DENSITY OF FISHERS IN BOREAL MIXED-WOOD FORESTS OF NORTHEASTERN BRITISH COLUMBIA

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Fishers (Martes pennanti) are medium-sized carnivores of the family Mustelidae that are found in boreal and temperate coniferous and deciduous-coniferous forests across North America (Proulx and others 2004). Fishers are rare, but important members of the forest ecosystems that they occupy, and as mesocarnivores may play an essential role in regulating populations of many mid-sized mammals in these forests (Roemer and others 2009). In British Columbia, Fishers are harvested for their fur and can be legally trapped on registered traplines in the central and northern portions of the province between 1 November and 15 February. Harvest of Fishers has declined considerably in British Columbia over the past 30 y. Causes for harvest declines are unexplained, but may include both declining populations and declining trapper effort. Fishers currently have a provincial status of S2S3 in British Columbia, designating it as a species of “special concern” (BCCDC 2010).

To ensure that Fisher harvests are sustainable, wildlife managers and trappers need basic population information. Population density is a key piece of data upon which harvest levels should be based. Because Fishers are secretive and difficult to inventory (Powell and Zielinski 1994), until recently harvest management of Fishers in British Columbia has been largely based on studies from eastern North America, where density estimates range from 50 to 385 Fishers/1000 km² (Powell and Zielinski 1994; Fuller and others 2001). Recent work in north-central British Columbia, however, has demonstrated that the density of Fishers in coniferous-dominated western forests are substantially lower (for example, 8.8 Fishers/1000 km², Weir and Corbould 2006), and more conservative harvest management is required relative to eastern Fisher populations.

Habitat quality is not uniform throughout British Columbia and, as a result, Fisher density is believed to vary among regions (Weir 2003; Lofroth 2004). This is reflected in the variability of Fisher harvest across the province. The boreal mixed-wood forests of northeastern British Columbia have consistently high harvests of Fishers and are believed to be among the most productive areas for this species in the province (Lofroth 2004). To improve our knowledge of Fisher density in British Columbia, we estimated the density of Fishers in a representative boreal mixed-wood forest landscape in northeastern British Columbia. This information will provide wildlife managers and trappers with better data to evaluate sustainable harvest levels and help facilitate population persistence.

Our work builds upon Weir and Corbould’s (2006) estimation of Fisher density in the sub-boreal spruce forests of north-central British Columbia by applying their methods to Fishers in boreal mixed-wood forests. Because our data was collected, analyzed, and interpreted following methods identical to that of Weir and Corbould (2006), readers are directed to this article for comprehensive details of the capture methodology, density estimation, its biases, and resultant implications for interpretation of the results.

Our study area covered 950 km² of boreal mixed-wood forests (that is, the moist-warm subzone of the Boreal White and Black Spruce biogeoclimatic zone; DeLong and others 1990) in the Kiskatinaw Plateau and Peace Lowlands ecoregions (Demarchi 1995) to the south and west of Dawson Creek, BC (UTM: Zone 10, 674000 E, 6182000 N, NAD83). The climate of the study area is cold and dry, which is typical of continental boreal forests. Mean annual