Blue-gray Gnatcatcher
(Polioptila caerulea)

A.O.U. No. 751.0

Range: Breeding: Southern New England, w. Pennsylvania, w. to w. California, s. to s. Mexico. Winter: South Carolina s. through the coastal states to s. California, s. to Central America.

Relative Abundance in New England: Rare (Maine).

Habitat: Breeding: Open, moist woodlands interspersed with brushy clearings, often oak, pine, or mixed woods, bottomland forests with closed canopies, wooded swamps, stream-side thickets. Favors tall trees.

Special Habitat Requirements: An abundant supply of arthropods (Root 1967).

Nesting: Egg dates: May 14 to June 17, New York (Bull 1974:441). Clutch size: 3 to 5, typically 4 or 5. Incubation period: 13 to 15 days. Nestling period: 10 to 13 days. Brood per year: 1 or 2. Age at sexual maturity: 1 year. Nest height: 4 to 70 feet (1.2 to 21.3 m), typically less than 25 feet (7.6 m). Nest site: Usually high in a deciduous or coniferous tree saddled on a horizontal limb or in a fork. Nests in a variety of trees—limb size and shape seem to be more important than tree species (Bent 1949).

Territory Size: 9 territories ranged from 2.2 to 7.4 acres (0.9 to 3.0 ha) average 4.6 acres (1.8 ha)) in oak woodland and chaparral in California (Root 1970). 1 territory covered 2.2 acres (0.9 ha) along a wooded ravine and grove of trees in Kansas (Fitch 1958).


Comments: Most breeding birds in New York were seen near lakes or rivers (Bull 1974:441).

Eastern Bluebird
(Sialia sialis)

A.O.U. No. 766.0

**Range:** Breeding: Newfoundland w. to s. Manitoba, s. to Florida, the Gulf Coast, and Central America. Winter: Southern New England w. to s. Michigan, s.

**Relative Abundance in New England:** Uncommon to rare.

**Habitat:** Breeding: Open country with scattered trees (savannas), farmlands, swamps, sparsely inhabited residential areas, roadside fencelines, woodland edges beside fields and meadows, orchards, clearings created by fire, flood, or logging. Wintering: Graber and Graber (1963) found that bluebirds in Illinois favored grasslands, shrub areas, and forest edges in winter.

**Special Habitat Requirements:** Low cavities for nestling. Abundant perches for foraging (Pinkowski 1977).

**Nesting:** Egg dates: April 1 to August 18, New York (Bull 1974:438). Clutch size: 3 to 7, typically 4 or 5. Incubation period: 13 to 15 days. Nesting period: 15 to 18 days. Broods per year: 2 or 3. Age at sexual maturity: 1 year. Nest height: 5 to 12 feet (1.5 to 3.7 m). Nest site: Natural cavities, old woodpecker holes, or nest boxes.

**Territory Size:** 5.4, 8.6, and 7.0 acres (2.2, 3.5, and 2.8 ha) for 3 territories in Kansas (Fitch 1958). 2.5 acres (1.0 ha) (Thomas 1946).

**Home Range:** Pinkowski (1977) found bluebirds foraging on areas ranging in size from 4.5 to 38.9 ha (11.1 to 96.1 acres during nesting periods.

**Sample Densities:** 30 birds per 100 acres (40 ha) in orchard in Illinois. 34 birds per 100 acres (40 ha) in edge shrubbery in Illinois. 25 birds per 100 acres (40 ha) in residential habitat in Illinois. 13 birds per 100 acres (40 ha) in second-growth or cutover woods in Illinois (Graber et al. 1971).

**Foraging:** Major foods: Insects, especially grasshoppers, crickets, beetles, and caterpillars, make up about 68 percent of diet; fruit represents about 32 percent of diet (Bent 1949:247). Substrates: Leaf and branch surfaces, leaf litter on ground, air. Techniques: Gleaning, flight-gleaning, dropping to ground from perch, hawking. Preferred feeding habitat: Areas with poor soil and sparse ground cover (Pinkowski 1977).

