

Two 12-point bird surveys were also done in bog and upland black spruce plant communities. A third 12-point count was planned for a lowland white spruce/willow-alder plant community, but could not be conducted due to time constraints. These 12-point counts seemed to be an effective off-road survey although 2-3 miles of sloggng through bogs and marshes make the river boat routes seem more desirable. Our biggest find of the season was a breeding pair of Hudsonian godwits on a bog. Several experienced bird watchers unanimously agreed as to the identification of these birds so we have added this rare bird to our refuge list as a "breeding bird". A total of 48 species were recorded from the four surveys completed.

ROS Skinner attended the Alaska Partners in Flight meeting in Anchorage, December 7-9. Several suggestions regarding the neotropical bird surveys will be incorporated into the Refuge program including earlier survey dates in June. Since Innoko Refuge was one of two refuges in the state currently using river routes for BBS, ROS Skinner was able to add suggestions for the establishment of river routes in other parts of the state.

8. Game Mammals

Line Transect Moose Survey

No moose survey was conducted in 1993. Data from the 1992 survey were compiled and sent to Wally Erickson and Lyman McDonald of WEST INC. for statistical review. Five habitat density strata were constructed from the moose locations obtained during the survey, and a satellite imagery constructed plant community map was developed using GIS. The circle program described above in Section F., was used to perform these functions. The distribution of moose sightings in relation to their distance from the helicopter was described.

This year, in preparation for our 1994 moose survey, the Standard Operating Procedures were revised. Topics of revision included the survey design-flightline layout and number, sampling procedure-data categories and line transect methodology, and statistical procedures-prestratification, calculations, and post stratification. Also revised was the on board aircraft field data recording computer program.

10. Other Resident Wildlife

Small Mammals

A small mammal habitat inventory began in 1993. The purpose of the inventory is to produce habitat maps depicting the relative densities of each species of small mammal throughout the Refuge. Small mammals are extremely important because of their low position in the food web and the dependence of many predators, both avian and mammalian. Our first use of the information will be development of predator furbearers habitat maps. Plant community and small mammal relative density data will be combined to produce habitat maps for each species of furbearer. This