THE STARKEY DATABASE: SPATIAL-ENVIRONMENTAL RELATIONS OF NORTH AMERICAN ELK, MULE DEER, AND CATTLE ON THE STARKEY EXPERIMENTAL FOREST AND RANGE IN NORTHEASTERN OREGON

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An interagency research project on interactions among North American elk, mule deer, and cattle was initiated in the late 1980s at the Starkey Experimental Forest and Range in northeastern Oregon. As part of that project, an automated radio telemetry system was developed based on rebroadcast LORAN-C signals. LORAN is a marine radio-navigation system that was well-established prior to widespread use of Global Positioning Systems (GPS). The LORAN system is comprised of transmitting collars placed on individual animals, and a control-receiving

subsystem. Every 20 seconds, a central computer pages one of the many collars deployed at any given time. As many as 150 animals have been included in the user-defined paging list simultaneously. The LORAN receiver in the collar responds by collecting raw LORAN data, which are then retransmitted via a VHF radio link to one of several relay towers located throughout Starkey Forest. The relay towers then retransmit the data back to the central computer, where the raw data are decoded and information on the animal's location is stored electronically for future analysis. The LORAN system has a mean locational accuracy of about 50 meters. Data collected from elk, mule deer, and cattle can be used to demonstrate animal distributions and interactions in real time. In addition, a Starkey database CD is available that includes: locations of animals recorded between 1991-1996, metadata, electronic publications further explaining the system and the data collected, and relevant GIS layers such as habitat types, soils, a digital elevational model, and the forest road network. The public release of these data should allow other research scientists to formulate and test hypotheses that only could be analyzed with such comprehensive information.