Birds of the Great Plains: Family Parulidae (Wood Warblers)

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FAMILY PARULIDAE
(WOOD WARBLERS)

Black-and-white Warbler
Black-and-white Warbler
*Mniotilta varia*

**Breeding Status:** Breeds in partially wooded areas of northwestern Minnesota (records for Roseau, Clearwater, and Becker counties), North Dakota (especially the Little Missouri Valley), South Dakota (probably including the Black Hills), Nebraska (west to the Pine Ridge area, commonest along the Niobrara and Missouri rivers), eastern Kansas (west to Doniphan, Coffey, and Sedgwick counties), and eastern Oklahoma (west at least to Alfalfa, Caddo, and Love counties). There are no breeding records for the Texas panhandle.

**Breeding Habitat:** The species is generally found in semiopen upland stands of deciduous or coniferous forest, especially those composed of immature or scrubby trees such as oaks and junipers and hillside or ravine groves with thin understories. It is also found in riverside forests adjacent to grasslands.

**Nest Location:** Nests are normally on the ground, at the base of a tree or stump, under a fallen tree branch or log, near a rock, or otherwise well protected and concealed from above. The nest is built of dried leaves and lined with various softer materials. Infrequently it is placed on top of a low stump, in a rotted cavity.

**Clutch Size and Incubation Period:** From 4 to 5 eggs, white with brown spots and blotches over most of the surface. The incubation period is 11–12 days. Single-brooded.

**Time of Breeding:** In North Dakota, dependent young have been seen in late July and August. In Kansas, eggs are probably laid in May and June, and in Oklahoma eggs are probably laid as early as late April, and dependent young have been seen as late as July 20.

**Breeding Biology:** This warbler is adapted for gleaning arthropods from the trunks of trees in creeper fashion. It is not dependent on foliage and thus tends to migrate well before most other warblers. Males are the earliest to arrive on their breeding grounds and soon begin to announce territories with their high-pitched seesawing song. The female incubates alone, and presumably she also does all the brooding. The fledging period is said to be 8–12 days.

**Suggested Reading:** Bent 1953; Smith 1934.
Prothonotary Warbler

*Protonotaria citrea*

**Breeding Status:** A rare breeder in the Missouri Valley of southeastern Nebraska (extending north to Sarpy County) as well as adjacent southwestern Iowa and northwestern Missouri, and southward through eastern Kansas (breeding records for Doniphan, Douglas, Linn, and Cowley counties) and the eastern half of Oklahoma (probably west to Alfalfa, Canadian, Greer, and Tillman counties).

**Breeding Habitat:** The species is restricted to moist bottomland forests and wooded swamps or periodically flooded woodlands, in the vicinity of running water or pools.

**Nest Location:** Nests are in natural cavities or in old woodpecker holes, 5–20 feet high, often over water. Both tree stumps and trees are used, and there have been some records of nesting in birdhouses, gourds, and even tin cups. The cavity is lined with a variety of grasses, leaves, rootlets, and twigs, forming a deep hollow.

**Clutch Size and Incubation Period:** From 3 to 6 eggs (15 Kansas clutches averaged 4.5). The eggs are white with extensive brown spotting. The incubation period is 12–14 days. Frequently double-brooded, at least in Oklahoma.

**Time of Breeding:** Kansas egg records are from May 11 to July 10, with a peak in early June, and 75 percent of the records fall between June 1 and June 20. In Oklahoma, breeding records are from May 5 (nest-building) to early August (dependent young).

**Breeding Biology:** As soon as the males return to their breeding areas in spring, they become territorial and particularly try to stake out areas along riverbanks or other well-shaded water edges. The presence of suitable nest sites, preferably downy woodpecker holes only 5–6 feet above the water or ground, is critical, and males begin to carry moss into the cavities even before the females arrive. Apparently it is not typical for these birds to mate with the partner from the previous year. The female completes the nest and performs all the incubation. Fledging occurs after 10–11 days, and a second clutch may be begun in the same nest.

**Suggested Reading:** Walkinshaw 1953; Bent 1953.
Swainson Warbler
*Limnothlypis swainsonii*

**Breeding Status:** Breeding in our region is limited to eastern Oklahoma, including the extreme southeast (McCurtain County), and the northeastern area of Arkansas River drainage (Delaware, Washington, Tulsa, and Payne counties).

**Breeding Habitat:** In Oklahoma the species is associated with moist, bottomland woods and woods with a brushy cane thicket or briar cover. It is generally most abundant in canebrake swamps, wooded ravines, or brushy thickets that provide a combination of deep shade, moderately dense undergrowth, and dry land within a general floodplain forest situation.

**Nest Location:** Nests are 2–12 feet high, in shrubs, vines, or small trees, often far from water and sometimes at the edge of or even outside the male's advertised territory. The nest is usually in rather thin cover but is always close to a denser thicket and is well concealed. It is a bulky structure of twigs, needles, and leaves, lined with fine grasses.

**Clutch Size and Incubation Period:** From 3 to 5 white eggs, usually 3. The incubation period is 14–15 days. Probably single-brooded.

**Time of Breeding:** In Oklahoma, eggs have been found as early as May 29 and as late as June 20, and fledged but dependent young have been seen in late June.

**Breeding Biology:** During the breeding season, these warblers can be found as unmated males, isolated pairs, or clustered breeding groups or "colonies." Typically, males establish territories immediately upon arrival and defend them with vigorous singing and chases. Singing is done from a variety of perches, but usually from below 30 feet. Pairs forage on the ground within these territories and begin nest-building 2–4 weeks after the males arrive. The nest is built by the female and takes 2–3 days to complete. After another 2 days, the first egg is laid. Apparently the male does not visit the nest during incubation but feeds the female some distance away. However, both sexes visit the nest when feeding the young, which fledge in 10–12 days. Singing by the males becomes sporadic after late June, but until that time they are persistent singers, often averaging 200 songs an hour.

**Suggested Reading:** Meanley 1969, 1971.
Worm-eating Warbler  
*Helmitheros vermivorus*

**Breeding Status:** A very rare breeder in our region, with few actual records. Periodically seen in southeastern Nebraska, but no breeding records exist for the state. In Kansas it is a possible resident in the east, but a territorial male reported in Doniphan County is apparently the only suggestion of breeding there. In Oklahoma the species has been seen in several eastern counties, but the only definite records are for 1961 and 1962, in McCurtain County, when a breeding pair and a pair with one young were seen.

**Breeding Habitat:** Wooded hillsides covered with medium-sized deciduous trees and an undergrowth of small shrubs and saplings are the preferred habitat of this species, especially when there are streams or swampy areas nearby.

**Nest Location:** The nest is in a hollow on the ground, usually on steep or sloping hillsides. It is constructed of partly skeletonized leaves and lined with mosses, and is often placed under a canopy of dead leaves at the base of a tree or under bushes where it is well concealed.

**Clutch Size and Incubation Period:** From 3 to 6 eggs, usually 4-5. The eggs are white with dark speckles. The incubation period is 13 days. Probably single-brooded.

**Breeding Biology:** Rather little has been written on the breeding biology of this woods-adapted species, partly owing to the heavy cover it frequents and perhaps also because the male's song is easily mistaken for that of the chipping sparrow. The female apparently incubates and broods the young alone, but she is fed on the nest by her mate. In one case, the young left the nest after 10 days.

**Suggested Reading:** Bent 1953.

Golden-winged Warbler  
*Vermivora chrysoptera*

**Breeding Status:** Limited as a breeder in our region to north-central Minnesota (breeding records for Becker and Clearwater counties), north at least to Itasca State Park.

**Breeding Habitat:** The species is associated with openings in deciduous forest or forest edges, where there is a dense understory of ferns and other moisture-loving plants. Also found in
hillside thickets, overgrown pastures, and brushy fields. At Itasca Park the birds occupy both upland forest such as aspens and lowland areas that provide edge habitat or openings in cover.

