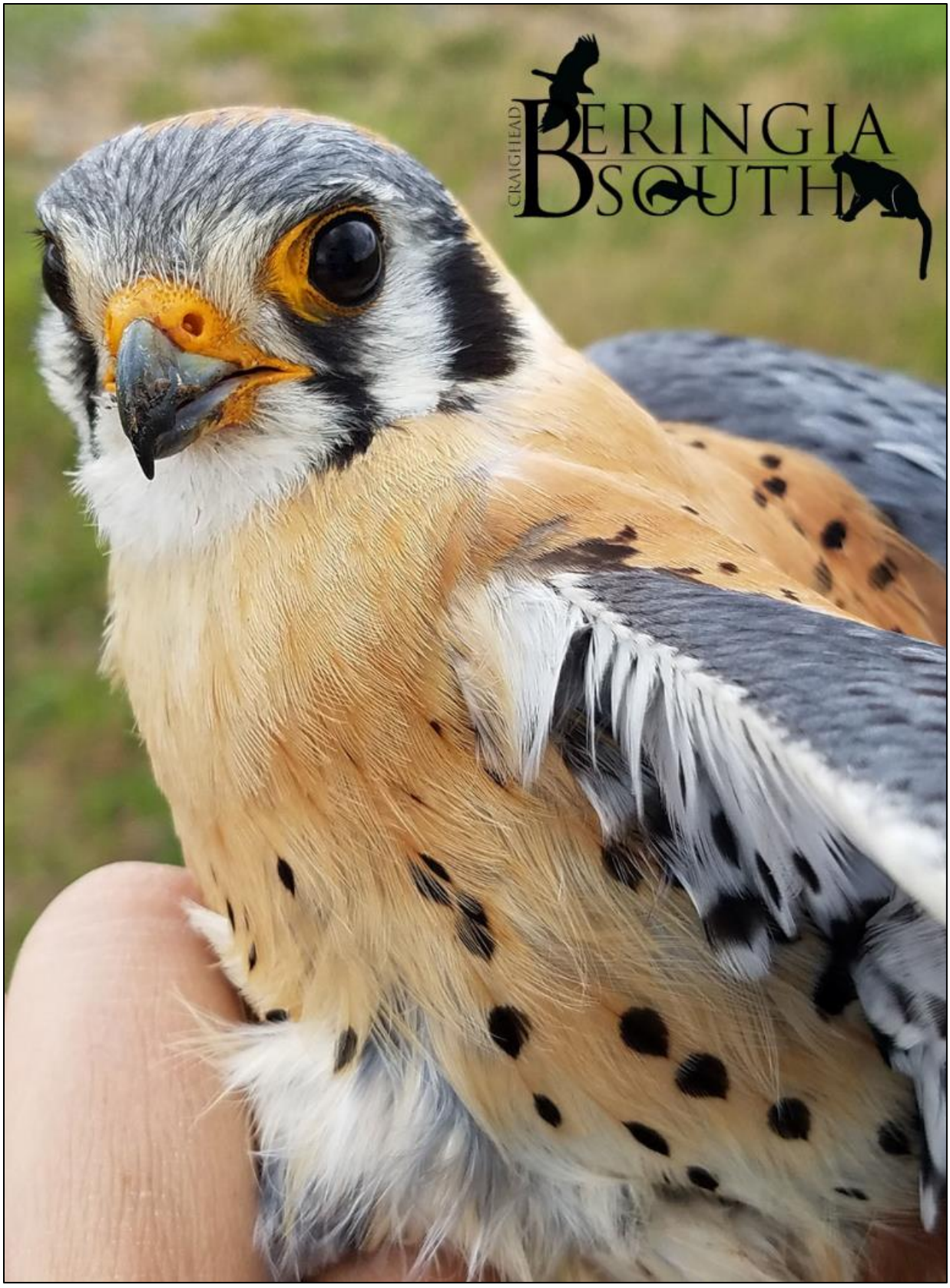

CRAIGHEAD
BERINGIA
SOUTH

American Kestrel Survival

Project Status Report

Prepared for the Meg and Bert Raynes Wildlife Fund

By Ross Crandall, Craighead Beringia South

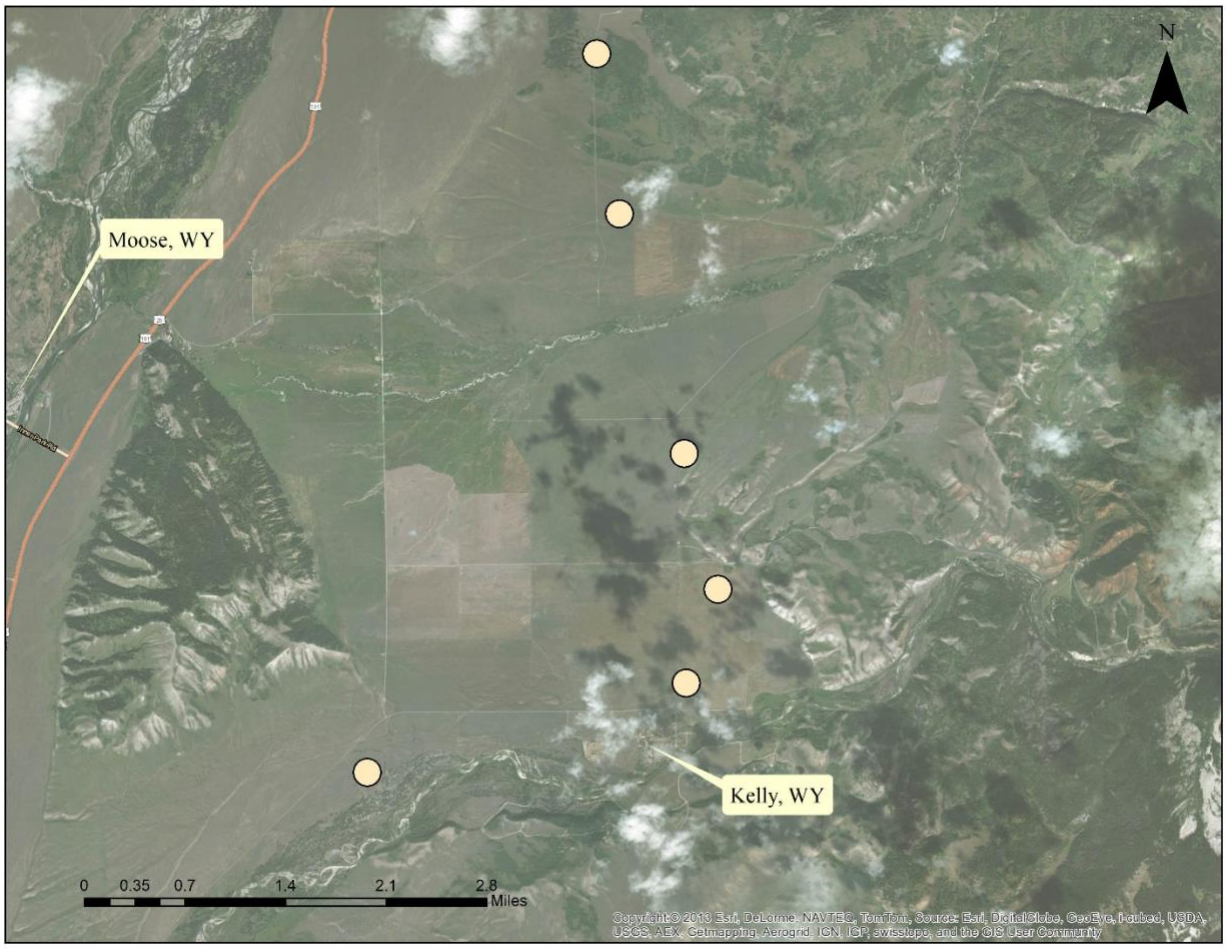
January 12, 2018

The American Kestrel is a small, wide-ranging falcon of conservation concern in Wyoming. The best available data we have to assess population trends show a 55% decline in the species since the 1960's. Currently, the cause of the decline is unknown. Starting in 2017, with financial support from the Meg and Bert Raynes Wildlife Fund (MBRWF), we at Craighead Beringia South initiated an effort to determine patterns and the impact of adult kestrel mortality on the downward population trends of the species in western Wyoming. Our specific research objectives for this effort were to 1) estimate survival probability of American Kestrels in Teton County, 2) identify the temporal trends of American Kestrel mortality (e.g. nesting vs. non-nesting season), and 3) assess the contribution of estimated mortality rates to population dynamics. Understanding population declines often requires a multi-faceted approach, including monitoring productivity, identifying habitat associations, estimating