Black-backed Woodpecker (*Piciodes articus*)

Distribution

Black-backed woodpecker (BBWO) are non-migratory throughout their range including California. They may shift to lower elevations in winter (Small 1994, Dixon and Saab 2000); however, this phenomenon is not well-documented in California. Grinnell and Miller (1944) described the range of the BBWO in California as "of small extent and interrupted nature; chiefly Cascade Mountains and high northern and central Sierra Nevada, south to about latitude 37º 30'; peripherally west through the Siskiyou Mountains, east to Warner Mountains, Modoc County, and south to Tulare County." The species was recorded at altitudes ranging from 4,000 ft to 10,168 ft. The current range of the BBWO in California is slightly greater than the documented historic range.

Distribution Map: See last page of the CDFG Report: Comrack, L. A. and D. B. Applebee. 2011. Evaluation of petition from John Muir Project of Earth Institute and Center for Biological Diversity to list black-backed woodpecker (Picoides arcticus) as threatened or endangered, Calif. Dep. of Fish and Game.

Habitat Requirements

Evidence exists to support the conclusion that BBWO select forest stands with larger trees and higher tree densities, in both burned and unburned forests; however, the claim that BBWO rely on old growth forest is unsupported by the existing body of literature. Post-fire Salvage: Dixon and Saab (2000), state that BBWO are vulnerable to local and regional extinction as a result of post-fire salvage logging (p .46). However, the California Department of Fish and Game finds there is considerable uncertainty associated with this statement when considering the potential role of unburned forests and insect-infested forests in sustaining the species, as well as documented instances of BBWO nesting in salvaged stands, even at reduced levels relative to unsalvaged stands (Saab and Dudley 1998, Cahall and Hayes 2009, Saab et al. 2009).

BBWO occur in a variety of montane and boreal coniferous forest types throughout their range (Dixon and Saab 2000). Although BBWO can be found in green forests, the highest densities of the species are found in recently burned forests (Hutto 1995, Hanson and North 2008). BBWO reach their greatest densities in burned forests within the first five to eight years following the fire. By the end of this brief period, the combination of decreasing snag densities, declining numbers of beetle larvae prey, and increasing numbers of nest predators recolonizing the burn area results in habitat that is no longer optimal for the species (Hanson and North 2008). Additionally, BBWO apparently prefer intensively burned forests (i.e. forests that burned in hot fires resulting in near total tree mortality) over unburned forests and forests that burn at lower intensities (Hutto 1995, Smucker et al. 2005). BBWOs and BBWO nests have been significantly less abundant in the salvage logged stands – even when snags were retained to improve wildlife habitat (Saab and Dudley 1998, Hutto and Gallo 2006, Saab et al. 2007, Hanson and North 2008, Cahall and Hayes 2009, Saab et al. 2009).

Nesting Habitat: BBWO excavate cavity nests in live and dead conifer and broadleaf trees (aspen), favoring relatively hard recently dead snags (Raphael and White 1984). Snags (standing dead trees) used for nesting have been found to be slightly larger than the average available snags (Ibid, Saab and Dudley 1998). Raphael and White (1984) found the average diameter of trees used for nesting by BBWO in the Sierra Nevada was 44.5 cm (17.5 in) while the average diameter of available trees was 32 cm (12.6 in). However; among the five species of woodpeckers studied by Saab et al. (2002), BBWO used the smallest diameter snags for nesting.

Several studies show that BBWO nest densities are highest in areas with the highest snag densities (Ibid, Russell et al. 2007, Vierling et al. 2008). Russell et al. (2007) found that the best model for predicting BBWO nesting included high pre-fire canopy closure, high average tree diameter, and high large snag densities. When post-fire snag densities are reduced by salvage logging, BBWO nesting densities are greatly reduced (Saab and Dudley 1998, Dixon and Saab 2000, Hutto and Gallo 2006, Cahall and Hayes 2009). Nesting densities were found to be nearly four times greater in unlogged burned areas than in salvage logged burned areas, even when substantial numbers of snags (32-52% of small snags and approximately 40% of large snags) were retained in the salvaged areas (Saab and Dudley 1998). BBWO appear to require large patches of suitable habitat for nesting. In burned forests in Idaho, BBWO nests were absent from stands (areas of uniform tree species, size, and distribution) of less than 12 ha (29.7 ac), and nest stands averaged 37.16 ha (91.8 ac) (Saab et al. 2002). Russell et al. (2007), also working in Idaho found the average BBWO nest stand to be 112.47 ha (277.92 ac).