**Nest Location:** Nests are on the ground or close to it, usually at the forest edge but within its shade, and may be in grass clumps, at the bases of trees, or on a substrate of dead leaves. The cup of the nest is lined with grasses, bark strips, and sometimes hair.

**Clutch Size and Incubation Period:** From 3 to 6 eggs, usually 4-5. The eggs are white, with brown spotting on the larger end. The incubation period is 10-11 days. Probably single-brooded.

**Time of Breeding:** Minnesota egg records are from May 30 to June 24, and fledged but dependent young have been seen from early July to early August.

**Breeding Biology:** The blue-winged and golden-winged warblers are closely related species that have come into contact in recent times and that hybridize locally, as well as competing strongly with one another. In these species and their hybrids males with similar plumage and songs or with similar plumage but dissimilar songs have nonoverlapping territories. Those with dissimilar plumage and songs or with similar songs but dissimilar plumage have overlapping territories. Both species do have very similar courtship displays and form pair bonds very rapidly, which helps to explain the occasional hybridization in areas of overlap. In the golden-winged warbler the female incubates alone, with the male starting to feed her some days before the eggs hatch and continuing for a few days thereafter in one observed instance. The young leave the nest when about 8 days old, and a few days later they are able to fly fairly well.

**Suggested Reading:** Eyer 1963; Ficken and Ficken 1968a.

**Blue-winged Warbler**

*Vermivora pinus*

**Breeding Status:** Restricted as a breeder in our region to eastern Oklahoma (breeding record only from Delaware County; probably also breeds in Adair County).

**Breeding Habitat:** The primary habitat in the Great Plains consists of woodland edges, overgrown pastures, and thickets. The species is also more generally associated with rank growth near the borders of swamps or streams but is usually not found in heavy forests. This species uses slightly moister habitats than the golden-winged warbler, although in some areas the species overlap and hybridize.
Nest Location: Nests are on the ground, usually attached to the stems of weeds or grasses. The nests closely resemble those of the golden-winged warbler, but in this species the eggs are slightly less heavily marked.

Clutch Size and Incubation Period: From 3 to 6 eggs, usually 4–5. The eggs are white, with limited brown spotting toward the larger end. The incubation period is 10–11 days. Probably single-brooded.

Time of Breeding: No egg dates are available for our region, but nestlings in Oklahoma have been seen during late May and dependent fledglings in mid-June.

Breeding Biology: Adaptations for foraging in this species and in other species of the genus include a very straight and sharply pointed bill tip that allows for efficient probing of buds and leaf clusters and for feeding in flowers. The more typical warbler method of gleaning food from flat surfaces is used less frequently. The breeding biology of *Vermivora* warblers fits the general pattern for the family, with the female doing most or all of the nest-building and also all of the incubating. Both sexes feed the young birds, and the female does the brooding at night. The nestling period is normally about 10 days, rarely as short as 8.

Suggested Reading: Ficken and Ficken 1968b; Murray and Gill 1976.

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Tennessee Warbler

*Vermivora peregrina*

Breeding Status: Breeds in north-central and northwestern Minnesota, south to Itasca State Park, Clearwater County. Regarded as a hypothetical breeder in eastern North Dakota (singing males reported in Cass, Bottineau, and Pembina counties).

Breeding Habitat: In Minnesota this species is associated with open spruce and tamarack or white cedar (arbor vitae) bogs, where sphagnum moss is abundant. More generally it is also associated with deciduous forests, forest clearings, and bushy hillsides.

Nest Location: Nests are on the ground, typically in sphagnum-covered hummocks. They are deeply cupped and overhung with grasses and sedges and are lined with fine grasses. Infrequently, nests are placed on rather dry hillsides, under the cover of shrubs or saplings.

Clutch Size and Incubation Period: From 4 to 7 eggs, usually 6. The eggs are white with extensive brown blotches or spotting. The
incubation period is unreported but probably is 11-12 days. Presumably single-brooded.

**Time of Breeding:** Specific egg dates are not available for this region, but territorial males have been found throughout June and into early July. Singing has been heard as late as August 16 in northern Minnesota.

**Breeding Biology:** Remarkably little has been learned of the breeding biology of this species. An early study in New Brunswick indicates that the birds are most abundant in low areas of streams and boggy ground, in spruce and balsam woodlands that have been partially cut, leaving areas of second growth not much higher than shrubs. In such boggy and open habitats the birds were found to be numerous, with up to five territorial males in a single clearing. Although it is known that only the female incubates, the incubation period and the details of nestling development have not been established.

**Suggested Reading:** Bowdish and Philipp 1916; Bent 1953.

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**Nashville Warbler**  
*Vermivora ruficapilla*

**Breeding Status:** Breeding in our region is restricted to north-central and northwestern Minnesota (breeding records for Becker and Clearwater counties).

**Breeding Habitat:** In Minnesota this species is especially typical of tamarack-ash and tamarack-spruce-white cedar swamps, and less frequently occurs in second growth and heavy timber in upland situations. Generally, it also occurs in swales, slashings, and undergrowth of mixed forests.

**Nest Location:** Nests in Minnesota are usually in sphagnum hummocks, well concealed by overhanging vegetation. The nest is a shallow cup of leaves and rootlets, lined with fine grasses, moss stems, needles, and hair.

**Clutch Size and Incubation:** From 4 to 5 eggs, white with scattered or concentrated brown spotting. The incubation period is 11-12 days. Probably single-brooded.

**Time of Breeding:** Minnesota egg dates are from May 30 to July 14, and nestlings have been reported as early as June 20.

**Breeding Biology:** Apparently male Nashville warblers become territorial immediately upon arrival, and pairing occurs soon afterward. The nests are usually so hard to find that few observations on them are available, but in one case nest-building took 7-9 days.
days, with the female presumably doing most of the work while the male perched nearby and sang. The female does all the incubating and occasionally leaves the nest for foraging, accompanied by the male. The female also broods the young, but both sexes bring food to them. They fledge in 8–11 days and thereafter seem to leave the nesting area.

Suggested Reading: Lawrence 1948; Bent 1953.

Northern Parula

*Parula americana*

**Breeding Status:** Breeds in north-central and northwestern Minnesota (breeding records for Becker and Clearwater counties) and from northwestern Kansas southward through eastern Kansas (west locally to Riley and Montgomery counties) and eastern Oklahoma (records for Washington, Delaware, and McCurtain counties; probably breeds west at least to Marshall county, since there is a breeding record for Cooke County, Texas).

**Breeding Habitat:** The species is primarily associated with swampy woods, especially those where there are mosslike lichens or *Tillandsia* ("Spanish moss"). In Minnesota, tamarack and spruce swamps with abundant *Usnea* lichens are prime habitat.

**Nest Location:** Nests are suspended from tree branches at heights averaging about 10 feet (range 6–100). In Minnesota they are woven of *Usnea*, as they are in Oklahoma; where lichens or Spanish moss (*Tillandsia*) are not available, other materials may be used. In all cases the nest is a woven pouch, with a lateral or dorsal entrance.

**Clutch Size and Incubation Period:** From 3 to 7 eggs, usually 4–5. The eggs are white with brown spotting. The incubation period is at least 12 days. Single-brooded.

**Time of Breeding:** Minnesota egg records are for early June, with nestlings seen in late June and dependent young as late as August 7. In Kansas, eggs are apparently laid at least from mid-May to mid-June, and in Oklahoma nest-building has been reported in late April, with eggs in mid-May and nestlings as late as early July.

