

STATUS: HIGH CONSERVATION PRIORITY IN IOWA

Loggerhead Shrike

Lanius ludovicianus

Introduction

The Loggerhead Shrike is the only one of the world's thirty species of true shrikes that occurs exclusively in North America. It is a year around resident throughout the southern half of the lower 48 states. Northern populations breed throughout the North Central states (including Iowa) and into the Prairie Provinces of Canada, and then migrate to winter in more southerly states. Where resident, this species usually lives in pairs on permanent territories. Some pairs spend the entire year on a single territory; but outside the breeding season, mates may defend neighboring territories, which are coalesced at the beginning of nesting.

Like other shrikes, the Loggerhead inhabits grasslands, savanna/shrub habitats, and other open habitats where it feeds on a variety of invertebrate and small vertebrate prey. Compared to most birds, its head is large in proportion to its body size – hence the name Loggerhead, which also means "blockhead."

This shrike, like others, is a small avian predator that hunts from perches and impales its prey on sharp objects such as thorns and barbed-wire fences. Although its foraging behavior mimics that of some raptors, its impaling behavior represents a unique adaptation to the problem of eating large prey without benefit of the stronger feet and talons of raptors. Being both a passerine (perching bird) and top-level predator, shrikes occupy a unique position, not only in the food chain, but also in the avian world.

LINK TO IOWA IBA: LOGGERHEAD SHRIKE

Despite its wide distribution, the Loggerhead Shrike is one of the few North American passerines whose populations have declined continent-wide in recent decades. Changes in human land-use practices, the spraying of biocides, and competition with species that are more tolerant of human-induced changes appear to be major factors contributing to this decline.

Habitat Preferences

Loggerhead Shrikes prefer open country with short vegetation: grasslands, pastures with fence rows, old orchards, roadsides, cemeteries, golf courses, agricultural fields, riparian areas, and open woodlands. Breeders usually settle near isolated trees or large shrubs. Its near relative, the Northern Shrike, found in Iowa only during winter, by comparison, prefers open deciduous and coniferous woodlands.

Foraging takes place in landscapes characterized by well-spaced, often spiny, shrubs and low trees, usually interspersed with short grasses, forbs, and bare ground including: scrub lands, savannas, prairies, agricultural lands (especially pastures and meadows with hedges or shrubs), and some suburban areas. This species favors fence lines and utility lines and poles for perching, therefore they are frequently found along roadways.

In many regions, indices of Loggerhead Shrike abundance correlate with percentage of pastureland that is present. Shrubs and small trees, and the presence of canopy cover are most important during the nesting season.

Additional IBA Criteria Species in Iowa that utilize the same general type of open savanna/shrub habitats – and each also a species of high conservation concern – include White-eyed Vireo, Bell's Vireo, and Yellow-breasted Chat.

Feeding Habits

This predatory songbird forages mostly on large insects, rodents and small birds. The breeding season diet consists mainly of insects, especially grasshoppers and crickets, but also beetles, wasps and various others.

Loggerhead Shrikes take mice and other small rodents during all seasons, but especially in winter. Small birds may be captured throughout the year. The annual diet also includes spiders, snails, frogs, lizards, small snakes, crayfish, small fish, and other items.

Like other shrikes, the Loggerhead kills its vertebrate prey by precisely attacking the nape area of the neck, and then severing the vertebrae in a series of grabs and bites. A special tooth in the upper mandible probably serves as a device for quickly penetrating the spinal cord through the space between the articulating vertebrae, thereby producing partial paralysis, and rendering the quarry easier to kill.

Foraging appears to be opportunistic; and like most predatory species the diet is adjusted to prey availability. The absence of heavy talons and strong feet cause 2 problems: self-defense, and holding the prey once it's killed. The first problem is overcome by avoiding dangerous prey through hovering, attacking from behind, and biting at the base of the skull of prey.

The second problem is remedied by impaling and storing prey on sharp spines in conspicuous places such as on vegetation, or on barbed wire, or wedging prey into narrow V-shaped forks in shrubs and small trees. Loggerhead Shrikes are well known for this unusual and complex behavior.

Impaling probably evolved as a feeding adaptation because it enables shrikes to immobilize larger prey than they could otherwise handle. The commonly used

terms *cache, larder,* and *pantry* describe the impaling that is used as a means of food storage, especially during winter when food is scarce, or during breeding season when energy demands are high and caching is a way of dividing labor between the parents. Caching may also function as mate attraction.