**Comments:** Suitable nest sites are scarce since many snags have been removed. Starlings, House Sparrows, Tree Swallows, and Wrens compound the problem by competing successfully for cavities. Conner and Cedarson (1974) found that clearcuts with standing, cavity-bearing snags provided bluebird nesting habitat for at least 12 years following cutting.

Veery
(Catharus fuscescens)

A.O.U. No. 756.0

**Range**: Breeding: Newfoundland w. to British Columbia, s. to Long Island and c. New Jersey, and the mountains of Georgia, and New Mexico. Winter: South America.

**Range**: Breeding: Newfoundland w. to British Columbia, s. to Long Island and c. New Jersey, and the mountains of Georgia, and New Mexico. Winter: South America.

**Relative Abundance in New England**: Common.

**Habitat**: Breeding: Low, moist deciduous woods, bottomland forests, wooded swamps, damp ravines. Prefers thickets of early deciduous second-growth and open woods with fairly dense high undergrowth of ferns, shrubs, and trees. Avoids mountains.

**Special Habitat Requirements**: Moist woodlands with understory of low trees and shrubs.

**Nesting**: Egg dates: May 16 to June 25, New York (Bull 1974:436). Clutch size: 3 to 5, typically 4. Incubation period: 10 to 12 days. Nestling period: 16 days. Broods per year: 1 or 2. Age at sexual maturity: 1 year. Nest height: To 3 feet (0.9 m), typically on ground. Nest site: On ground or low in a shrub, tree, or brush pile, often well hidden on a tussock of ferns or other groundcover.

**Sample Densities**: 12 pairs on a 3-acre (1.2 ha) plot of lake-side forest with laurel understory in New Hampshire (Harding 1925). 8 territorial males per 100 acres (40 ha) in virgin hemlock stand (Stewart and Robbins 1956:251).

**Foraging**: Major foods: Mainly insects (about 60 percent) and wild fruits and seeds (40 percent). Substrates: Forest floor (leaf litter), leaf and branch surfaces in lower canopy. Techniques: Ground gleaning, turning leaves with bill.

**Comments**: Bertin (1977) found Veeries in cool wet areas of both early successional and mature woodlands. In mature woodlands, Veeries used areas with cool microclimates.

**Key References**: Bent 1949, Bertin 1977, Dilger 1956, Forbush 1929.
Gray-cheeked Thrush
(Catharus minimus)
A.O.U. No. 757.0


COMMENTS: About 75 percent of the diet is animal matter and 25 percent vegetable matter (Beal 1915 in Bent 1949:192).

RELATIVE ABUNDANCE IN NEW ENGLAND: Uncommon (Maine).

HABITAT: Breeding: Moist northern coniferous forests, especially in stunted spruce-fir tangles of mountain tops.

SPECIAL HABITAT REQUIREMENTS: Coniferous forests.


FORAGING: Major foods: Insects, wild fruits. Substrates: Forest floor which is usually carpeted with sphagnum and other mosses. Techniques: Ground gleaning. Preferred feeding habitat: On ground in forest interior.

Swainson’s Thrush
(Catharus ustulatus)

A.O.U. No. 758.0

**Range**


**Relative Abundance in New England:** Common (Maine).

**Habitat:** Breeding: Spruce-fir forests especially in low damp areas near water. Occurs in both young stands and mature forest. Prefers forest interiors to edges. Occasionally breeds in mixed woodlands.

**Special Habitat Requirements:** Coniferous or mixed forests.

**Nesting:** Egg dates: June 10 to July 11, New York (Bull 1974:430). Clutch size: 3 to 5, typically 4. Incubation period: 10 to 13 days. Nestling period: 10 to 12 days. Broods per year: 1. Age at sexual maturity: 1 year. Nest height: 2 to 20 feet (0.6 to 6.1 m), typically 4 to 8 feet (1.2 to 2.4 m). Nest site: Usually in a crotch close to trunk or on a horizontal limb of a spruce or fir tree.

**Foraging:** Major foods: Insects, wild fruits. Substrates: Forest floor, foliage and branch surfaces, often high in trees. Techniques: Ground gleaning, hawking. Preferred feeding habitat: Forest interior, mainly in trees.