**Breeding Biology:** The distinctive nests of this species are far less easy to find than one might suspect; not only are they constructed of the abundant hanging lichens, but at times the female builds a concealing curtain of *Usnea* above and around the nest site before starting the nest itself, which may thus be seen only from directly below. About 4 days are required to construct the nest, and laying
may begin the next day. Only the female incubates, and she leaves
the nest rather often for foraging. Both sexes feed the young, but
females do so more actively than males. In one observed case a
young bird left the nest at 10 days of age, but this was the result
of disturbance and apparently was premature.

Suggested Reading: Graber and Graber 1951; Bent 1953.

Yellow Warbler
*Dendroica petechia*

**Breeding Status:** Breeds pandemically in suitable habitats
throughout the region.

**Breeding Habitat:** The species prefers moist habitats, such as
brushy bogs, edges of swamps, marshes, or creeks, but is also
found in dry sites such as roadside thickets, hedgerows, orchards,
and forest edges. It avoids both heavy forests and grassland
environments lacking shrubs or trees.

**Nest Location:** Nests are 2–12 feet above the ground in upright
forks or crotches of shrubs and trees. The nest is a compact cup
of grasses, milkweed fibers, and cottony materials, lined with
plant down and fine grasses.

**Clutch Size and Incubation Period:** From 3 to 5 eggs (29 Kansas
clutches averaged 4.2, and 12 North Dakota nests averaged 3.6).
The eggs are white, with gray to brown spotting near the larger
end. The incubation period is 11–12 days. Single-brooded.

**Time of Breeding:** North Dakota egg dates are from June 2 to
June 30, with dependent young seen as late as July 29. In Kansas,
egg dates are from May 11 to June 20, with a peak in late May.
Oklahoma records extend from May 11 (eggs) to late July (depen­
dent young), and Texas egg records are from May 17 to July 13.

**Breeding Biology:** This widespread and abundant warbler seems
to have rather generalized territorial needs, including suitable
nest sites, tall singing posts, concealing cover, and foraging areas
in shrubs and trees, within an area of about two-fifths of an acre.
Territorial behavior begins soon after the males arrive, and pairs
may be formed in 1–4 days. Approximately 4 days are needed for
nest construction, which is done mostly or entirely by the female.
The female also does all the incubating, often beginning before
the clutch has been completed. Both sexes feed the young, and
occasionally males have been seen brooding them, but this seems
to be atypical. The young fledge in 9–12 days and remain in the
general vicinity for another 7–10 days.

Suggested Reading: Schrantz 1943; Frydendall 1967.
Magnolia Warbler
*Dendroica magnolia*

**Breeding Status:** Breeding is limited to northern Minnesota (south rarely to about Itasca Park, Clearwater County) and confined to coniferous forest habitats.

**Breeding Habitat:** Spruce and fir forests with low trees and open coniferous bogs dominated by white cedar or other coniferous species are preferred. Dense thickets of spruce and fir, second-growth following logging, edges of taller coniferous forests, and similar bush and sapling habitats are used.

**Nest Location:** Nests are usually in small conifers, 1-8 feet above the ground and generally are well concealed in the foliage near the tip of a horizontal branch. Occasionally hardwood tree or shrub species such as cherries, rhododendrons, or birches are also used, but hemlocks and spruces are favored. The nest is a loosely constructed cup of twigs, grasses, and weeds, lined with black rootlets.

**Clutch Size and Incubation Period:** From 3 to 5 eggs, usually 4. The eggs are white, with extensive markings of brown, reddish, or purplish near the larger end. The incubation period is 11-13 days. Probably single-brooded.

**Time of Breeding:** Few specific egg dates are available, but young have been found in Minnesota as early as June 22, and there have been several sightings of young during July. A nest at Itasca State Park hatched on June 7 and fledged on June 16 or 17 (*Loon* 49:199).

**Breeding Biology:** This species maintains territories by songs, visual displays, and chases, with favorite singing posts about 10-45 feet up in a tree. Males display toward other birds with wing- and tail-spread and persistently follow females that enter the territory. Apparently both birds help build the nest, which may require 4-6 days. Only the female incubates and broods the young, although both sexes feed them. They fledge in about 10 days, and thereafter the young birds wander about, being fed by their parents until about 3 weeks after fledging.

**Suggested Reading:** Kendeigh 1945; Bent 1953.
Cape May Warbler
Dendroica tigrina

**Breeding Status:** Breeding in our region is limited to north-central and probably northwestern Minnesota (Clearwater County is the only specific record, and it is rare even at Itasca State Park).

**Breeding Habitat:** The species is associated with fairly open stands of tall conifers or the edges of coniferous forests, especially if birches or hemlocks are present.

**Nest Location:** Nests are in thick foliage near the top of tall spruces, usually 30-40 feet above the ground, and generally are invisible from the ground. The nest is built of mosses, twigs, and grasses and lined with soft vegetation, feathers, and hair.

**Clutch Size and Incubation Period:** From 4 to 9 eggs, usually 6-7. The eggs are white with reddish brown spots or blotches. The incubation period is not known but presumably is about 12 days. Probably single-brooded.

**Time of Breeding:** No definite egg dates or dates of young birds are available from Minnesota, but nesting probably occurs during June.

**Breeding Biology:** Because of the species’ tendency to nest so high in conifers, few nests have been found, and little is known of the nesting biology. In one observed case, only the female gathered nest materials, which she collected from two places within 60 feet of the nesting tree. The nest was built mostly of sphagnum around the exterior, interwoven with vine stems, generally resembling a green ball of moss. Apparently only the female incubates, but almost nothing else is known of the breeding biology, since the female is very secretive about approaching and leaving her nest.

**Suggested Reading:** Bent 1953; Walley 1973.

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Black-throated Blue Warbler
Dendroica caerulescens

**Breeding Status:** Breeding in our region is restricted to north-central and perhaps northwestern Minnesota (Itasca State Park, Clearwater County, is the only definite record).

**Breeding Habitat:** In Minnesota this species is found in mixed coniferous forests as well as hardwood forests; heavy deciduous forest with an ample undergrowth of saplings and evergreen or
deciduous shrubs seems to be preferred. Small conifers, creeping yew, or species of the heather family are usually present in such habitats and often serve as nesting cover.

**Nest Location:** Nests are in low coniferous seedlings or evergreen shrubs such as rhododendron, laurel, or yew, and usually are elevated less than 2 feet. They are often well concealed and are built of a mixture of twigs, bark, and leaves with a lining of hair and black rootlets.

**Clutch Size and Incubation Period:** From 3 to 5 eggs, usually 4. They are white, with spotting or blotching of browns and grays toward the larger end. The incubation period is 11-13 days, usually 12. Probably single-brooded.

**Time of Breeding:** Minnesota records of eggs or nestlings are all no earlier than July, but almost certainly eggs are laid by June, and singing by territorial males occurs in May.

**Breeding Biology:** Like the other species of its genus, the black-throated blue warbler is specialized for gleaning. It forages in the shrub, subcanopy, and lower canopy layers of forests, up to about 20 yards above the ground, mostly in the foliage and outer tree branches. Males tend to forage at higher levels than females and sing from territorial posts rather high in the trees. Most nest-building is done by the female, but sometimes males bring in materials, and in one case a nest was completed in 4 days. Incubation and brooding are done by the female, but both sexes feed the young with equal intensity. The young are fledged in about 10 days but are fed by the adults for some time thereafter.

**Suggested Reading:** Black 1976; Harding 1931.

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**Yellow-rumped Warbler (Myrtle and Audubon Warblers)**

*Dendroica coronata*

**Breeding Status:** Breeds commonly in north-central and north-western Minnesota (records for Clearwater, Marshall, and Roseau counties) and in the Black Hills of South Dakota. Also breeds commonly in the Pine Ridge area of Nebraska (Sioux and probably Dawes counties, *Nebraska Bird Review* 40:41), and rarely in North Dakota (Slope County).

