



UNIVERSITY OF WYOMING

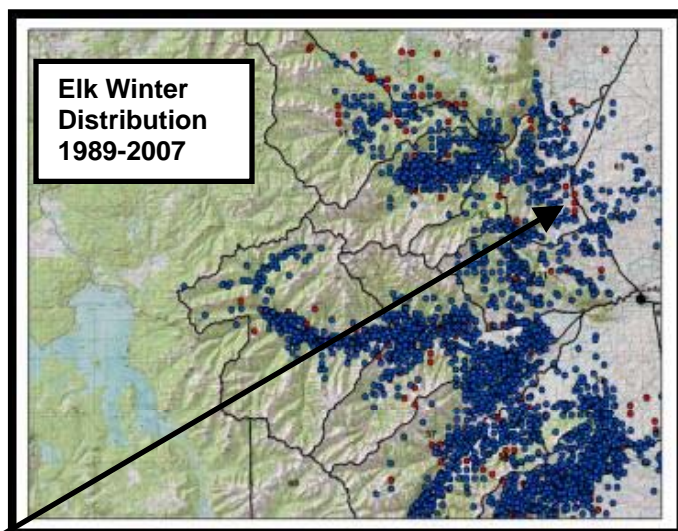
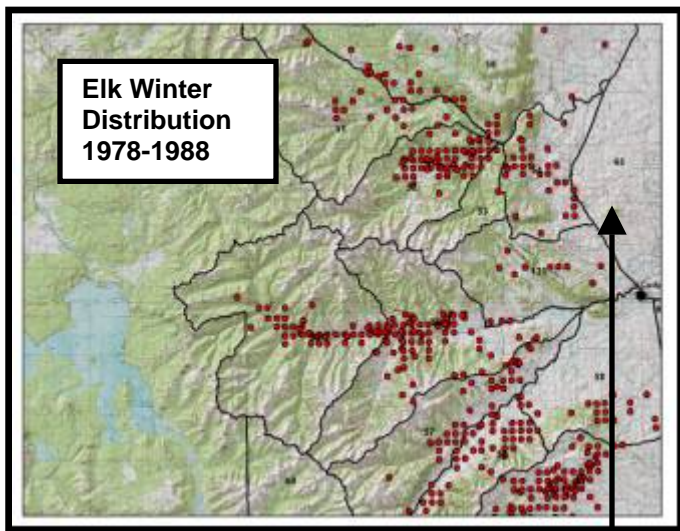
Absaroka Elk Ecology Project

2008 Update

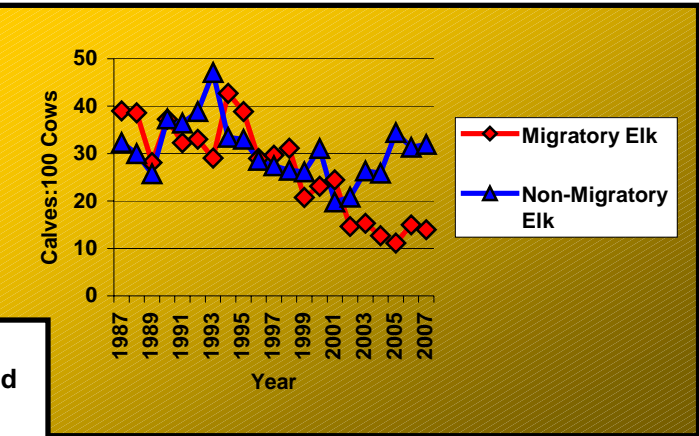
Introduction

The Wyoming Game & Fish Department, the University of Wyoming, and the U.S. Fish & Wildlife Service initiated the Absaroka Elk Ecology Project in January 2007. Objectives of this project include;