Breeding Biology

Migrant Loggerhead Shrikes arrive in Iowa by late March or early April, and males tend to use the same territories in successive years.

As with many predatory birds, nesting begins quite early in spring – in late April or early May – in Iowa. In courtship the male performs short flight displays, and provides the female with food. The nest is built by both sexes, and is located in a spot well hidden by foliage in a dense and often thorny tree or shrub, usually 5 to 30 feet above ground but occasionally higher.

Generally 5 to 6 eggs are laid, but the number may range from 4 to 8. Incubation is by the female, and usually lasts from 16 to 17 days. The male feeds the female during incubation, and this food may be some that he stored on thorns earlier. Both parents feed the nestlings, and the young leave the nest at about 17 to 21 days of age. Fledglings continue to be fed by both parents for another 3 to 4 weeks.

Concerns and Limiting Factors

Loggerhead Shrikes are one of the few North American passerines whose populations have declined continent-wide in recent decades. Changes in human land-use practices, the spraying of biocides, and competition with species that are more tolerant of human-induced changes appear to be major factors contributing to this decline.

Although pesticides have not been linked to a reduced reproductive success in this species, additional studies of other impacts of pesticides on Loggerhead Shrikes should be conducted. The impacts of habitat fragmentation certainly need to be addressed. One approach could involve comparing size and degree of isolation for blocks of suitable habitat among areas that have a stable, declining, or extirpated Loggerhead Shrike population.

Research needed to aid management practices include the following poorly understood topics: 1) determining migration routes, stopover and wintering areas, and susceptibility to human disturbance; 2) evaluating dietary needs and how weather, season, land use, and biocides influence food availability; 3) determining mortality rates of fledged juveniles and adults throughout the annual life cycle in different habitats, and at the same time identifying factors contributing to mortality and causing population declines; 4) comparing different populations to find where problems are, and allowing identification of regions that are population sources and those that are sinks; and, 5) determining degree of niche overlap between Loggerhead Shrikes and potential competitors to see whether shrike productivity is correlated with the presence or absence of these species.

Reproductive studies have not provided convincing answers to help land managers. Coordinating research efforts to make productivity and mortality estimates comparable and more accurate would make future results most useful. In regions where Loggerhead Shrike populations are small, tracking nesting locations and nesting attempts would probably be worthwhile. This might identify site-specific problems that could be managed for and help contribute to determining causes of the decline.

Studying foraging success and overall vigor of nesting shrikes may also provide valuable information for future management, but the loss and fragmentation of savanna/shrub habitats is

undoubtedly the major contributing factor to continuing population declines.

Habitat Management Recommendations

Since reproductive rates are potentially high in this species, Loggerhead Shrikes could expand their current numbers and perhaps their range if the factors responsible for recent declines can be identified and eliminated or reduced significantly.

An Ontario, Canada, Loggerhead Shrike Working Group has defined Loggerhead Shrike habitat as including all suitable grassland and pasture habitat within a 400 yard radius of their nests. At present, no habitat management programs at a larger scale than this are known to be underway, but providing the necessary savanna/shrub habitat in smaller units is something that county and state biologists and private landowners should be able to accomplish.

Despite the dangers inherent in creating linear habitats, roadside habitats could be incorporated into management plans, and state and county departments of transportation could be encouraged to leave shrubs standing along roadsides. Use of biocides on these lands should be eliminated or reduced. Better maintenance of roadside nesting habitat could also be achieved. It is also desirable to maintain shrubs and brush along fence-lines, scattered trees in pastures and fields, and hedges as potential nest sites.

Implementation of the above recommendations is problematic because many areas that are a mixture of grassy open areas and small woody plants are considered prime real estate for suburbs, farming, ranching, golf courses, etc. In addition, mid-succession grasslands are often overlooked in grassland management plans, which usually concentrate on early succession habitat. However, managing habitat for Iowa's high conservation priority Loggerhead Shrikes is also likely to benefit White-eyed Vireo, Bell's Vireo, and Yellow-breasted Chat – each with the same status as a species with high conservation priority in Iowa. Consequently, special attention ought to be given to this entire suite of species.

For more information about conservation efforts for Loggerhead Shrikes, see both the sections on Woodland Management for Birds and Grassland Management for Birds. And for more specific details see Recommended Woodland Management Practices and Recommended Grassland Management Practices. Each of these sections is found in Part 3.