

Archaeological Evidence of Pronghorn Migration in the Upper Green River Basin by Paul H. Sanders and Mark E. Miller, Office of the Wyoming State Archaeologist, PO Box 3431, University of Wyoming, Laramie, WY 82071. Paper presented at *Ancient Corridors: Understanding Western Wyoming's Human Impacts on Wildlife Routes* symposium, March 14-15, 2003, Pinedale, WY.

ABSTRACT

Archaeological investigations conducted at the Trappers Point site (48SU1006) within the upper Green River Basin revealed a 5600 year old pronghorn bonebed. The site is located directly in a bottleneck of the seasonal pronghorn migration route as mapped by Wyoming Game and Fish Department biologists. Faunal analyses indicate at least 27 pronghorn were killed in late March to April during the Early Archaic period, which coincides with the timing of the modern Sublette pronghorn herd's movement across the site area. The position of the Trappers Point site and other prehistoric pronghorn kill/butchering locations along seasonal migration routes of herd units within the Green River Basin point to the time-depth of modern pronghorn routes thousands of years into the past.

The Trappers Point site contains three major components ranging in age from 7880 to 4690 years before present (BP), one of which includes the oldest known pronghorn antelope (*Antilocapra americana*) bonebed in the region. Primary topics discussed in this paper are: (1) the association of the Trappers Point site locality with a bottleneck in the modern pronghorn seasonal migration route, (2) the seasonality of the pronghorn bonebed and its timing with the seasonal migration of modern pronghorn across the site locality, and (3) the occurrence of other prehistoric pronghorn kill/butchering sites within modern, pronghorn summer and winter ranges.

TRAPPERS POINT SITE

The Trappers Point site (48SU1006) contains three major components attributable to the Early Archaic period: stratum III (7880-6180 years BP), stratum V (6010-5160 years BP), and stratum III (4690 years BP) (Miller et al. 1999). All three components are situated on the upper leeward side of a sagebrush covered ridge that links a large plateau to the south (known as The Mesa) with a series of hills (Cora Buttes) to the north and northwest. This area is west of Pinedale, just below the south flank of the Wind River Mountains in western Wyoming. The site area is bordered by the Green River to the west and the wide meadows of the New Fork River to the east; an area known as the Cora Y bottleneck.

A block excavation, 129 square meters in size, yielded nearly 87,000 pieces of chipped stone debitage, almost 300 projectile points, 400 other stone tools, 86,000 faunal remains, and nine features (Figure 1). Pronghorn remains dominate each of the three main components, but are most prevalent within the 5600 year old stratum V where the remains of 27 animals and eight fetuses were recovered. We estimated that only about 30 percent of this bonebed was excavated; had we excavated the entire bonebed we believe that the remains

of nearly 100 animals would have been uncovered.

Faunal remains are unique among archaeological materials in that they can often provide estimates of the time of year a site was occupied. An estimate of the stratum V seasonality is believed to have been around mid-March through April. This is based on, (1) pronghorn fetal development, (2) post-natal tooth eruption in mandibles and maxillae, and (3) post-natal tooth wear. Most of the pronghorn were three years old or less and, along with other evidence, these data suggest a catastrophic mortality from a single, or very closely spaced, multiple events. The faunal remains were highly fragmented due to human butchering and processing activities and subsequent weathering. The fact that all portions of the pronghorn, from head to toe were recovered and that the physical extent of the stratum V bonebed was quite limited, argue for some sort of corralling structure. No corral or trap was noted at the site, although one could have been constructed from big sagebrush that surrounds the site area, as is the case for similar ethnographic and archaeological examples (Arkrush 1986; Egan 1917; Fowler 1989; Frison 1971, 1991; Steward 1941, 1943). Most of these traps consist of two lines or "wings" constructed of piles of rock or juniper logs that gradually converge toward a corral-like structure. Prehistoric peoples often also used or enhanced features of the natural topography in the placement of the trap. Some simple enhancements to the natural bottleneck of the Cora Y area would have allowed the trapping of the pronghorn.

