PRELIMINARY OBSERVATIONS ON NON-INVASIVE TECHNIQUES FOR IDENTIFYING INDIVIDUAL SNOW LEOPARDS AND MONITORING POPULATIONS

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Abstract

We are experimenting with video and infrared 35 mm camera traps, hair carpets and playback vocalizations to determine which combination of techniques would maximize data while minimizing the amount of effort required, cost involved and disturbance to wild snow leopards. To date, video and infrared camera traps have proven the most successful methodology for generating the necessary level of information for high precision population estimates. Video monitoring is being undertaken in collaboration with production of a 16mm film on snow leopards, and we will report on this at a later date.

We deployed ten camera traps (seven CamTrakkers and three TrailMaster 1500 Active Infrared Game Monitors) at fifteen sites for a total of 557 track-nights. Stations were operated from November 2, 2001 through March 19, 2002. Ten rolls of film were collected, of which four produced pictures of snow leopards for a trapping success of 3.2%, but with an estimated 28% capture rate per picture (18 of the 64 pictures taken were of snow leopards).

Baseline information is being analyzed to determine optimal camera density and spacing, based on site topography, snow leopard movement patterns, human disturbance and other environmental factors. Preliminary results indicate that strategic positioning of camera traps along travel corridors and active scent rocks greatly enhances capture rates. Based on data collected in Hemis National Park, Ladakh (India) during the 2001-2002 winter field season, as many as seven individuals have been preliminarily identified from their unique pelage markings. However, due to the high degree of pelage pattern variability, and difficulty of obtaining high definition forehead and facial area images, bilateral pictures will be needed to eliminate pattern asymmetry biases. We feel the actual number of individuals sampled is five, but must obtain more pictures of each snow leopard to validate this claim. Video performs better than still cameras in terms of reducing loss of information due to asymmetry bias. Other problematic factors in obtaining camera trap

data within Hemis National Park include human disturbance, domestic livestock movement, and weather and solar interference.

We also employed hair carpets as a means of non-invasively collecting snow leopard hair. Carpet nails and industrial staples were embedded in sections of carpet approximately 8 inches by 8 inches in size. The hair carpets were glued to heavily utilized rock scents and sprayed with a scent in hopes of snagging individual hairs with attached follicles. We collected 27 samples of hair from 11 sites for future DNA analysis. By linking the DNA "fingerprint" of a leopard with simultaneous camera trap information, we will be in a better position to identify, catalog and track individual leopards and monitor population trends over time.

Finally, we experimented with prerecorded playback vocalizations of captive snow leopard mating calls as a way of detecting the species within a given area during the breeding season, and possibly also for encouraging visitation to camera trap or hair carpet sampling stations. A more detailed report of these methods, including their respective advantages and disadvantages will be provided as more information is accrued.