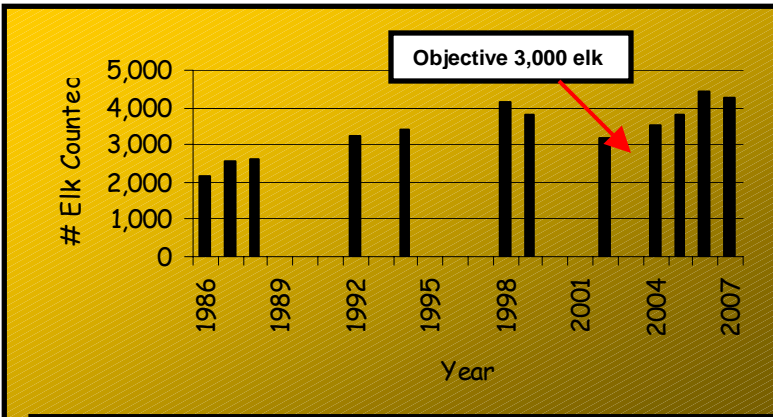
- Determine the status of migratory and non-migratory elk in the Clark's Fork Herd Unit.
- Determine the timing of migrations and routes used by migratory elk.
- Increase understanding of elk use of private lands.
- Determine adult female survival rates.
- Evaluate the influence of wolves on elk habitat use and movements.



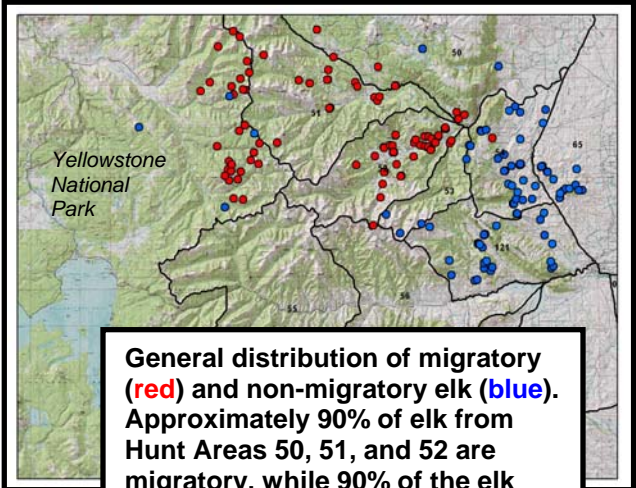
In the last 20 years a dramatic shift in elk distribution has occurred, with more elk frequenting low elevation areas along the Absaroka Front. Most of these areas are on private land.



When compared to migratory elk, non-migratory elk on private lands are more productive and recently have had higher calf:cow ratios.



The higher productivity of non-migratory elk seen recently has allowed the Clark's Fork Elk Herd to grow well above the population objective of 3,000 elk.



General distribution of migratory (red) and non-migratory elk (blue). Approximately 90% of elk from Hunt Areas 50, 51, and 52 are migratory, while 90% of the elk captured in Hunt Areas 54, 65, and 121 are non-migratory.



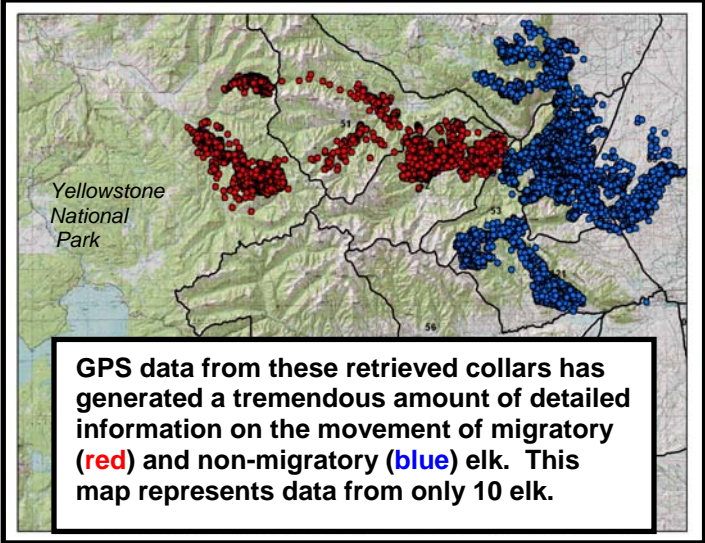
To address the objectives of the study, a total of 90 adult female elk were captured in 2007 and 2008 and fitted with GPS radio collars. An additional 20 adult females were captured and fitted with conventional VHF radio-collars.