The construction of a corral and subsequent trapping, killing, and processing of 27+ pronghorns would require the communal effort of a number of individuals, possibly several bands of hunter-gatherers. The presence of Jackson Hole obsidian in the site assemblage indicates connections with this area and the possibility that some groups may have followed the pronghorn out of Jackson Hole in the fall of the year, or arrived at the site in spring to intercept animals on their return. Lithic raw materials from the Rock Springs area suggest the prehistoric group's seasonal round also incorporated the south central portion of the Green River Basin. The wide distribution of lithic raw material sources found at the site could be evidence of multiple groups coming together to cooperate in a communal hunting effort.

While the other two main components (strata III and VII) contain fewer faunal remains and total numbers of pronghorn, their tool assemblages are very similar suggesting a similar function. Most striking is the fact, that the 4690 year old, stratum VII contained 100 projectile points, compared to 78 from the main bonebed (stratum V). The 7880-6180 year old, stratum III contained the fewest points (n=24), but was also had the smallest excavated area. As a result, it is believed that the site was utilized as a pronghorn kill/butchering locale multiple times during the Early Archaic period.

PRONGHORN MIGRATION PATTERNS

A number of early naturalists and observers have noted the seasonal migrations of pronghorn throughout various areas of the western U.S. (Burroughs 1961; Grinnell 1929; McLean 1944; Seton 1937; Skinner 1922). Pronghorn that cross the Trappers Point site are no different, except that their movements are better documented (Rapier et al. 1989; Sawyer and Lindzey 1999, 2000). The Trappers Point site is within the modern range of the Sublette pronghorn herd unit as defined by the Wyoming Game and Fish Department, which has the distinction of following the longest annual pronghorn migration route in North America, ranging from Jackson Hole in the summer to as far as Interstate 80 in the winter, a distance of 160-270 km (100-170 mi) (Seton 1937; Harper 1985; Segerstrom 1997; Sawyer and Lindzey 1999, 2000) (Figure 2). Through conversations with Doug McWhirter, a Big Game Biologist with the Wyoming Game and Fish Department in Pinedale (personal communication 1994), it became apparent that the Trappers Point site was directly located on a 1.6 km (1 mi) wide migration bottleneck known as the Cora Y, through which pronghorn (and mule deer) move back and forth between their winter ranges to summer ranges (Figure 3).

Direct observations by wildlife personnel and use of radio-collars (Sawyer and Lindzey 1999, 2000) show that the pronghorn typically cross the Cora Y bottleneck in late March to late April. This directly coincides with the seasonal of use determined for the Trappers Point site. Upwards of 1500-2000 pronghorn and as many mule deer have crossed this bottleneck in recent years providing an indication of the quantity of animals utilizing this corridor. As many as 600 pronghorn eventually make the trek across the Gros Ventre Range into the Gros Ventre River valley and Jackson Hole, crossing through other bottlenecks, some as small as 100 m wide (Segerstrom 1997:16, 26). These pronghorn typically move out of Jackson Hole in October to December, although their movements are more sporadic and less dependent on snow conditions (Sawyer and Lindzey 2000:33).

Wildlife studies of the Sublette pronghorn herd (Harper 1985; Rapier et al. 1989; Segerstrom 1997; Sawyer and Lindzey 1999, 2000) indicate that the animal movement follow set seasonal patterns, especially when they travel to and from Jackson Hole. Although the severity of the climate, snowpack, and habitat condition can affect the actual timing of spring and winter migrations, these factors do not appear to change the route location (Greenquist 1983; Segerstrom 1997, Sawyer and Lindzey 2000). Prehistoric peoples inhabiting the area would need to be quite familiar with pronghorn behavior, habitat, snowpack, and local weather conditions to predict timing of the annual movements from winter to summer range as the animals cross the Cora Y and other bottlenecks. In this regard, the seasonal movement of pronghorn across the Cora Y/Trapper Point locale can be characterized as a predictable annual event, usually occurring within a period

of weeks. When food resources are predictable, and therefore reliable, they are likely to become a regular part of a prehistoric hunter-gatherer's diet, and influence their settlement and subsistence pattern, especially if they are high value resources like large game animals (cf. Winterhalder and Smith 1981). The presence of pronghorn remains in strata III, V, and VII at Trappers Point seem to verify this situation, at least during the Early Archaic period. The identification of three other bottlenecks along pronghorn migration into Jackson Hole (Seegerstrom 1997; Sawyer and Lindzey 1999, 2000) provide the opportunity to search for other archaeological sites that may have coincided with the interception of these animals at different points along this route.

