to 815 mi^2 in 2013-15. Concurrently, in 2011-13, approximately 27% of BC pronghorn migrated substantially large distances south of the boundary identified in the WMMM (~26 to 45 mi), most to the Sublettes Flat area (Figure 2). The most recent two years of data show no individual animals travelling greater than 7 miles south of the study area.

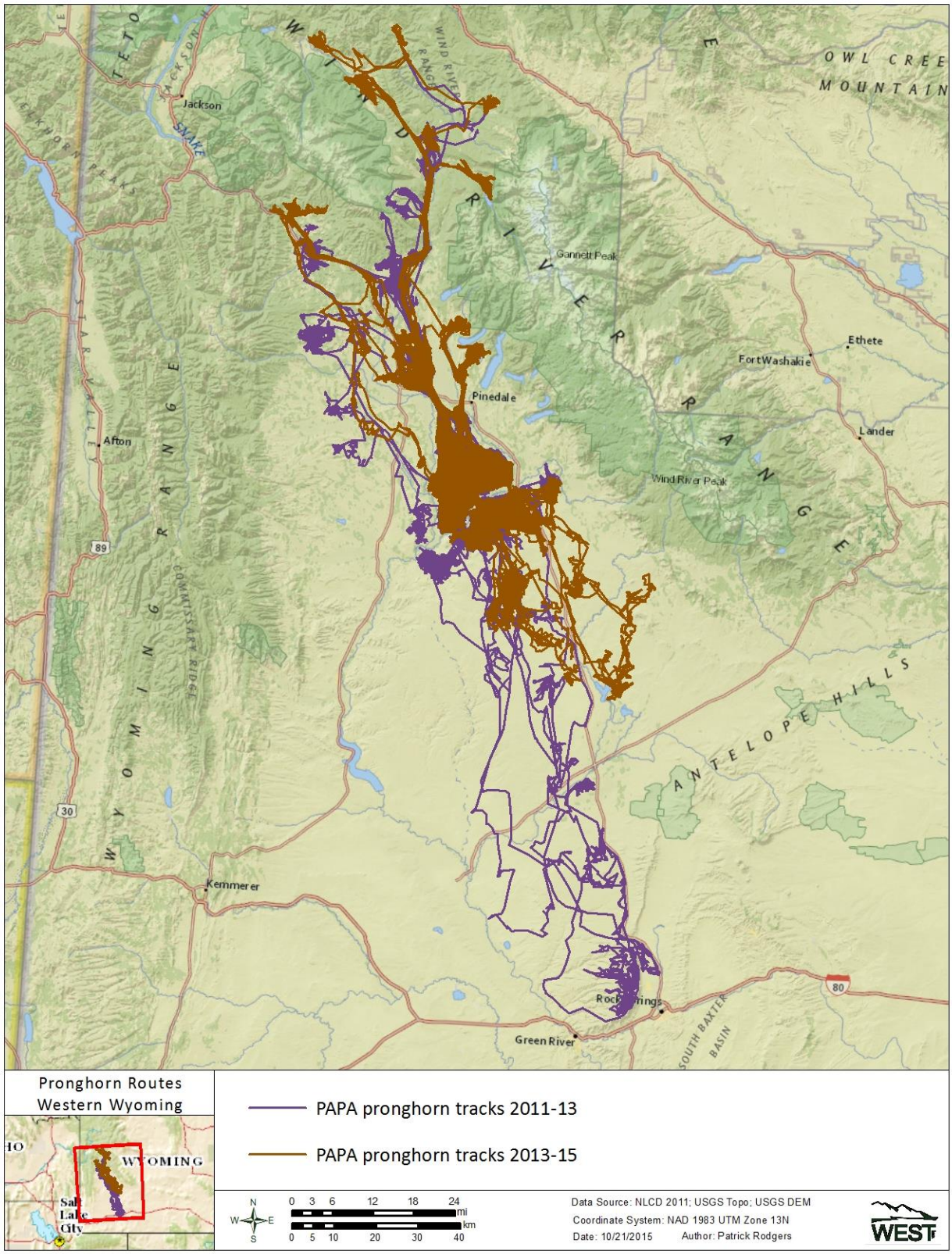

Figure 1. Pronghorn movements of animals captured in Pinedale Anticline Project Area for the 2011-13 and 2013-15 study periods.