**Breeding Habitat:** In the Black Hills, breeding occurs both in pine and in spruce forests, and in Minnesota it occurs rather
generally in coniferous forests. Scattered evergreens, thickets near a stream or lakeshore, or open plantings are more typically used than dense, mature stands.

**Nest Location:** Nests are almost invariably in conifers, elevated 5-40 feet, and are usually well out on horizontal branches where they are screened from above by clumps of needles. Sometimes they are built in the topmost clump of needles of small conifers or, rarely, in a hardwood species. The nest is built mostly of twigs and bark fibers, lined with plant down and almost always some feathers.

**Clutch Size and Incubation Period:** From 3 to 5 eggs, usually 4. The eggs are white, with brown blotching near the larger end, often forming a continuous wreath. The incubation period is 12-13 days. Probably single-brooded, but double-brooding has been suspected.

**Time of Breeding:** Nesting in the Black Hills occurs from the last week of May to mid-July. In Minnesota, fledged young have been reported as early as June 13, and fledged but dependent young have been seen as late as late July.

**Breeding Biology:** This warbler is among the first of its family to move northward in spring, often becoming fairly abundant as the first tree leaves appear. Little has been written on the early stages of its nesting, but it is believed that only the female incubates and broods the young. One early account suggests that rarely the male may incubate too and may even sing while on the nest. The young fledge at about 12-14 days.

**Suggested Reading:** Ficken and Ficken 1966; Hubbard 1969.

**Black-throated Green Warbler**
*Dendroica virens*

**Breeding Status:** Restricted as a breeding species in our region to north-central and perhaps northwestern Minnesota (Clearwater County is the only specific breeding record).

**Breeding Habitat:** In Minnesota, this species nests in rather open coniferous and mature stands of mixed forests. It is generally associated with large trees but occasionally is found in second-growth timber as well as scattered trees in pastures and on hillsides. Stands of pines, especially white pines, seem to be preferred habitat.

**Nest Location:** Nests are elevated 2-80 feet, in horizontal forks or branches of trees, well away from the trunk in rather thick
foliage. Conifers are the usual sites, but various hardwoods are also used at times. The nest is constructed of a variety of materials that often include birch bark, and feathers or hair are frequently part of the lining.

**Clutch Size and Incubation Period:** From 4 to 5 eggs, white, with brown to purple spotting around the larger end. The incubation period is 12 days. Two broods may occasionally be raised.

**Time of Breeding:** In Minnesota, eggs have been found in late June, and nestlings have been seen as early as July 4. Dependent but fledged young have been seen to the end of July.

**Breeding Biology:** In a study done in Michigan, it was found that a pair of black-throated green warblers spent 4 days building a nest; both sexes worked initially, but the bulk of the work was done by the female. In an earlier study only the female built, and 8 days were spent in this phase of breeding. Incubation is apparently done only by the female; early reports of males incubating have not been substantiated. Likewise, all brooding is by the female, but both sexes feed the young. Fledging occurs 10 days after hatching, and young birds have been observed being fed as late as early September in Massachusetts.

**Suggested Reading:** Pitelka 1940; Nice and Nice 1932.

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**Cerulean Warbler**

_**Dendroica cerulea**_

**Breeding Status:** Probably breeds in west-central and north-central Minnesota (no specific records) and is a hypothetical breeder in southeastern North Dakota (territorial male noted in Richland County). Also breeds in the Missouri Valley, but the northern limits are uncertain; several nests have been found in Sarpy County, Nebraska, and it presumably breeds south to the Kansas border. However, it is not known to breed at Squaw Creek N.W.R., Missouri, and there are no definite breeding records for Kansas, where it probably is a rare nester. It is known to breed in eastern Oklahoma (Delaware and McCurtain counties), and it has been seen as far west as Washington, Tulsa, and Latimer counties.

**Breeding Habitat:** The species is found in moist deciduous bottomland forests as well as shady and mature upland woods. Rather open forests, with large elms, maples, and ashes and fairly free of undergrowth, seem to be preferred.

**Nest Location:** Nests are usually fairly high (20–60 feet) in tall trees, usually well away from the trunk on horizontal branches,
which are usually substantial and free of vegetation below. The
nest is compactly rounded, made of bark fibers, spider silk, and
grasses and decorated outside with brownish lichens and mosses.
It resembles a large knot.

**Clutch Size and Incubation Period:** From 3 to 5 eggs, usually 4.
They are white, with brown spotting near the larger end. The
incubation period is unreported but probably is about 12 days.
Probably single-brooded.

**Time of Breeding:** No egg dates are available for Minnesota, but
young birds have been seen in late July. In Oklahoma, fledglings
have been seen in late June, and there is one egg record for April
29.

**Breeding Biology:** Rather little is known of the early stages of the
breeding cycle, during the period of territorial establishment and
nest-building. Only the female is known to incubate; during incu­
bation the male rarely visits the nest and apparently is forcibly
kept away by the female, as is typical of several other species of
warblers. Nothing specific has been reported on the fledging
period or other posthatching stages of the breeding biology.

**Suggested Reading:** Trapp 1967; Bent 1953.

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**Blackburnian Warbler**

*Dendroica fusca*

**Breeding Status:** Breeding in our region is restricted to north-cen­
tral and perhaps northwestern Minnesota (records for Becker and
Clearwater counties).

**Breeding Habitat:** The species is associated with mature conifer­
ous forests, especially heavy timber and swampy areas where
*Usnea* lichens are abundant. Deciduous or mixed second-growth
timber is used secondarily, but mature stands of spruces, hem­
locks, and pines are the primary breeding habitat.

**Nest Location:** Nests are 5-90 feet above the ground, usually at
least 25 feet high, on horizontal branches of large conifers, com­
monly hemlocks. The nest is built of twigs, into which *Usnea* is
normally woven, concealing the nest, and the cup is usually lined
with hair, grasses, and black rootlets.

**Clutch Size and Incubation Period:** From 4 to 5 eggs, usually 4.
They are white, with extensive brownish spotting or blotching
around the larger end, usually forming a wreath. The incubation
period is unknown but presumably is 12 days. Probably single­
brooded, but attempted renesting has been seen.
Time of Breeding: The few available egg records from Minnesota are for July, but it is likely that most eggs are laid in June.

Breeding Biology: Studies of several pairs in Ontario indicate that only females do the nest-building and that 3–6 days may be spent in this phase of breeding. Likewise, only the female incubates and broods the young; in some instances the female is fed on the nest by the male and in other cases she leaves the nest briefly for foraging. The period to fledging has not been established. By late July the adults go into molt, and singing stops abruptly. At that time territories are abandoned and the adults begin to disperse, often followed by fledglings still begging to be fed.

Suggested Reading: Lawrence 1953b; Bent 1953.

Yellow-throated Warbler

*Dendroica dominica*

Breeding Status: Current evidence indicates that breeding in our region is restricted to Oklahoma, where the species is resident in the eastern part of the state, extending west at least to Tulsa and Cleveland counties and along the Red River perhaps to Love County, since breeding has been reported across the river in Cooke County, Texas. There are no breeding records for Kansas, but in 1968 the collection of possible breeding birds was reported for Cherokee County (Kansas Ornithological Society Bulletin 20:7). Reported without apparent justification to be a rare breeder in southeastern Nebraska.

Breeding Habitat: In Oklahoma this species occupies swampy hardwood forests and upland forests of mature pines and oaks. Over most of its range it is associated with forests with abundant Spanish moss.

Nest Location: Nests are most frequently in oak trees, at heights of 10–100 feet, averaging about 35 feet. Where Spanish moss is available the nest is constructed of it and is hung from a horizontal branch a considerable distance from the trunk. Where this material is lacking the nest is usually saddled over a horizontal branch, and is a more typically warbler nest of bark strips, grasses, and weeds lined with plant down and feathers.