The juxtaposition of the Trappers Point site with the Cora Y bottleneck begs the question: what is the relationship, if any, between modern pronghorn winter/summer ranges and other known prehistoric pronghorn kill/processing sites? This question has been discussed by Sanders and Wedel (1999), using three site examples that occur within the Sublette herd unit. The sites are Boar's Tusk (48SW1373), Eden-Farson (48SW304), and Gailium (48SU1156) (Frison 1971; Lubinski 1997; Fisher and Frison 2000) (Figure 1). In contrast to Trappers Point, all three are late in age, ranging from the Late Prehistoric into the Protohistoric period (ca. 1500-150 RCYBP). All have fall-winter seasonality estimates (Lubinski 1997) and coincide with crucial pronghorn winter range or winter year long range (Figure 2).

The degree of correlation of these three sites to the migration routes is less dramatic than for Trappers Point, but they are positioned where modern herds of pronghorn were wintering for several months, and do not necessarily represent short-term locations used to intercept pronghorn on their seasonal migrations. Nonetheless, the prehistoric groups likely took advantage of the local terrain, habitats, and pronghorn behavior to facilitate their hunting and procurement during all seasons. Similar situations have been noted at the other prehistoric pronghorn kill/processing and trapping locales within southwestern Wyoming (Sanders and Wedel 1999), and it is likely that similar sites exist that took advantage of seasonal pronghorn migration routes.

There are also a number of prehistoric sites at the Fremont Lake bottleneck. Most of these are campsites with radiocarbon dates and artifacts that indicate occupations during the past 7,000 years (Rose 1988; Schoen 1989, 1990). Faunal remains include bison, elk, deer, pronghorn, beaver, rabbit, and fish (Hoefler 1991). No large bonebed was found at these sites, similar to Trappers Point, it is evident that a wide range of animals were utilized at these locations. In addition, a line of rock piles or cairns were identified along the lateral, Fremont Lake glacial moraine that may have been used as drive line or hunting blinds (Schoen 1988). The concentration of archaeological sites at the Fremont Lake bottleneck attests to the importance of this area to prehistoric peoples.

Our knowledge concerning the prehistoric utilization of the migration corridor through the mountains into the Upper Gros Ventre River Valley and Jackson Hole has been hampered by the fact that very little archaeological work has been done within this area. Jamie Schoen, Forest Service Archaeologist, has recently identified a line of rock piles or cairns next to the pronghorn migration route in the Upper Gros Ventre area that may have been used as a drive line or hunting blinds for migrating animals. He is planning additional archaeological work for the Bacon Ridge area, which the pronghorn travel across. Hopefully, he will be able to identify other archaeological remains that could be attributed to the prehistoric utilization of the migration corridor.

CONCLUSIONS

The Trappers Point data suggest that pronghorn have passed through the Cora Y area on their way to summer range for thousands of years. At this time we can only speculate on the antiquity of the migration of pronghorn into Jackson Hole, but we believe that it probably coincided as a response to dry climatic episodes that have been documented thousands of years ago (Eckerle and Hobey 1999; Whitlock 1993). Such evidence will have to come from archaeological sites in Jackson Hole and the mountainous section of the migration corridor. At present, there is no archaeological evidence of pronghorn remains in any of the known sites in Jackson Hole, but it doesn't mean that the evidence doesn't exist. Part of it is due to the fact that few dated archaeological sites with faunal remains have been investigated in Jackson Hole. A second factor is that deer, big horn sheep, and pronghorn bones are quite similar in appearance and many archaeologist have not taken the effort to distinguish the different species from one another. And finally, the importance of identifying prehistoric pronghorn migration into Jackson Hole has only come to the forefront of archaeological or wildlife management issues in the past few years. As a result, there are a number of known archaeological sites along the migration corridor into Jackson Hole, but none of these have yet been investigated from a perspective that explores their possible relation to intercepting animals as they traveled through the migration corridor or to establish the antiquity of the corridor. The good news is that the message has now gotten out and we are looking much more intently at this important question.