Foraging Habitat: BBWO forage chiefly on the trunks of larger, less decayed snags and logs within dense stands of intensively burned conifer trees (Murphy and Lehnhausen 1998, Kreisel and Stein 1999, Russell et al. 2007, Hanson and North 2008). BBWO appear to require higher densities of snags for foraging than they do for nesting (Hutto and Gallo 2006). Hanson (2007) found BBWO foraging on large (>50 cm [19.7 in]) snags more than expected based on availability, which is likely explained by the fact that their primary food, woodboring insect larvae, are found in greater numbers in larger diameter snags (Nappi et al. 2003). Bull (1986) found BBWO in Oregon foraged for insects on live and dead trees in equal proportion. When using snags, BBWO preferred recently dead trees averaging 34 cm (13.4 in) diameter at breast height (dbh), and 19 m (62.3 ft) tall (Ibid.).

In burned forests in the Sierra Nevada, BBWO were found to forage almost exclusively in stands which had burned at high intensity and were not salvage logged in a recent study (Hanson and North 2008). Foraging was found to be nearly absent from areas which had burned at moderate or low intensity and from high intensity burn areas which had been salvage logged, even with the retention of at least 7.5 large (>50 cm [19.7 in]) snags per hectare (2.47 ac) as prescribed by the Sierra Nevada Forest Plan Amendment (USDA 2004). Studies in the Rocky Mountains have also reported BBWO strongly favor recently burned forests that burned at high intensity (Hutto 1995, Smucker et al. 2005).

Unburned Habitat: There have been few published studies of the species' ecology outside of burned environments. BBWO are known to occur and nest in green forest stands and stands infested with bark beetles (Bull et al. 1986, Goggans et al. 1989, Bonnot et al. 2008). Forty percent of the BBWO nests found in an Oregon study were in live tree,s and BBWO were observed foraging nearly equally on live and dead trees, with a preference for lodgepole pine (*Pinus contorta*) (Bull et al.1986). Goggans et al. (1989) found in a study of pine beetle infested forests of Oregon that 22 of 35 BBWO nests were in live trees, and all nests were in lodgepole pine. Sixty six percent of the nests were in stands with mountain pine beetle outbreaks and 34% in stands not significantly impacted by beetles. The mean nest tree was 27.9 cm (11 in) dbh and canopy cover averaged 24% in unharvested stands and 11% in harvested stands.

In Brief:

- Breeding Season is April 15 to July 15
- Breeding Habitat in California
  - Generally Sierras, southern Cascades, and Siskiyou Mountains from Tulare County to Oregon border – coniferous forests (e.g. Sierran mixed conifer, lodgepole, subalpine, and true fir)
  - Generally above five thousand feet from Lassen County to the Oregon border
  - Generally above six thousand feet from Plumas County south to Tulare County
- Excavates nesting cavities in hard snags with highest densities occurring in intensively burned coniferous forests (Generally ≤ 10 year from burn kill).
- Primary Threat
  - Sanitation/Salvage logging during the breeding season of: A) intensively burned conifer stands, or B) bug infested/diseased conifers, where most of the trees in the stand have recently died.
  - Generally, removal of hard/sound snags within their breeding habitat.

Literature Cited

See:
Comrack, L. A. and D. B. Applebee. 2011. Evaluation of petition from John Muir Project of Earth Institute and Center for Biological Diversity to list black-backed woodpecker (Picoides arcticus) as threatened or endangered Calif. Dep. of Fish and Game.