survival and determining causes of mortality. Our broad research effort includes many elements to determine, and hopefully slow or stop, causes of population decline in Teton County. The specific effort funded in part by MBRWF seeks to determine patterns and influence of kestrel mortality on the documented downward population trend.

Our approach to document patterns of mortality and estimate survival involved deploying programmable VHF transmitters on adult kestrels nesting in Teton County. Since American Kestrels are very small, relatively few options exist for tracking devices, which are the most efficient tool for assessing mortality and estimating survival probability. We used programmable VHF tags that we fit to the kestrels using a backpack-style harness. The VHF tags emit a signal that we were able to follow with a receiver. The tags were programmed to emit a signal for one week per month during the nesting season and then again the following spring, when kestrels return to their nesting grounds from southern latitudes. The programmable feature allowed us to use tracking devices that are very light yet have adequate batter power to last for a year, which make it possible for us to assess over-winter survival.

Programmable VHF transmitter on an adult, male kestrel nesting near Kelly, Wyoming.

With the financial support provided by the MBRWF, we were able to purchase 8 programmable VHF transmitters in 2017. Our trapping effort in 2017 yielded 13 adult kestrels and were able to deploy 6 of the 8 VHF transmitters. The remaining adults were captured before the VHF transmitters were ready for deployment or the captured adult was too light for the transmitter. We required each adult to weigh at least 100 grams before we considered deploying a transmitter. Some of the males that we captured were below the 100-gram threshold. The VHF transmitters were deployed in June and July in territories with known-nesting kestrels in Grand Teton National Park. After we deployed each transmitter, the birds were located and followed during the transmission periods for the remainder of the summer. All kestrels were relocated after transmitter deployment and we did not document any mortalities during the 2017 nesting season. All birds with transmitters also fledged young in 2017. Our next step is to determine how many of the individuals return in 2018 so we can estimate over-winter survival. We considered 2017 our pilot year but, based on our success, we will continue the project through the 2019 nesting season.