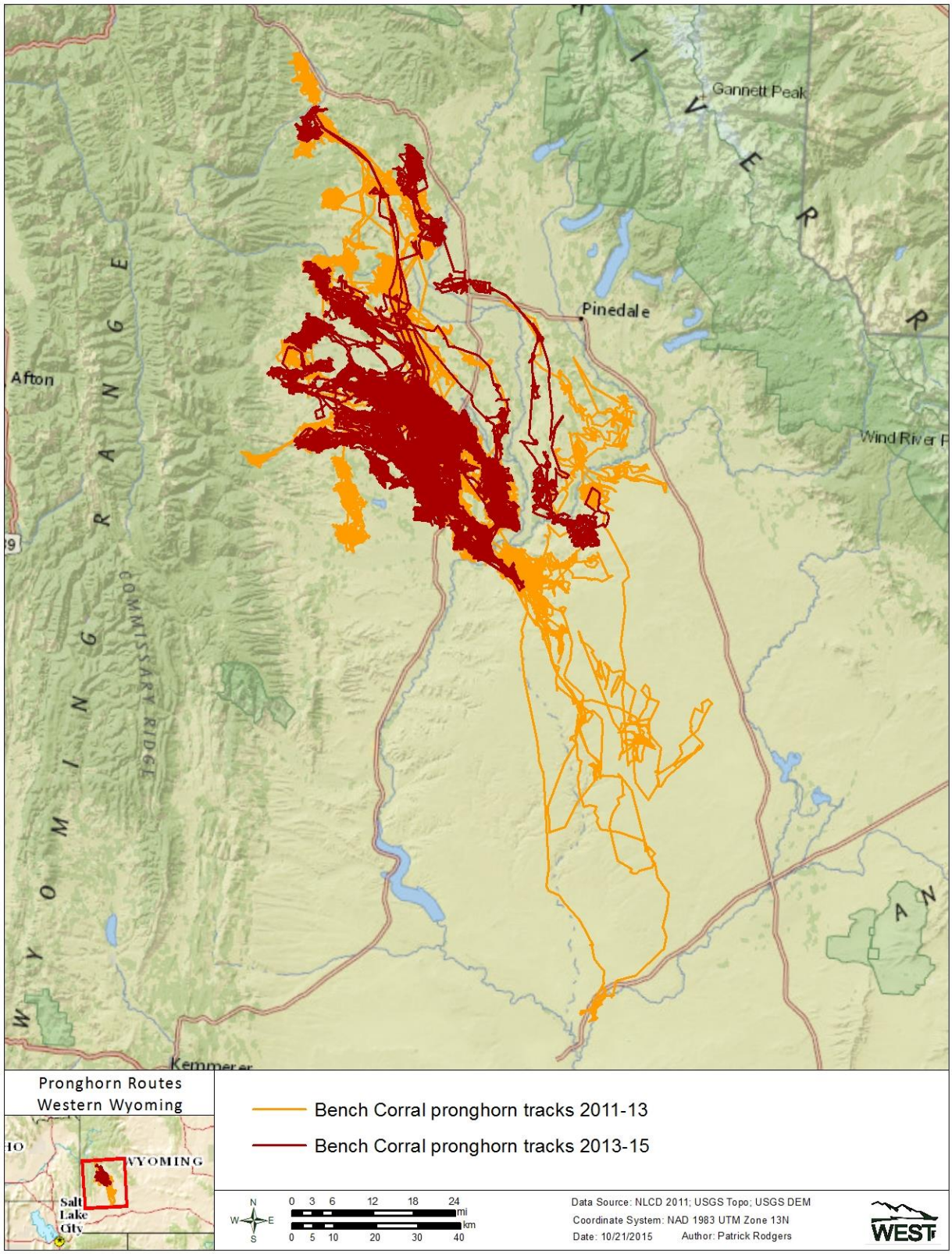

Figure 2. Pronghorn movements of animals captured in Bench Corral Study Area for the 2011-13 and 2013-15 study periods.

SUMMARY

Using GPS technology, we were able to track individual movements in two-year intervals and collect a total of two years of GPS data from individual pronghorn in the PAPA and BC. Despite the accuracy of these data, identifying pronghorn high-use areas and migratory patterns remains a challenge because of unpredictable movements and substantial travel distances. The results of our analysis affirm that travel distances and use areas do fluctuate across multiple years. However, when comparing mapped pronghorn tracks, prominent overlap areas are visible –mainly within winter range areas of the PAPA and BC. These results have important management implications and can aid decision-makers in prioritizing pronghorn habitats near the PAPA. Despite these improvements in our understanding of pronghorn migrations and movements, the ability of pronghorn to move beyond the boundaries of the study areas continues to distort the accuracy of long-term pronghorn abundance estimates and occupancy models and increasingly challenges mitigation efforts.