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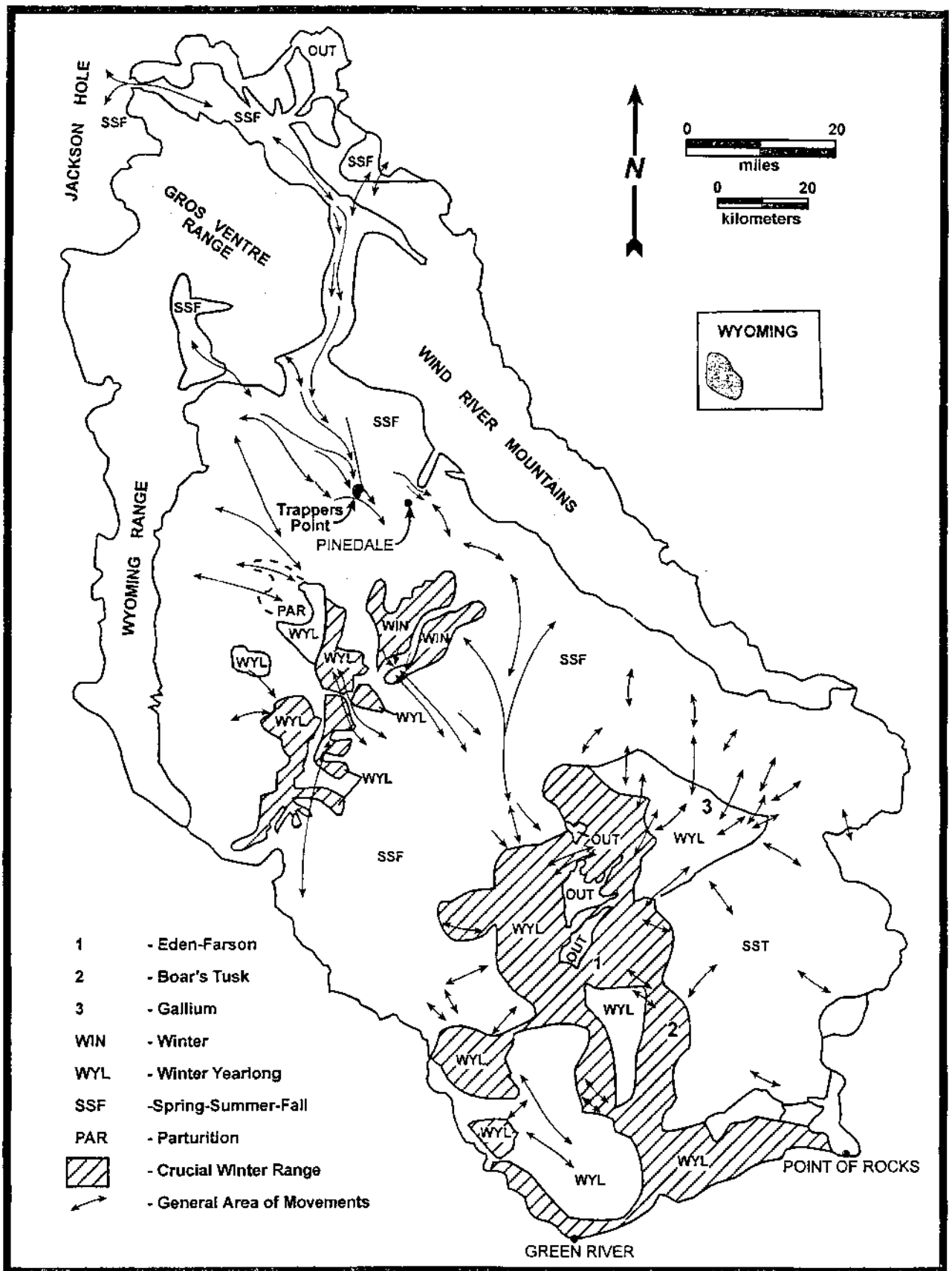


Figure 2. Map of Sublette herd pronghorn migration routes and summer and winter range and relation to known prehistoric pronghorn kill/butchering sites. Map adapted from Wyoming Game and Fish Department maps (1987).

