

Captive Cougars May Aid Florida Panther Project

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The Florida panther (*Felis concolor coryi*) is one of the rarest mammals in the world. Less than 50 animals inhabit 1.5 million ha of land in south Florida, the bulk of which includes the Big Cypress National Preserve (Maehr 1990). More than 45,000 ha of additional land will soon become part of the preserve and most of the Florida panthers at Big Cypress live on those additional lands. An environmental assessment for recreation access to the addition lands calls for monitoring and studies of the Florida panther, its prey, and human visitors. Most public use of the area is associated with hunting for deer (*Odocoileus virginianus*) and hog (*Sus scrofa*) since 1980. Although direct panther mortality as a result of those hunts has not been documented, potential impacts to panthers could result from excessive disturbance by hunters and activities associated with hunting, such as off-road vehicle use. Therefore, we initiated a study in 1993 to test the hypothesis that panther habitat preferences, activity patterns, energy expenditure, and prey are impacted by public use.

A number of panthers are currently being radiotracked by the Florida Game and Fresh Water Fish Commission to monitor the status of the cats (e.g., mortality, home range, reproductive status), but the schedule and timing is not adequate to address the objectives of our research. Those efforts probably are not of sufficient scale or intensity to detect more than gross shifts in home range. However, more subtle changes in panther behavior may occur due to human disturbance and could have a significant impact on their fitness. We wanted to be able to detect these less dramatic, yet potentially important changes in panther behavior, if they were actually occurring, and we wanted to look into some new techniques for doing so.

We began concentrating on how we might obtain more detailed information using the telemetry collars currently worn by the panthers. Equipped with mercury tip-switches, the collars being worn by the panthers indicate whether the head is up or down by transmitting either a fast or slow pulse rate. However, no one has determined whether the tip-switches are accurate in characterizing cougar activity, although analyses have been conducted for other species such as Dall sheep (*Ovis dalli*) (Hansen et al. 1992), elk (*Cervus elaphus*) (Green and Bear 1990), black-tailed deer (*O. h. columbianus*)

(Gillingham and Bunnell 1985), and white-tailed deer (Beier and McCullough 1988).

We learned of a local Knoxville man with a number of captive cougars and facilities to enable them to move about in a seminatural environment. We contacted him and were able to obtain permission to fit the cats with collars identical to those at BICY to evaluate the tip-switches for characterizing activity.

To conduct the experiment, we fitted a radiocollar on one of two captive western cougars (named Marcos and Moses) and simultaneously recorded activity and the radio pulse rate. We had planned to use both cougars equally, but, on the first day, Marcos (being fully equipped with claws and teeth) politely informed us that he did not like to be collared. Therefore, in order to keep him happy (and Craig in possession of all his body parts), we decided to use only Moses in our study. Moses and Craig got along great and it did not take long for the cougar to associate the appearance of Craig and the radiocollar with "play time."

The collar was placed on Moses so that, when his head was up, the collar emitted a signal with a fast pulse rate, and when his head was down, the collar emitted a slow signal. Movements by the cougar were categorized as walking, standing, running, sitting, or lying.

On the first day, we noticed that certain movements caused a specific pulse to be generated most of the time. For example, walking caused a slow pulse signal, while standing, sitting, and lying generally created a fast signal. We recorded the pulse signal and direct observations on microcassette tape and later entered the data into a computer spreadsheet.

Preliminary analysis of the activity data is encouraging. We combined all observations (9+ hours) and broke them into 5-minute intervals. Activities with similar energy costs were classed into two groups: active (walking, standing, running) and inactive (sitting and lying). We included standing in the active category, because time spent standing was usually an intermediate behavior between walking bouts. The animal spent minimal time running. Based on the percentage of time that the collar pulse indicated a head up position, we found that we could correctly classify the cougar as active (>60% walking, standing, or running in a 5-minute time interval) 69% of the time (24 out of 35 in-

stances). Likewise, we could classify inactivity (>60% lying or sitting) 79% of the time (41 of 52). Based on these results, and after further refinements from additional forthcoming captive cougar data, we can classify gross activity level of the Florida panthers with a good chance of being correct.

With this model, we are now making arrangements to collect similar data on the wild panthers at Big Cypress to assess human disturbance. We have obtained a number of portable, telescoping radio towers and a chart recorder to monitor the cats. With that equipment, we should be able to obtain continuous data on activity for selected panthers, and the data will be compatible with the above model for analysis. In so doing, we can obtain activity data (day and night) without actually having to know the exact location of the panthers. We can also compare data from areas that are being hunted (treatment) with areas that are not (control). Then, we can develop a statistic to apply to our study objective using the mercury tip-switch technology. There may even be many ways to extrapolate this statistic into a crude measure of energy expenditure (Gessaman 1973, Ackerman 1982, Corts and Lindzey 1984), a question we will investigate as our research progresses.

References

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