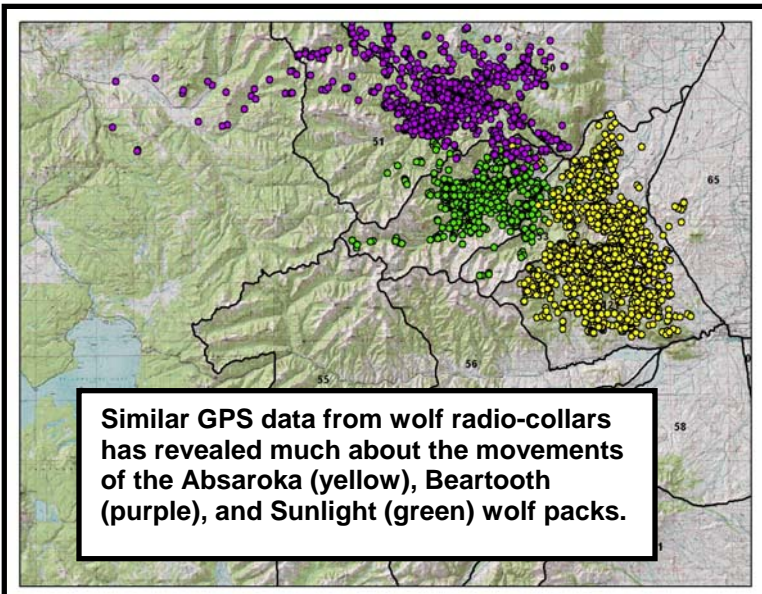
To date, 12 mortalities of radio-collared elk have been documented. These include 6 hunter kills (3 migratory, 3 non-migratory), 5 unknown causes, and 1 probable wolf kill.



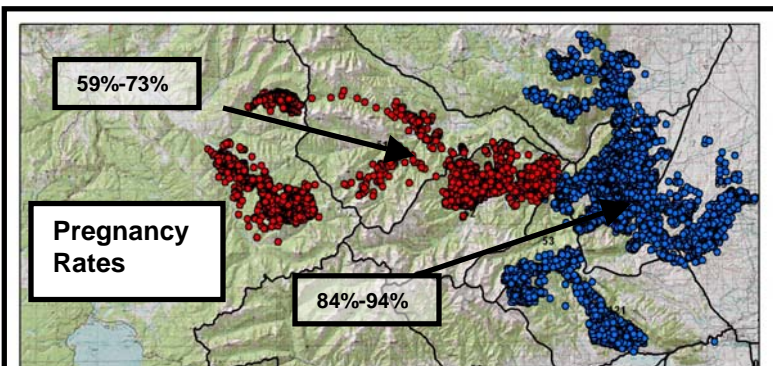
Wolves captured and fitted with GPS collars are being monitored in relation to elk distribution and movements.



GPS data from these retrieved collars has generated a tremendous amount of detailed information on the movement of migratory (red) and non-migratory (blue) elk. This map represents data from only 10 elk.



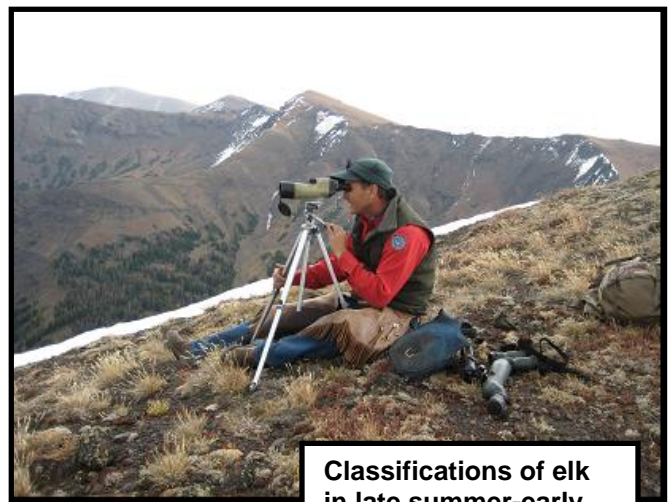
Hunter checks and blood and tooth samples from hunter-harvested elk give data on age, pregnancy status, lactation status, and body condition. Information from hunter-killed elk is an important contribution to this study.



