

## AN ESTIMATE OF WOLF POPULATION SIZE USING NETWORK SAMPLING

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*Abstract:* Stratified network sampling was used to obtain an estimate of wolf (*Canis lupus*) population size in a 31,370 km<sup>2</sup> area in Interior Alaska. Sample units were generally 41 km<sup>2</sup> (6.4 x 6.4 km.). They were classified as having a high, medium, or low likelihood of containing fresh wolf tracks, based on moose densities and known historical wolf travel routes. Sampling commenced 24 hours after a snowstorm and continued to about 96 hours after a snowstorm. Fresh tracks were defined to have no snow deposits in them. Selected sample units were searched for approximately 15 minutes using small 2-person aircraft. Tracks observed in selected sample units were tracked backwards until they were no longer considered fresh and forwards to the wolves. Probability sampling results were used to estimate population size and variance. Inclusion probabilities were calculated based on the product, over strata, of a hypergeometric distribution. An estimate of 256 wolves (SE = 28.41) was obtained, pack size ranged from 1 to 14 wolves, and inclusion probabilities ranged from 0.1429 to 0.9997. Sub-area estimates can be obtained to compare wolf numbers with local moose populations.

**Key words:** probability sampling, aerial survey, snow, wolf, *Canis lupus*

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