has not been considered a resident of the MBNF. There are no historic records that indicate whether the bird was a regular breeder here in the past.

The species is very uncommon on the forest (2 sightings by Steve Loose and possible sighting(s) on the Laramie Range). However, good habitat (areas burned by lethal fire in the preceding 1-8 years) has been lacking. There may be a dispersed, inconspicuous population.

In 2003, the Gramm fire occurred on the MBNF near Foxpark. The area was surveyed for woodpeckers several times in August-early November. Numerous Hairy and American Three-toed Woodpeckers were found concentrated in the area, but no Black-backed Woodpeckers were found. Since the Black-backed Woodpeckers specialize on a later developmental stage of beetle than the other species, it is possible that the species could appear in 2004. Most studies on post-fire woodpeckers do not survey immediately after the fire. However, in one study a pair was not only present but initiated nesting within two weeks following a June fire. Another found the species present in November, four months after a fire. Whether a delay in shifting to burned habitat is typical is not known.

MBNF lands may not have supported a viable population under natural patterns of disturbance. In most years, only 50 to 500 acres burned on the MBNF (von Ahlefeldt and Speas 1996). Every few decades this acreage might increase substantially for a few years, and very infrequently (every few hundred years), extensive acrages would burn during a warm, dry interval (Dillon et al 2003). This pattern of creation of prime habitat (forests that burned in a lethal fire 1-6 years before) may not have sustained a consistent viable population of Black-backed Woodpeckers even before the environmental changes that followed European settlement. If the area has always been unsuitable habitat, a persistent reproducing population is not expected to occur today. The species may have had a continuous breeding population that fluctuated with its ephemeral habitat, or it may always have occurred only as a vagrant.

Habitat and natural history

Black-backed Woodpeckers are yearlong residents in coniferous forest. They may be found at low density in lodgepole and other pines and in mixed conifer forest (Bock and Bock 1974) and in patches of trees that have been killed by insects or by flooding. In Alberta, they were found in old growth if no burned areas were available nearby, but none were found in old growth within 50 km of a recent burn: density in old forest was less than half that found in burns (Hoyt and Hannon 2002). In the western U.S., Black-backed Woodpeckers are regularly found and are abundant only in recently burned forest with dead or damaged trees over 9" dbh. (Hutto 1995; Murphy and Lehnhausen 1998). In the first few years after a fire, the numbers of many woodpeckers rise dramatically (Koplin 1969; Apfelbaum and Haney 1981; Raphael, Morrison et al. 1987). Though the Black-backed is never common, it is regularly seen in burns, with the population rising to peak about 5-6 years after the fire. Black-backed Woodpeckers select larger trees than Three-toed Woodpeckers, do not use early successional stands, and remain longer in burns than Three-toed Woodpeckers (Hoyt and Hannon 2002). Little is known of how the birds locate patches of this ephemeral habitat.

Black-backed Woodpeckers specializes on large wood-boring beetle larvae typical of beetles that are attracted to fires and start to lay eggs while the trees are still smoldering (Powell 2000). The woodpeckers spend a majority of foraging time "scaling" bark (Bull, S.R. Peterson et al. 1986), but the bulk of their food is composed of large larvae extracted from chambers within the trunk obtained by drilling (Powell 2000). As a result, unlike other woodpeckers, the Black-backed is not abundant in insect infestations like mountain pine beetle outbreaks. A few pairs may be present, but abundance is far lower than in burned areas (Lester 1980).

This species uses unsalvaged burned areas but not adjacent burned areas that have been thinned by salvage logging (Hitchcox 1996). Of the woodpecker species inhabiting a burned forest, the Black-backed Woodpecker was the most sensitive to the removal of standing burned trees, nesting only in the densest (unsalvaged) stands. (Hitchcox 1996; Saab and Dudley 1998). Nest trees are larger than those used by Three-toed Woodpeckers (averaging 14.6" in the Northwest, (Marshall 1992)), but they will use smaller trees than many other woodpeckers, sometimes as small as 8". These woodpeckers excavate nesting cavities in snags (trees that were dead prior to the fire); in subsequent years, these cavities are used by secondary nesters and by birds and small mammals using communal winter roosts.

Threats, limiting factors, and vulnerabilities

The primary threats are from fire suppression, salvage logging, and removal of snags. Unlike many woodpeckers, which forage opportunistically on burned forest, in the western United States this species rarely nests outside of burns (Hutto 1995). The Black-backed Woodpecker is one of the most fire-dependent species known (Powell 2000). Removal of snags and old forest, fragmentation of blocks of mature/old forest, and salvage sales reduce the amount and quality of habitat. The stand characteristics that are preferred by this species (larger trees, moderate intensity of burn that leaves bark on the trees) are the same as those preferred for salvage logging. Firewood collection of snags removes potential nesting habitat.

Changes from HRV in factors that may affect the species

Burned stands are rarer than in the past because of fire suppression and salvage logging. The area burned annually on the Medicine Bow varied tremendously during recent centuries. During wet, cooler periods, the recently-burned acreage may have been too small to support a consistent population. The limited area of burned forest may also be because lower probability of fires in the existing large area of even-aged relatively young forest (100-120 yrs old). At a broad scale, two habitat types that are becoming rare in boreal forest are post-burn early-successional stands and old growth (Schmiegelow and Monkkonen), the two types used by this species.