Blood samples from captured elk, as well as hunter-killed elk from the 2007 hunting season revealed pregnancy rates of migratory elk (59%-73%) are much lower than non-migratory elk (84%-94%). These data support and could explain much of the difference observed in calf:cow ratios between migratory and non-migratory elk.

The disparity in pregnancy rates between migratory and non-migratory elk begs the question of why pregnancy rates are so low for migratory elk. To address this question, additional project objectives were developed. They include;

- Evaluate the availability of bulls during the breeding season and the possible effect upon pregnancy rates.
- Evaluate the influence of the female age structure of migratory and non-migratory elk and its' possible effect upon pregnancy rates.
- Evaluate the influence of elk body condition upon elk pregnancy rates.
- Evaluate the influence of elk habitat selection on elk body condition and ultimately elk pregnancy rates.
- Evaluate the relationship between wolf predation risk and elk habitat selection, body condition, and pregnancy rates.

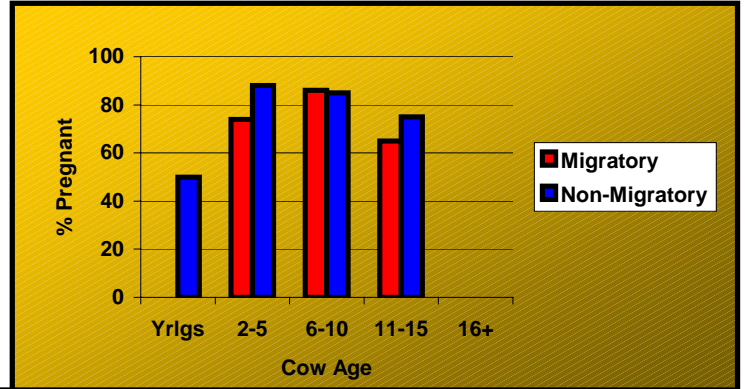


Classifications of elk in late summer-early fall support pregnancy rate findings, as calf:cow ratios of migratory elk were 16:100 in 2007 and 15:100 in 2008, while non-migratory elk had calf:cow ratios of 41:100 in both 2007 and 2008.

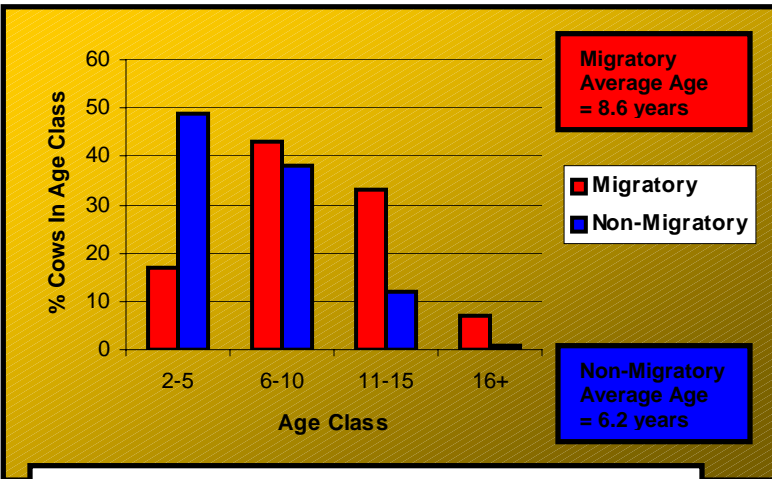




Late summer-early fall classifications reveal that migratory adult bull:cow ratios (21:100) are not low enough to affect pregnancy rates. Yearling bull:cow ratios, however, are quite low (3:100) as a result of poor calf crops (non-migratory yearling bull:cow ratios are 11:100). This has major implications for future bull hunting opportunities for migratory elk.



