

Science You Can Use *in 5 minutes*

Birds of a Feather Benefit from Fire Together: How prescribed burning can benefit ground-nesting birds



Like Goldilocks, ground-nesting birds in the southeastern U.S. need habitat conditions that are “just right.” They need just the right food and just enough protective cover, all in close proximity—talk about high maintenance! Recently published research syntheses in the [Fire Effects Information System](#) (FEIS) about ground-nesting bird species of management concern describe how prescribed fire can help meet these needs for [chuck-will’s-widows](#), [eastern](#)

[whip-poor-wills](#), and [northern bobwhites](#).

All three species live in southeastern pine and/or hardwood (especially oak) forests during all or part of the year. They prefer forested areas interspersed with open patches or open-canopied forests with patches of cover in the understory. These patchworks of varied habitats provide the diverse foods and protective cover they need. Fires historically created

and maintained much of the patchwork of habitats required by these species, and now prescribed fire is an important tool for managing their habitats. According to Mike Ward, the Prescribed Fire and Fuels Program Manager for the USDA Forest Service’s Southern Region, “In the Southern Region, we prescribe burn over a million acres per year on Forest Service lands and over 6 million acres per year on mostly private lands across the 12 States that make up the



Chuck-will’s-widow

- Migratory aerial insectivore.
- Nests early March to early July, typically in heterogeneous, uneven-aged forests with frequent canopy gaps.
- Uses recent burns for foraging but may avoid nesting in these areas if adequate understory cover is lacking.
- Small burns within densely forested landscapes may increase populations. Too much burned area may decrease populations.

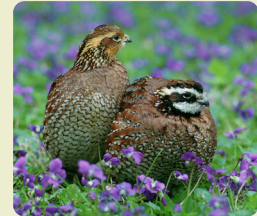
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Eastern whip-poor-will

- Migratory aerial insectivore.
- Nests mid-April to July, typically in large tracts of continuous forests interspersed with open areas; likes habitat edges.
- Uses burns of various ages; recent burns may be avoided for nesting if they lack adequate understory cover.
- Periodic fire helps create and maintain the open forest structure it requires for foraging.

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Northern bobwhite

- Nonmigratory ground-feeding game bird that eats seeds, fruits, and insects.
- Nests mostly April to September; in southeastern pine forests it typically nests in bunchgrasses.
- Requires frequent low-severity fires (1–5 years in southeastern pine forests) that create a mosaic of early successional stages.
- Fire-excluded forests and large, high-severity burns make poor habitat.

U.S. Fish and Wildlife Service photo.

region. The majority of the burning occurs in and is specifically planned to restore, enhance, and maintain habitats that support multiple species of ground-nesting birds.”

Managing habitat for these three species often benefits other species of management concern. For example, habitat management for northern bobwhites in southeastern pine forests can benefit red-cockaded woodpeckers, Bachman’s sparrows, Henslow’s sparrows, and prairie warblers, as well as gopher tortoises. Managing habitats for chuck-will’s-widows and eastern whip-poor-wills can benefit other aerial insectivores such as bats, swallows, swifts, and flycatchers that are in decline in many areas. Prescribed burning also helps to reduce the risk of large, severe wildfires that could otherwise degrade these birds’ habitats for long periods.

However, using prescribed fire for habitat management of these species is not without risk. Especially since the eggs and nestlings of ground-nesting birds are particularly vulnerable to fire during their nesting season, including the low-severity surface fires typically used by managers. The synthesized research suggests, however, that the benefits of prescribed fire to these bird species populations outweigh potential drawbacks. The research supports frequent prescribed fire in different seasons, including the occasional use of prescribed fire early in the nesting season when the probability of renesting is still high. As explained by Robin Innes, Ecologist and Fire Effects Information System Technical Writer and Editor for the Forest Service’s Rocky Mountain Research Station, “While each species has different requirements, in general, burning in different seasons at relatively frequent intervals can benefit these species by promoting high habitat diversity as long as fires are small and/or patchy. Large, uniformly burned areas, regardless of season, are less likely to provide the habitat heterogeneity these species need. A lack of fire, too, may be detrimental as these species avoid areas of dense, uninterrupted forest resulting from fire exclusion.”

Key Findings

- Ground-nesting birds in the Southeast need varying habitat conditions for foraging, protection, and reproduction. These conditions can be created and maintained with fire.
- The FEIS Species Reviews synthesize information on the biology, ecology, and effects of fire on individual species, including recent syntheses on ground-nesting birds.
- See the infographic above for management implications for chuck-will’s-widows, eastern whip-poor-wills, and northern bobwhites.

Further Reading

Innes, Robin J. 2024. [Colinus virginianus, northern bobwhite](#). In: Fire Effects Information System, U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory.

Innes, Robin J. 2023. [Antrostomus carolinensis, chuck-will’s-widow](#). In: Fire Effects Information System, U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Missoula Fire Sciences Laboratory.

Innes, Robin J. 2023. [Antrostomus vociferus, eastern whip-poor-will](#). In: Fire Effects Information System, Missoula, Montana: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Missoula Fire Sciences Laboratory.

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