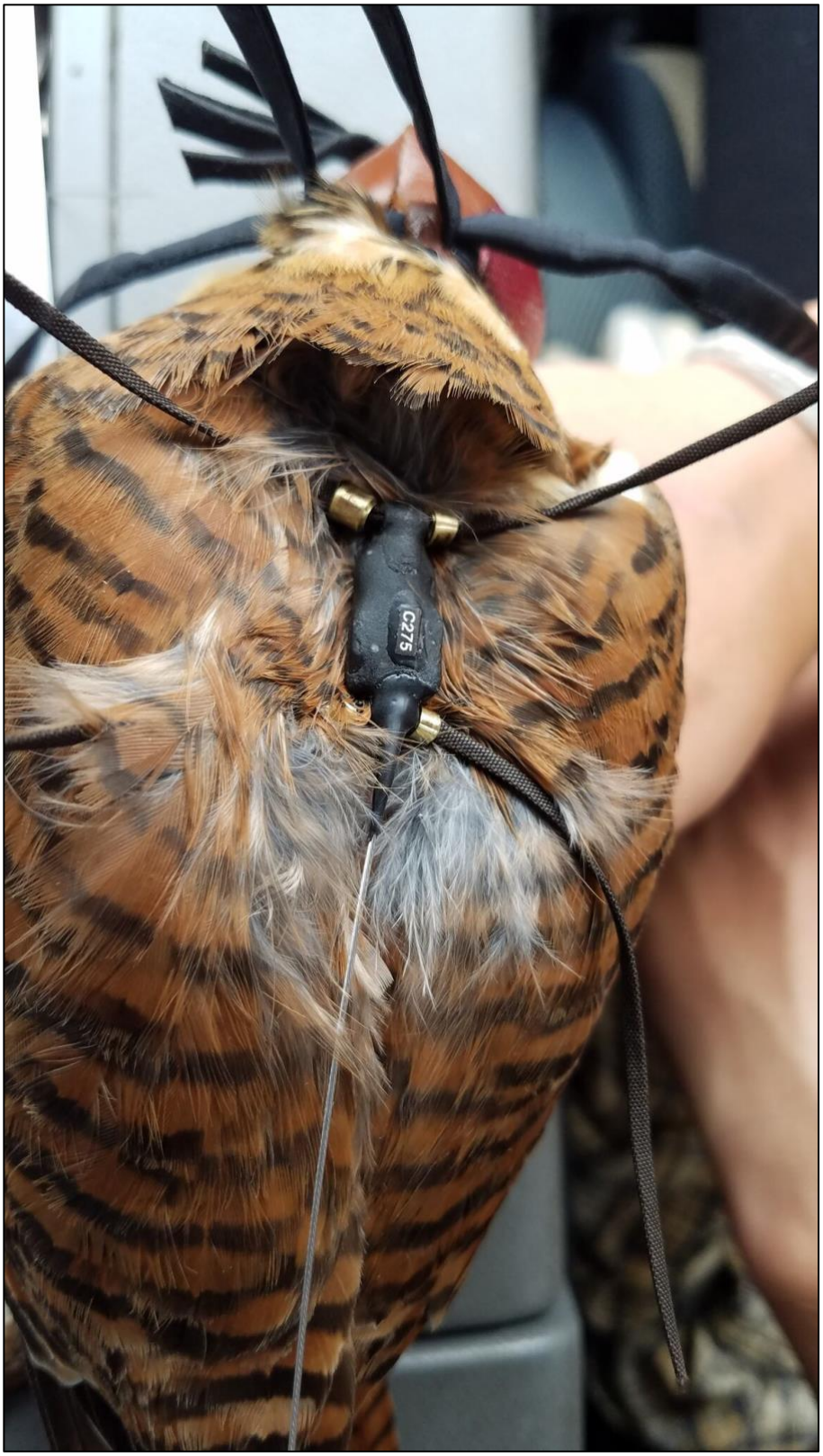
Locations of kestrel captures and transmitter deployment. All transmitters were deployed in known-nesting territories where we also monitor productivity.

Use of Grant Money
We used the $900 awarded to us through the MBRWF to purchase 4 of the 8 VHF transmitters. Each transmitter was $225, therefore the full $900 was used for 4 of the transmitters. We used other funds available for the project to purchase the additional 4 transmitters.

Assessment of Project Objectives
Although our kestrel survival project is ongoing, we are very encouraged by our results obtained during the 2017 nesting season. Our current results suggest kestrel mortality is low in Teton County during the nesting season. We need a larger sample size to support or refute that claim, which will be the focus of our research over the next few years. We currently do not have any idea on overwinter survival for kestrels but we look forward to gathering that information when the birds return in April and May. Our objectives for the 2017 nesting season specifically were met by trapping kestrels, deploying transmitters and gathering information on kestrel survival in Teton County. As we continue to collect more information over the next few years, we will work towards completing our overall project objectives but we are well on our way thanks to our success in the 2017 nesting season.

Conclusions and Effectiveness
We are very encouraged by the current state of our project. Since the project is ongoing, we are hesitant to report any major conclusions from our research. But, as stated in the previous paragraph, our results suggest kestrel mortality is low in Teton County during the breeding season. Most importantly, we were able to determine that using the extremely small and lightweight programmable VHF transmitters are an effective method for assessing kestrel survival. With the strong foundation built by the 2017 nesting season, we are confident moving forward that we will get a firm grip on the patterns and influence of kestrel mortality on documented population trends.

Releasing an adult American Kestrel after capture.



Programmable VHF transmitter being fit on an adult, female American Kestrel.