
Value of Grassland Set-asides in Increasing Farmland Habitat Capacity for Wintering Raptors in the Lower Fraser River Delta

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Abstract: The abundance of grassland habitats that are critical to supporting dense winter populations of raptors in the lower Fraser Valley, British Columbia has declined over the last 40 years due to land development and changes in agricultural practices. The Delta Farmland and Wildlife Trust has been providing incentives to farmers in the lower Fraser River delta to reintroduce grassland into their crop rotations to rebuild soil and provide habitat for raptors and other grassland species. Grassland set-asides funded by the Delta Farmland and Wildlife Trust account for almost 50% of available tall grass habitat within the municipality of Delta, British Columbia. These areas cover 223–263 ha, annually.

The overall objective of this study was to evaluate grassland set-asides as winter raptor habitat. To achieve this objective, landscape level habitat use and availability surveys were conducted on approximately 4270 ha of upland habitat on the Fraser River delta. In addition, six grassland habitat types—1-, 2-, 3-, and 4-year-old grassland set-asides; old-fields (grass fields \geq 8 years old); and perennial forage crop (intensively cut fields)—were selected and surveyed for raptor use and small mammal relative density. Raptor use was recorded using timed field watches; small mammal relative density was determined by using mark-recapture techniques.

Landscape level surveys indicated that tall grass habitats including grassland set-asides were used preferentially by northern harriers (*Circus cyaneus*), red-tailed hawks (*Buteo jamaicensis*), and rough-legged hawks (*Buteo lagopus*) during winter. Northern harriers preferred grassland set-asides to other tall grass habitat present in our survey areas.

Individual field surveys indicated that grassland raptors used 1-year-old grassland set-asides and perennial forage fields less than 2-, 3- and 4-year-old set-asides and old-field habitat for daytime hunting. Use of 2-, 3- and 4-year-old set-asides was equal to, or exceeded that, of old-field habitat. Relative density of Townsend's voles (*Microtus townsendii*) in set-asides that were 2–4 years old was greater than or equal to that in old-field habitat. Northern harrier hunting effort was positively correlated with Townsend's vole density, and was greatest in 2- and 3-year-old set-asides.

Results from these surveys indicate that the average habitat capacity of farmland in the delta for some species of raptor has likely increased as the result of the grassland set-aside program,

particularly during winter months. Future work on wildlife use of upland habitat will include locating and evaluating nighttime winter roosting habitat for northern harriers and short-eared owls (*Asio flammeus*), and conducting breeding bird surveys in selected grassland habitats.