Pregnancy rates by age class, however, do seem to be different for migratory and non-migratory elk. Although both migratory and non-migratory elk have similar pregnancy rates in the 6-10 year old age class, non-migratory elk have higher pregnancy rates in the younger age classes (yearlings and 2-5 year-olds) and older age classes (11-15 year olds). Younger cows with higher pregnancy rates suggest better nutrition for non-migratory elk and lower pregnancy rates for older cows may mean earlier reproductive senescence for migratory elk.



Age data from captured and hunter-killed cow elk show that non-migratory elk are younger in general, with more cows in the 2-5 year age class than migratory elk. Both migratory and non-migratory elk have relatively similar proportions of cows in the 6-10 year old class, and migratory elk have more 11-15 year, and 16+ year old cows. Still, average ages of migratory elk (8.6 years) were not dramatically different from that of non-migratory elk (6.2 years) to explain observed pregnancy rate differences.



Sampling of body condition (body weight, % body fat), pregnancy status, and lactation status of radio-collared elk occurred in March 2008 (at the low point of body condition) and September 2008 (at the peak of body condition). March sampling revealed data similar to other efforts, with pregnancy rates for migratory and non-migratory elk of 60% and 90%, respectively. Both migratory and non-migratory elk came through winter in reasonably good condition (5.6% and 6.1% average body fat, respectively). Body sizes of both migratory and non-migratory elk were quite small, averaging 197kg (434 lbs) for migratory elk and 195 kg (429 lbs) for non-migratory elk. These are among the smallest body sizes of Rocky Mountain elk documented, and may be explained by nutritional limitations.



September body condition sampling revealed that most (80%) migratory elk sampled were not lactating, while most (80%) non-migratory elk were lactating, again supporting other data collected on pregnancy rates and calf:cow ratios. Body weights increased compared to March, with migratory elk weighing an average of 228kg (502 lbs) and non-migratory elk weighing an average of 216kg (476 lbs). Heavier weights for migratory elk are mostly a result of the larger sample of non-lactating (and therefore fatter) cows. Body fat levels of lactating cows were 10.5% for migratory elk and 11.3% for non-migratory elk. At this level, delays in breeding, delays in birthing, reduced growth rates of calves and yearlings (and smaller-sized adults) would be predicted, but not the reduced pregnancy rates observed. The effect of good growing season precipitation in 2008 upon forage conditions, and the interaction of summer calf predation and adult nutrition could explain these findings.



Scott Copeland 2004

Data collection will continue through April 2010 when elk GPS collars are programmed to fall off. The addition of more data as the project continues should help shed light on the many complicated relationships between elk, their habitat, and wolves with the ultimate goal of increasing understanding and improving elk population and habitat management in the Absaroka Mountains of Wyoming.

The following contributors and cooperators have made this project possible;

- Wyoming Game & Fish Department
- University of Wyoming
- U.S. Fish & Wildlife Service
- U.S.D.A. Wildlife Services
- Shoshone National Forest
- Yellowstone National Park
- Bureau of Land Management – Cody Field Office
- Wyoming Animal Damage Management Board
- Rocky Mountain Elk Foundation
- Sportsmen for Fish & Wildlife
- Wyoming Governors Big Game License Coalition
- Bowhunters of Wyoming
- Pope & Young Club
- Boone & Crockett Club
- Safari Club International
- Frank & Nanitta Pachmayr Foundation
- Safari Club International – Montana Chapter
- Wildlife Heritage Foundation of Wyoming
- Cody Country Outfitter & Guides Association



Along with information being collected on elk habitat selection and wolf pack movements, data is being gathered on the forage quality of habitats that elk select. This will make it possible to determine the relationship between elk habitat selection, habitat/forage quality, and elk body condition (and thus pregnancy rates), and the possible influences of wolves and weather upon these relationships.