Clutch Size and Incubation Period: From 4 to 5 eggs, usually 4. The eggs are white, with extensive spotting or blotching of browns and grays often forming a wreath around the larger end. The incubation period is probably 12–13 days. Believed to be double-brooded in some areas, but not in Oklahoma.
Time of Breeding: In Oklahoma, nest-building has been reported in late April and early May, and recently fledged broods have been seen from early June to mid-July.

Breeding Biology: Throughout most of the southern states this species has an ecological affinity for Tillandsia-draped forests of oaks, pines, and cypresses. On the eastern coast, its northern limit coincides with the northern limit of loblolly pine, and its major foraging adaptation is a narrow skull and an elongated bill that allow it to probe deeply into the cones of these pines. The birds often forage creeperlike on tree trunks as well, in both pines and oaks. The female does most of the nest-building and all the incubating. The fledging time has apparently not been established. The birds are persistent renesters after clutch-loss; in one case a pair built four nests and laid complete clutches of 4 eggs in each nest between late April and early June.

Suggested Reading: Ficken, Ficken, and Morse 1968; Bent 1953.

Chestnut-sided Warbler
*Dendroica pensylvanica*

Breeding Status: Regular breeding in our region is probably restricted to north-central and northwestern Minnesota (records for Clearwater, Polk, and Roseau counties) and to northeastern North Dakota (Turtle Mountains of Bottineau and Rolette counties and Pembina Hills of Cavalier County). Elsewhere it has apparently been known to nest only near Omaha, Nebraska, in 1894 and during 1975 in Scottsbluff County (Nebraska Bird Review 44:10). There is an 1895 nest record from Dickinson County, Kansas (Kansas Ornithological Society Bulletin 28:32).

Breeding Habitat: The species is associated with low shrubbery, briar thickets, forest clearings and edges, overgrown pastures, and similar rather open and dry habitats having some woody vegetation in the form of shrubs and small trees. The nesting requirements seem to be trees or shrubs for singing perches and shade, moist situations with dense vegetation for about 3 feet above the ground to provide the nest sites and foraging, and sufficient nesting materials.

Nest Location: Nests are in bushes or saplings, 1–4 feet above the ground. They are loosely constructed structures made of grasses, bark strips, and weed stems and are lined with fine grasses, rootlets, and plant fibers.

Clutch Size and Incubation Period: From 3 to 5 eggs, usually 4. The eggs are white with dark spotting or blotching of various
tones. The incubation period is 11–12 days. Probably single-brooded.

**Time of Breeding:** Minnesota egg records extend from May 27 to July 2. Nestlings have been reported as late as July 22, and dependent young out of the nest have been seen as early as June 27.

**Breeding Biology:** Nests are apparently built only by the female, although her mate often follows her about during this 3-4 day period. From 1–6 days may follow before the first egg is laid, and subsequent eggs are laid daily. Only the female incubates, but the male sometimes will approach the nest with food or feed her while she is away from the nest. Only the female broods, but both sexes tend the young birds, which remain in the nest 8–10 days.

**Suggested Reading:** Tate 1970; Cripps 1966.

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**Bay-breasted Warbler**

*Dendroica castanea*

**Breeding Status:** Breeding in our region is probably restricted to north-central and northwestern Minnesota, but there is still only indirect evidence of breeding in the area (Itasca Park, Clearwater County).

**Breeding Habitat:** The species is associated mainly with coniferous forests, especially with rather low forests in swampy areas containing some birches and maples, and with mixed coniferous and deciduous forests having clearings or edge areas.

**Nest Location:** Nests are in conifers, at heights of 4–40 feet, but usually less than 25 feet. They are generally well away from the trunk on horizontal branches, well concealed by foliage. Nests are rather loosely constructed of twigs and grasses and are lined with rootlets, hair, and grasses. They are often built so that they are nearly invisible from directly below and may also have a limb or foliage directly above.

**Clutch Size and Incubation Period:** From 4 to 7 eggs, usually 5. They are white, with extensive spotting or blotches of brown and gray around the larger end. The average incubation period is slightly over 12 days. Probably single-brooded.

**Time of Breeding:** No Minnesota egg dates are available, but adults apparently tending eggs or young have been seen in July, and dependent young have been observed in late July.

**Breeding Biology:** The nest in this species is begun with a few stems of hay placed in the fork of several twigs on a flat limb;
spruce twigs are then anchored to this base, and the nest is gradually built up of more of these components. Only the female incubates, but she is often fed on the nest by her mate and often seems quite fearless of humans. The female also broods the young, which fledge in about 11 days, and may remain in the general area for a week or more.

Suggested Reading: Mendall 1937; Bent 1953.

Pine Warbler
_Dendroica pinus_

**Breeding Status:** Breeding occurs in north-central and perhaps northwestern Minnesota (records for Clearwater and Beltrami counties), and also in extreme eastern Oklahoma (from Cherokee and Mayes counties south through Pittsburg, Pushmataha, and McCurtain counties).

**Breeding Habitat:** The species is associated with open pine woods and "pine barrens," including especially jack pine in Minnesota, and upland southern pines such as shortleaf pine in eastern Oklahoma. It generally avoids very tall, moist, and dense coniferous forests.

**Nest Location:** Nests are in pines (rarely other conifers) at heights of 8–80 feet, averaging about 40 feet, out near the tips of horizontal branches and well hidden in the foliage. They are constructed of twigs, bark, pine needles, and spider webs and lined with such materials as hair, pine needles, and feathers.

**Clutch Size and Incubation Period:** From 3 to 5 eggs, usually 4. The eggs are white, with extensive brownish spotting or blotches around the larger end. The incubation period is unrecorded but probably is about 12 days. At least two broods are produced in some southern areas, probably including Oklahoma.

**Time of Breeding:** Minnesota breeding records extend from early June (nests or nest-building) through early July (fledged but dependent young). In Oklahoma, sitting birds have been seen as early as April 27, and nest-building as late as June 28. Fledged but dependent young have been noted as late as August 7.

**Breeding Biology:** This species occurs only in pine forests throughout its range and tends to forage creeperlike over pine trunks. It occasionally also hawks for insects in the air or feeds on the ground, picking up surface invertebrates. The role of the sexes in nest-building is evidently not known, but several observers have indicated that males help with incubation. The young are fed by both parents as well, but the fledging period has not been established.

Suggested Reading: Bent 1953; Ficken, Ficken, and Morse 1968.
Prairie Warbler  
*Dendroica discolor*

**Breeding Status:** Breeding in the Great Plains is almost entirely limited to eastern Oklahoma, where the species nests from Ottawa County south to McCurtain County, and locally west to Mayes, Wagoner, Cleveland, Caddo, and Murray Counties. In Kansas breeding is known only from Wyandotte, Johnson, and Cherokee counties. There is no good evidence of any recent sightings in Nebraska, where reports of breeding (Dakota and Richardson counties) in the late 1800s now seem likely to have been the result of misidentification.

**Breeding Habitats:** In Oklahoma, brush-grown fields, openings in pine woods, dense or scattered oak saplings, and scrubby oaks and junipers on canyon slopes have all been described as breeding localities. In Kansas, edge habitats between oak-hickory forests and old fields are used. Generally, dry habitats with brush or low trees seem to serve the primary needs of this species. Recently, Christmas tree farms have provided a new habitat for prairie warblers in eastern states.

**Nest Location:** Nests are elevated 1-10 feet, in brush or small trees, in crotches or on limbs. They are constructed of bark shreds, leaves, plant fibers, and down, lined with hair, grasses, and feathers. The incubation period is 12-13 days. Single-brooded.

**Time of Breeding:** Oklahoma egg records are lacking, but fledged young or recently abandoned nests have been found from mid-June to mid-July, and in Kansas eggs are laid at least during June.