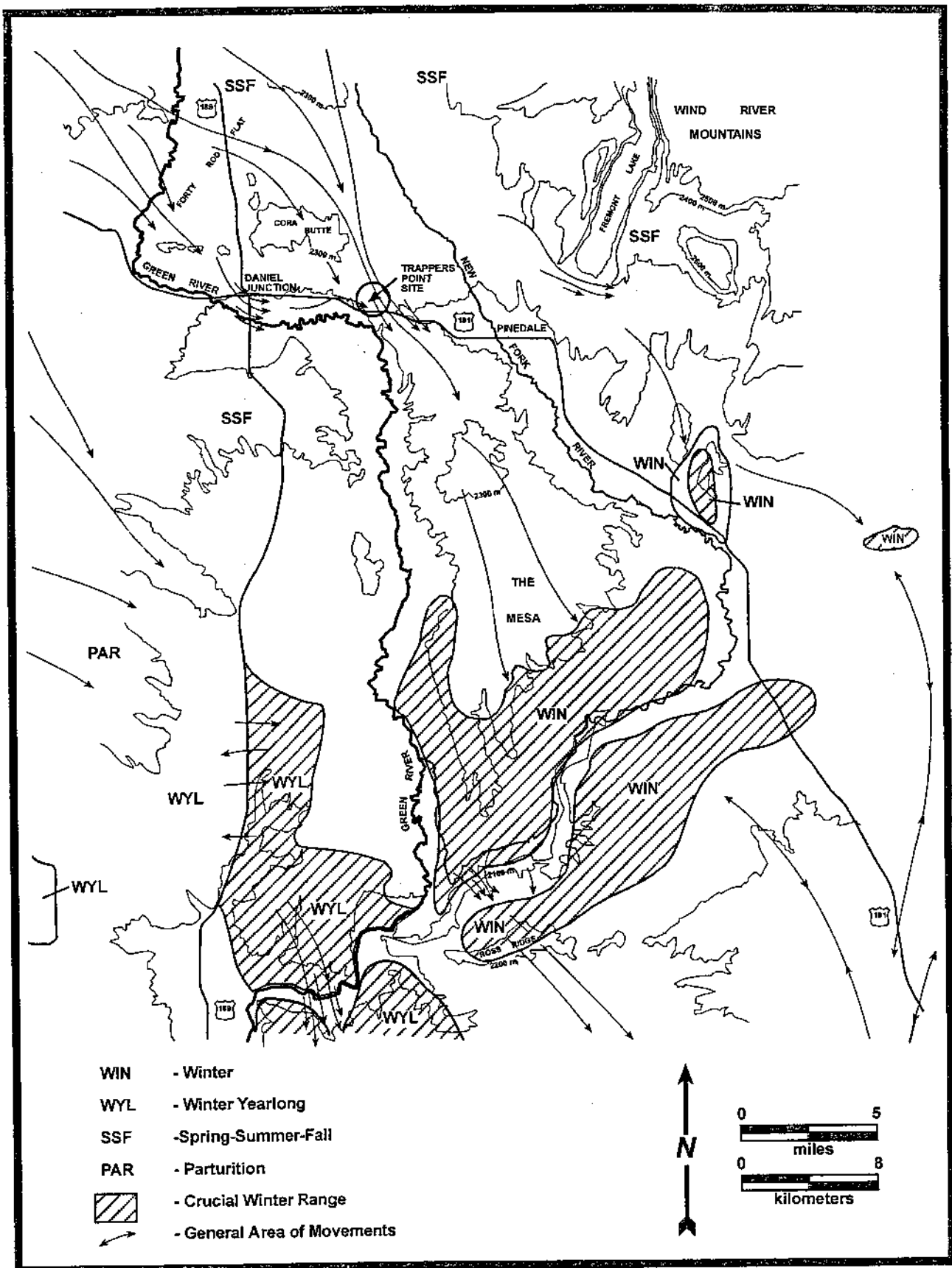


Figure 3. Map of Trappers Point area and pronghorn migration routes and winter and summer range. Map adapted from Wyoming Game and Fish Department maps (1987).