



**STATUS: HIGH
CONSERVATION
PRIORITY IN IOWA**

Bell's Vireo

Vireo bellii

Introduction

Bell's Vireos are small, insectivorous, Neotropical migrants that are most common as a breeder in the central and southwestern United States and northern Mexico, and they winter primarily in central and southern Mexico. The species has no distinctive plumage characteristics and both sexes are the same in appearance. In breeding season, males are territorial and most pairs are monogamous.

Male Bell's Vireos sing a distinctive song through the spring and summer from dense vegetation characteristic of early succession stages, or any stage exhibiting dense understory vegetation – riparian areas, brushy fields, and young second-growth woodland.

High rates of brood parasitism by Brown-headed Cowbirds and habitat loss, fragmentation and degradation have negatively affected nesting Bell' Vireos. The other IBA Criteria Species that share this general savanna/shrub type of habitat – Loggerhead Shrike, White-eyed Vireo, and Yellow-breasted Chat – each suffer from the same or similar problems.



Habitat Preferences

Bell's Vireo prefers dense, low, shrubby vegetation, generally early succession stages in riparian areas, brushy fields, young second-growth woodlands, and brush-lands. Nearly any dense understory vegetation may be used for nesting.

One assessment for Iowa (from the mid-1980s) indicated that Bell's Vireo was an uncommon but locally common breeder in southwest Iowa, but that its population appeared to be in a long-term decline. Although this species may be found throughout the majority of Iowa at this time, its primary range is south and southwest of this state.

Feeding Habits

Insects are by far the major food item for Bell's Vireo. In breeding season it feeds almost exclusively on large insects, including caterpillars, bees, wasps, and stink bugs. Some spiders and berries are also consumed.

Bell's Vireo usually forages in low brush, within 10 to 12 feet of ground level; but at times will forage much higher. It will sometimes fly out to catch, or "hawk" insects in midair; but the primary foraging technique is to search for insects among the foliage, and occasionally hover to pick food items from leaves and twigs.

Breeding Biology

The Bell's Vireo arrives in Iowa in early to mid-May, and the male establishes a territory almost immediately. Females settle on male territories within 2 days of arrival, and courtship begins immediately. Nest building is intimately tied to courtship. Both sexes construct the nest, which usually takes 4 to 5 days. Nests are placed in low shrubs and saplings, usually 2 to 5 feet above ground, and in the fork of a horizontal branch or twig.

Usually 4 eggs are laid, but the number may vary from 3 to 5. Females do most of the incubation, but males do some; and the incubation process takes about 14 days. Both parents feed and care for the young, which leave the nest about 11 to 12 days after hatching, and are fed by the parents for at least another 3 weeks.

Throughout Iowa and the entire breeding range, Brown-headed Cowbirds parasitize Bell's Vireo nests by laying 1 or 2 eggs (rarely 3) in parasitized nests. Early in the nesting season cowbird eggs laid just prior to vireo egg-laying may bring nest abandonment, but later in the nesting season cowbird eggs laid prior to vireo eggs are usually accepted. Female cowbirds lay 1 egg per day in vireo nests and may simultaneously remove or destroy (by pecking) one or more vireo eggs (or young). Bell's Vireos generally incubate cowbird eggs along with theirs once the former egg is accepted.

Vireos display various anti-cowbird strategies: male vireos, uttering a loud, scolding call, may confront and chase away female cowbirds near the nest; cowbird eggs may be removed from nests by vireos; and cowbird eggs are sometimes punctured by pecking or layered-over with nesting material. The most common anti-cowbird strategy is nest abandonment in response to appearance of a cowbird egg, and this has caused a substantial proportion of overall nest failures.

In addition, cowbird nestlings out-compete vireo nestlings for food and parental care so that vireo nestlings are often neglected and die. Non-parasitized vireo nests successfully fledge more young than parasitized nests.

Concerns and Limiting Factors

Many of the same concerns and limitations that apply to the White-eyed Vireo also apply to the closely related Bell's Vireo.

Refer to the previous species account for that information.

Land use patterns, particularly along streams and rivers (riparian habitat), strongly influence abundance in some portions of Iowa and the overall breeding range. Land-use changes – including agriculture, urbanization, firewood cutting, grazing, flood control projects, and reservoir construction – have reduced habitat for this species.

Land-use modifications that promote habitat patchiness apparently increase the rates of cowbird parasitism and act to segregate remaining breeding Bell's Vireos into scattered subpopulations that are more susceptible to local extinction. In some areas, overgrazing suppresses shrub growth and reduces available nest sites and vireo density.

Habitat Management Recommendations

Unfortunately, no special management practices are known to have been focused on Bell's Vireo over large portions of Iowa or in the eastern half of this species' breeding range. But it has been shown that trapping cowbirds significantly reduced brood parasitism in western states; and cowbird trapping is now a standard management tool there. Selective shooting of cowbirds, relocation of feedlots, dairies, and stables away from riparian areas, and reduction of grazing in certain riparian areas is also recommended, as well as re-vegetation of riparian areas to increase the extent of nesting habitat and deter cowbirds.

Since significant declines in Bell's Vireo populations have been suspected over several decades in Iowa, carefully planned conservation measures should be considered. Perhaps the most feasible would be to promote suitable scrub habitat, either by leaving open areas to grow or by opening some forested areas through

partial cutting. The effectiveness of these measures remains untested.

As more attention is given to IBA Criteria Species, and more and better management practices are planned and implemented across our state, the Bell's Vireo will hopefully be able to sustain its population.

Managing habitat for Iowa's high conservation priority Bell's Vireos is also likely to benefit Loggerhead Shrikes, White-eyed Vireo, and Yellow-breasted Chat – each with the same species of high conservation priority status – in Iowa. Consequently, special attention ought to be given to protecting and maintaining habitat for this entire suite of savanna/shrub species.

For general information about habitat management for Bell's Vireo, see the sections on Woodland Management for Birds and Grassland Management for Birds. For more specific details see Recommended Woodland Management Practices and Recommended Grassland Management Practices. All of these sections are in Part 3.