**Breeding Biology:** The breeding biology of this species evidently is much like that of the other *Dendroica* species. Furthermore, it has been intensively studied in one unusual aspect, “anticipatory food-bringing” behavior by the male. In this and several other warbler species the male may bring food to the nest before the young hatch. If the female is absent from the nest the male may eat the food himself, and if she is present she may either eat it or ignore it. This behavior seems to allow the male to determine the stage of hatching and thus to stimulate a prompt onset of parental feeding.

**Suggested Reading:** Nolan 1978; Bent 1953.
Palm Warbler  
*Dendroica palmarum*

**Breeding Status:** Breeding in our region is restricted to local areas in north-central and northwestern Minnesota (at least eastern Marshall County and probably Roseau County).

**Breeding Habitat:** The species is largely confined to open to dense boggy areas dominated by tamarack, black spruce, and white cedar (arbor vitae). Dry and open forests of spruce or jack pine are also reportedly used in some areas, but the Minnesota breeding records are all associated with swampy or boggy sites. In Nova Scotia, territories were found at the periphery of open heath bogs rather than in the open areas themselves.

**Nest Location:** Nests are usually on the ground, nearly buried in sphagnum mosses, and are built of coarse grasses and rootlets, usually with feather lining. In some areas nests have also been found in low branches of conifer saplings, such as on hummocks of ground junipers.

**Clutch Size and Incubation Period:** From 4 to 5 eggs, white, with brownish spots or blotches forming a wreath around the larger end. The incubation period is 11 days. Probably normally single-brooded; a few unsuccessful second clutches have been found.

**Time of Breeding:** The only available egg record for Minnesota is for mid-June (hatching nest), but nestlings or dependent fledglings have been seen from mid-June through late July.

**Breeding Biology:** In a study area in Nova Scotia, it was found that male territories were usually less than 5 acres in area, and as many as 30 song posts may be used. Males prefer high trees but also sing from some low posts such as shrubs. The female incubates, but she is fed by her mate, and monogamy is typical. Among 10 males studied in Nova Scotia, 3 were unmated, 1 had two mates, and the other 6 were monogamous. Young leave the nest at about 10 days and are able to fly well about 3 days later. The male’s participation in feeding the young appears to be variable, but he usually helps feed the fledged young, which are tended for at least 11 days after leaving the nest.

**Suggested Reading:** Bent 1953; Welsh 1971.
Ovenbird

*Seiurus aurocapillus*

**Breeding Status:** Breeds in suitable habitats from the Missouri and Little Missouri valleys of North Dakota eastward through western Minnesota and southward through the wooded portions of South Dakota including the Black Hills, northern Nebraska (Pine Ridge, the Niobrara Valley west at least to Cherry County, and the Missouri Valley), northwestern Missouri, and probably adjacent northeastern Kansas (no actual breeding records). Also breeds in northeastern Oklahoma (Delaware, Mayes, Adair, McCurtain, and possibly Washington counties).

**Breeding Habitat:** Breeding is mostly confined to well-drained bottomland deciduous forests and to well-shaded and mature upland forests, often on north-facing slopes or in ravines.

**Nest Location:** Nests are on the ground, in a depression among dead leaves or under a tuft of grass so as to be invisible from above. The structure has a lateral entrance and somewhat resembles an oven. The nest is built of grasses, twigs, leaves, and similar materials, lined with rootlets, hair, and plant fibers.

**Clutch Size and Incubation Period:** From 3 to 6 eggs, usually 4–5. The eggs are white, with reddish brown to lilac spots or blotches around the larger end. The incubation period is from 11 to 14 days, averaging about 12. Single-brooded.

**Time of Breeding:** There is a single North Dakota egg record for July 1. Minnesota egg records extend from May 17 to June 28, nestlings have been noted between June 20 and July 4, and fledglings have been seen as early as June 17. In Oklahoma, nests have been found in late April and early May.

**Breeding Biology:** Both sexes of ovenbirds display a strong tendency to return to their breeding areas of the previous season, and thus remating by old pairs sometimes occurs. While the male patrols and advertises his territory, the female selects a nest site and constructs the nest. Incubation begins on the day after the last egg is laid and is done entirely by the female. The male begins to bring food to the nest at the time of hatching or slightly before, and both sexes actively feed the young. In one instance a male was found to maintain two mates simultaneously, and in another two males were observed to carry food to the young of one nest. The young leave the nest in 8–10 days but may continue to be fed with decreasing intensity by the adults until they are nearly 5 weeks old.

**Suggested Reading:** Hahn 1937; Bent 1953.
Northern Waterthrush
*Seiurus noveboracensis*

**Breeding Status:** Breeding is restricted to northeastern North Dakota (Turtle Mountains, Pembina Hills, Devils Lake area, rarely elsewhere) and to north-central and northwestern Minnesota (relatively rare, no specific breeding records).

**Breeding Habitat:** The species is associated with ponds, lakes, and streams having woody borders, with brushy bogs and swamps, and with second-growth swamp forests in North Dakota. Standing-water habitats are favored, rather than swiftly running water as in the case of the Louisiana waterthrush.

**Nest Location:** Nests are in the sides of overhanging banks beside water, among the roots of living trees, or under the upturned roots of fallen trees. The nest is mostly composed of mosses and dead leaves, lined with mosses, grasses, and sometimes hair.

**Clutch Size and Incubation Period:** From 3 to 6 eggs, usually 4-5. The eggs are white, with variable spotting and blotching of brownish near the larger end. The incubation period is 12 days. Probably single-brooded.

**Time of Breeding:** In North Dakota, incubated eggs have been found in mid-July, and young have been collected in late July. In Minnesota, dependent young or parents carrying food to young have been seen in late June.

**Breeding Biology:** In contrast to the Louisiana waterthrush, and like the ovenbird, males of this species frequently perform flight songs over their territories, which tend to be rectangular rather than linear. These differences seem to be related to habitat similarities of the ovenbird and northern waterthrush and to associated difficulties in pairs' maintaining visual contact. Only the female builds the nest, and only she incubates. In one case the young left the nest when 9 days of age; for the first few days after leaving, the young are extremely secretive and hard to locate. Soon they begin to perch on low branches and beg for food, and within another week they are able to fly well.

**Suggested Reading:** Eaton 1957; Bent 1953.

Louisiana Waterthrush
*Seiurus motacilla*

**Breeding Status:** Breeds from the Kansas River Valley of Kansas (west to Riley County; one report of nesting in Decatur County in
1910), southward along the eastern edge of the state to Oklahoma, where it apparently extends westward locally to Major, Caddo, and Love counties. There was an apparent breeding in Fremont County, Iowa, in 1977 (Iowa Bird Life 47:130).

**Breeding Habitat:** The species is usually found near swift streams, in wooded and hilly country, but also breeds around lagoons and swamps where trees grow to the shoreline.

**Nest Location:** Nests are usually close to water, either in holes in steep banks or under the roots of nearby trees, well hidden by overhanging vegetation. The nest is made of dead leaves that are well packed and intermixed with twigs, and the nest cup is lined with grasses, rootlets, and so forth. There may be a pathway of leaves leading to the nest.

**Clutch Size and Incubation Period:** From 4 to 6 eggs, white with extensive spotting or blotching of gray and brown. The incubation period is 12-14 days. Single-brooded.

**Time of Breeding:** In Kansas eggs are laid in May and June, and in Oklahoma fledglings have been seen as early as May 12, while nestlings have been noted as late as June 25.

**Breeding Biology:** Males establish territories immediately after arriving in the spring and begin to advertise them from song posts in trees. Territories are long and narrow, centered on fast-flowing streams, and pairs typically occupy about 200-400 yards of stream habitat. The nest is constructed by both sexes, with the female doing most of the work. The main structure takes a day or two, and 2 or 3 more days are needed for lining it and for laying the first egg. The female incubates alone, and the male rarely is seen near the nest until the young are about to hatch, when he may begin to bring food. The young leave the nest when 10 days old, and within another month they begin to wander about unattended by the adults.

**Suggested Reading:** Eaton 1958; Bent 1953.

Kentucky Warbler

*Oporornis formosus*

**Breeding Status:** Breeds in the Missouri Valley from southeastern Nebraska (north to Sarpy County) southward through northwestern Missouri (uncommon at Squaw Creek N.W.R.), eastern Kansas (Doniphan to Labette counties, and west locally to Riley County), and eastern Oklahoma (west locally to Kay, Payne, Oklahoma, Caddo, Grady, Murray, and probably Love counties).
**Breeding Habitat:** The species is associated with shrubby woodland borders and the understory of damp or shady woods, especially moist ravines and bottomlands.

**Nest Location:** Nests are usually on sloping ground, at the base of a tree or bush, under the branches of a fallen limb, or just above the ground in a shrub. The nest is slightly above the ground on a foundation of dead leaves and is built of grasses, rootlets, and plant fibers, lined with fine grasses and rootlets.

**Clutch Size and Incubation Period:** From 4 to 5 eggs, rarely 6. The eggs are white, with dark spotting or blotching at the larger end. The incubation period is 12-13 days. Single-brooded.

**Time of Breeding:** In Kansas, records indicate that eggs are laid in May and June. In Oklahoma unfinished nests have been found as early as May 6, and eggs have been found as early as May 12 and as late as June 3. Nestlings have been seen from May 26 to July 10, and dependent young as late as August 5.

**Breeding Biology:** The breeding biology of this ground-foraging warbler is much like that of other warblers, judging from the rather small amount of published information. Unlike most warblers, males are accomplished and loud singers; their wrenlike vocalizations are uttered about once every 12 seconds at the peak of the breeding period and carry for as much as 150 yards. Apparently only the female incubates the eggs and broods the young, and she also does most of the feeding of the young. The young are fed in the nest for 8-9 days and thereafter are tended by the parents for as long as 17 days.

**Suggested Reading:** Bent 1953; De Garis 1936.

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**Mourning Warbler**  
*Oporornis philadelphia*

**Breeding Status:** Breeding in our region is restricted to north-central and northwestern Minnesota (records for Otter Tail, Clearwater, Marshall, and Roseau counties) and to northeastern North Dakota (Turtle Mountains, also locally in Pembina and Cavalier counties).

**Breeding Habitat:** Brushy areas such as clearing, slashings, road-sides, and forest edges are favored, especially those near woods and where thickets of raspberries or other briars occur. The species is often found in areas undergoing succession after forest fires.

**Nest Location:** Nests are on the ground, or infrequently may be as high as 30 inches above the ground, in tangles of thorny
shrubs, ferns, grass tussocks, or other rather rank growth. The nest is a fairly bulky structure of weeds, grasses, and vines with a cup of finer grasses, rootlets, and hair.

**Clutch Size and Incubation Period:** From 3 to 5 eggs, usually 4. The eggs are white, with brown spots and blotches, especially at the larger end. The incubation period is 12 days. Probably single-brooded.

**Time of Breeding:** North Dakota records indicate a breeding season from early June to early August, and in Minnesota eggs have been reported between May 26 and July 17, with nestlings seen as early as June 20 and as late as July 17.

**Breeding Biology:** Studies of this species at Itasca State Park indicate that territories average about 2 acres and occur where there is a partially open canopy and a mixture of shrubby and herbaceous ground vegetation. The nest is placed in a relatively open part of the territory, and incubation may begin before the clutch has been completed. Only the female incubates, but the male may feed her both at the nest and away from it. The young leave the nest at 8–9 days and for about 3 weeks may remain in the general vicinity of the nest. The young are scarcely able to fly until they are about 2 weeks old, and the adults begin to molt about the time the young become independent.

**Suggested Reading:** Cox 1960; Bent 1953.

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**MacGillivray Warbler**

*Oporornis tolmiei*

**Breeding Status:** Apparently confined as a breeding species to the Black Hills of South Dakota, where it is uncommon. It is rare in the Nebraska Pine Ridge area and is not known to nest there.

**Breeding Habitat:** In the Black Hills this species is primarily found near streamside thickets and other low deciduous growth in canyons or gulches. Less often it occurs in dense stands of deciduous woods or in mixed woodlands on upland slopes, and also in river-bottom stands of cottonwoods and associated riparian vegetation.

**Nest Location:** Nests are in grass clumps virtually on the ground or, more frequently, elevated from a few inches to about 2 feet in the upright stalks of shrubs. They are rather well concealed but are often poorly constructed, built of bark shreds, weeds, and grasses with a lining of rootlets, grasses, and sometimes hair.

**Clutch Size and Incubation Period:** From 3 to 6 eggs, usually 4. Eggs are white, with brown spots, scrawls, and blotches, primar-
ily at the larger end. The incubation period is about 13 days. Probably single-brooded.

**Time of Breeding:** In the Black Hills the estimated breeding period is from late May to mid-July. Eggs have been reported in the first half of June, and dependent fledglings have been noted in early July.

**Breeding Biology:** This western counterpart of the mourning warbler has been much less studied than that species but presumably has a breeding biology much like it. Apparently the female undertakes virtually all the parental duties, including incubation and brooding the young. The male also is said to participate only slightly in feeding the young, which leave the nest 8-9 days after hatching.

**Suggested Reading:** Bent 1953; Griscom et al. 1957.

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**Common Yellowthroat**  
*Geothlypis trichas*

**Breeding Status:** Pandemic, breeding throughout the region in suitable habitats.

**Breeding Habitat:** This species is primarily found near moist ground, at aquatic sites, and among associated lush vegetation, including tall grasses and often shrubs and small trees. Pond or river margins, or swampy areas, are especially utilized, but occasionally it is found in upland thickets of shrubs and small trees, in poorly tended orchards, retired croplands, or weedy residential areas.

**Nest Location:** Nests are near or, rarely, on the ground, in heavy growth of weeds, grasses, or low shrubs generally in vegetation less than 2 feet high. They are bulky, made of coarse grasses, leaves, and sometimes mosses and lined with grasses, bark fibers, and hair. Nests are well concealed unless the vegetation is parted, and are usually no more than a few inches above the ground, rarely as high as 3 feet.

**Clutch Size and Incubation Period:** From 3 to 6 eggs, normally 4. The average of 16 first nestings in Minnesota and Michigan was 3.9 eggs, and 8 subsequent nestings averaged 3.8. The eggs are white, with brown speckling near the larger end. The incubation period is 12 days. Frequently double-brooded in favorable habitats and known to be a persistent renester.

**Time of Breeding:** North Dakota egg dates are from mid-June to mid-July, and nestlings have been seen as early as July 10. In
Kansas, egg records are from May 11 to June 10, and in Oklahoma eggs have been found from May 1 to June 8.

**Breeding Biology:** As soon as they arrive in spring, males establish territories that usually are less than 2 acres in area, but in some instances may exceed 3 acres (one bigamous male was found to occupy an area of 3.4 acres). Nests are usually built in the drier and more open parts of the territory, but water is always nearby. The female builds the nest over a period of 2 to 5 days and also performs all the incubation. Feeding of the young is done by both sexes, and the young may leave the nest when only 7-8 days old. However, they cannot fly until they are 11-12 days old and they do not begin feeding on their own until about 3 weeks old. They may be tended by one or both parents until they are 4-5 weeks old. Most or all females attempt to raise second broods, but few are successful. At least some females built at least 3 nests, and mate-changing between broods apparently is infrequent.

**Suggested Reading:** Stewart 1953; Hofslund 1959.

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**Yellow-breasted Chat**  
* Icteria virens

**Breeding Status:** Breeds in suitable habitats from western North Dakota (Missouri, Little Missouri, and Souris valleys) southward through South Dakota (west locally to the Black Hills and east along the Big Sioux drainage into western Iowa and southwestern Minnesota), Nebraska (virtually statewide), eastern Colorado (west locally to the foothills), all of Kansas, Oklahoma (except possibly Cimarron County), the Texas panhandle (rare in the southern panhandle), and locally in northeastern New Mexico (casual in Union County).

**Breeding Habitat:** Ravine or streamside thickets are favored, especially those with small trees and tall shrubs, also forest edges, dense stands of tree saplings, and clumps of shrubs in overgrazed pastureland.

**Nest Location:** Nests are from a few inches to 6 feet above the ground, in forks or crotches of shrubs, low trees, or vines. They are relatively bulky (about 5 inches wide), built of leaves, stems, and grasses and lined with finer grasses and stems.

**Clutch Size and Incubation Period:** From 3 to 5 eggs (21 Kansas clutches averaged 3.9). The eggs are white, with brown to lilac spotting over most of the egg, but especially at the larger end. The incubation period is 11 days. Probably single-brooded.
**Time of Breeding:** In North Dakota the probable breeding season is from early May to early August, and in the Black Hills of South Dakota the nesting period is apparently from June through early July. Kansas egg records extend from May 11 to July 20, with the first ten days of June the peak period of egg-laying. Oklahoma egg dates are from May 11 to July 14, and fledged young have been seen as early as June 10.

**Breeding Biology:** This species is one of the most aberrant of all the warblers and quite possibly should be removed from the family, although its relationships are still obscure. Males are unusual in their remarkable diversity of vocalizations, which often have 6-10 different song phrases, which are almost randomly uttered and vary greatly in loudness, pitch, and duration. So far as is known, only the female incubates the eggs and broods the young, which leave the nest in 8-11 days.

**Suggested Reading:** Bent 1953; Griscom et al. 1957.

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**Hooded Warbler**

*Wilsonia citrina*

**Breeding Status:** The probable regular breeding range in our region is confined to southeastern Oklahoma (McCurtain and Le Flore counties). Additionally, there is a single breeding record for eastern Kansas (Anderson County) and specimens have been collected during the breeding season from Leavenworth and Shawnee counties.

**Breeding Habitat:** Associated with thick bottomland woods in Oklahoma, and wet, open woods in eastern Kansas. More generally, it is found in the undergrowth of deciduous forests and in wooded swamps, especially in the south.

**Nest Location:** Nests are from a few inches to 6 feet above the ground, in bushes, vines, saplings, and diverse other sites. The nest is often in the lowest branch of a sapling and invariably is extremely inconspicuous, initially resembling a random accumulation of leaves lodged in the vegetation. It is composed of dead leaves, grasses, bark strips, and various other materials, lined with fine grasses, hairs, and rootlets.

**Clutch Size and Incubation Period:** From 3 to 5 eggs, often only 3. The eggs are white, with brown to lilac markings toward the larger end. The incubation period is 12 days. Usually single-brooded, but sometimes double-brooded in Florida.

**Time of Breeding:** The single Kansas nesting record is for a clutch completed about May 23, and the young fledged on June 22. In
Oklahoma, fledged young have been seen in late June and early July.

**Breeding Biology:** Males begin to establish and advertise territories as soon as they arrive on the breeding grounds in spring, and they soon acquire mates. Both sexes defend the territories, which are often spaced at 50-100-yard intervals in favored swamp habitats. In spite of the almost haphazard appearance of the nest, it is carefully constructed and may take up to a week to complete. It has been questionably reported that the male participates in incubation, which would be highly unusual for wood warblers, but it is not surprising that both sexes participate in feeding the young, which remain in the nest for about 8 days. In an Ohio study, it was reported that only about one-seventh of the pairs were successful in raising their first brood, but second and sometimes even third nesting efforts are made by unsuccessful pairs.

**Suggested Reading:** Bent 1953; Griscom et al. 1957.

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**Canada Warbler**  
*Wilsonia canadensis*

**Breeding Status:** Breeding in our region is apparently confined to north-central and perhaps northwestern Minnesota (Clearwater County is the only breeding record). The species is also a hypothetical breeder in northern North Dakota, since adults have been reported in the Turtle Mountains during July.

**Breeding Habitat:** The species frequents heavy undergrowth in mature mixed or deciduous woodlands, the borders of cedar swamps, and second-growth deciduous forests. In Minnesota, moist spruce and birch forests that have a thick brushy understory are favored. Habitats similar to those of the mourning warbler are used but tend to be considerably moister.

**Nest Location:** Nests are on or very near the ground, often in a mossy hummock, under upturned tree roots, in a bank cavity, or in a rotted, moss-covered stump. The nest is built of leaves, weed stems, grasses, and bark fibers on a foundation of large leaves and is lined with hair, rootlets, and plant down.

**Clutch Size and Incubation Periods:** From 3 to 5 eggs, usually 4. The eggs are white, with brown spotting or blotching toward the larger end. The incubation period is not established but is probably about 12 days. Single-brooded.

**Time of Breeding:** There is only a single egg record (June 4) for Minnesota, but dependent young have been seen through most of July. A nest at Itasca State Park fledged on July 8 (*Loon 49*:199).
Breeding Biology: One of the few nesting studies of this warbler was done in Michigan, but so far no observations on the early phases of nest-building and early incubation are available. Apparently only the female incubates, and the male rarely comes to the nest but communicates with his mate by vocalizing. In the Michigan study the male always brought food to the nest during his visits. The female was never on the nest at the time, however, and the eggs were still unhatched. Such anticipatory food-bringing has also been seen in various other warblers. There is no information on the development of the young.

Suggested Reading: Krause 1965; Bent 1953.

American Redstart
*Setophaga ruticilla*

**Breeding Status:** Breeds in suitable habitats from western Minnesota and most of North Dakota (Turtle Mountains, Pembina Hills, and major river valleys) southward through western Iowa, South Dakota (major river valleys and the Black Hills), Nebraska (the Pine Ridge area, the Niobrara and Missouri valleys, and sporadically in the Platte Valley west at least to Adams County), eastern Kansas (east of Cloud and Sumner counties), and eastern Oklahoma (west regularly to Washington, Tulsa, and Pushmataha counties).

**Breeding Habitat:** The species frequents moist bottomland woods, usually deciduous but sometimes mixed or coniferous, especially young or second-growth stands, and the margins or openings of mature forests.

**Nest Location:** Nests are 4-30 feet above the ground, in vertical forks or crotches of shrubs or trees, usually hardwood saplings. The nest is compactly built of bark strips, grasses, rootlets, and so forth, and is lined with finer grasses, hair, and sometimes feathers. The outside is often wrapped with spider webs, to which lichens or other materials are attached.

**Clutch Size and Incubation Period:** From 2 to 5 eggs, usually 4. The eggs are white, with gray or brown spotting and blotching, especially at the larger end. The incubation period is 12-13 days. Single-brooded.

**Time of Breeding:** The breeding season in North Dakota is probably from late May to late July, and eggs have been found as late as June 27. In Kansas eggs are probably laid in May and June, and in Oklahoma nest-building has been noted as early as May 12.
Breeding Biology: The American redstart is one of the few warblers whose social behavior has been extensively analyzed, including both courtship and more general aggressive behavior. Males arrive on the breeding grounds before females and immediately become territorial. Females typically arrive at night and may obtain a mate by the following morning, presumably being attracted to the males by their singing. Up to 60 hours may elapse between the formation of the pair bond and the start of nest-building, during which time the female investigates the territory and begins to restrict her activities to the eventual nest site. The female selects the site alone and immediately begins to build a nest there, which may require about 3 days. Incubation and brooding are performed by the female alone, although males are typically highly attentive to the young during the nestling period, which usually lasts 8-9 days.

Suggested Reading: Ficken 1962; Bent 1953.