**Comments:** Beal (1915 in Bent 1949:181) found that the March to November diet of 403 birds consisted of 64 percent animal and 36 percent vegetable matter.

**Key References:** Bent 1949, Forbush 1929, Grober et al. 1971.
Hermit Thrush
(Catharus guttatus)

A.O.U. No. 759.0

Range: Breeding: Labrador w. to Alaska, s. to s. New York, the mountains of West Virginia and Maryland, c. Minnesota and through the Rockies to New Mexico. Winter: Southern Massachusetts, e. Pennsylvania and s. Ohio s. to Florida and Central America.

Relative Abundance in New England: Common (Maine) to uncommon (Massachusetts).

Habitat: Breeding: Lowlands in wooded swamps and damp forests and uplands in dry, brushy clearings in coniferous or mixed forests. Also frequents woodland edges and brushty pastures and cool north-facing slopes. Wintering: Borders of wooded swamps where birds find shelter in thick hummocks. Areas with persistent fruits on shrubs or vines or well-stocked feeding stations (New York) (Bull 1974:432).

Special Habitat Requirements: Coniferous or mixed woodlands with dense young undergrowth. In winter, birds require abundant native fruits.

Nesting: Egg dates: May 12 to August 24, New York (Bull 1974:431). Clutch size: 3 to 6, typically 3 or 4. Incubation period: 12 days. Nestling period: 12 days. Broods per year: 2. Age at sexual maturity: 1 year. Nest height: typically on ground. Nest site: Usually on ground on a hummock, or in dense fern or other cover, or under a low-hanging conifer limb. Occasionally to 4 feet (1.2 m) in a sapling.

Sample Densities: 40 to 93 birds per 100 acres (40 ha) in second-growth or cut-over woods (Pawik 1937, 1938). 20 birds per 100 acres (40 ha) in bottomland forest in Illinois (Karr 1968). 6 to 10 birds per 100 acres (40 ha) in upland forest in Illinois (Weise 1951 in Graber et al. 1971).


Comments: Beal (1915 in Bent 1949:153) found the stomach contents of 551 Hermit Thrushes contained 65 percent animal and 35 percent vegetable matter. Birds switch to mainly vegetable materials in fall and winter (berries and buds).

Wood Thrush.
(Hylocichla mustelina)

A.O.U. No. 755.0

**Range**: Breeding: Maine w. to South Dakota, s. to Florida and Texas. Winter: Mexico and Central America.

**Relative Abundance in New England**: Common.

**Habitat**: Breeding: Mature lowland forests (mainly deciduous or mixed); shady, cool, mature upland forests, often near a swamp, pond, stream, or lake; sometimes in residential areas. Requires abundant undergrowth. Absent from higher mountains of New England.

**Special Habitat Requirements**: Deciduous or mixed forests with tall trees and abundant sapling growth. Cool, moist conditions. Apparently requires a tree at least 40 feet (12 m), possibly for song perches (Bertin 1977).

**Nesting**: Egg dates: May 17 to July 7, New York (Bull 1974-429). Clutch size: 2-6, typically 3 or 4. Incubation period: 13 to 14 days. Nestling period: 12 to 14 days. Broods per year: 2. Age at sexual maturity: 1 year. Nest height: 5 to 50 feet (1.5 to 15.2 m), typically 5 to 12 feet (1.5 to 3.7 m). Nest site: In a fork or saddled on a horizontal limb of a sapling or tree (often elm or maple), or well hidden in dense shrubbery.

**Territory Size**: 0.2 to 2 acres (0.08 to 0.8 ha) (Weaver 1939). 2 to 7 acres (0.8 to 2.8 ha) in forested habitat in central Illinois (Graber et al. 1971). 1.4 acres (0.6 ha) in woodland edge in Kansas (Fitch 1958).

**Sample Densities**: Maryland—40 territorial males per 100 acres (40 ha) in virgin hardwood deciduous forest.

16 territorial males per 100 acres (40 ha) in shrub swamp. 11 territorial males per 100 acres (40 ha) in mature northern hardwood forest. 10 territorial males per 100 acres (40 ha) in mixed oak forest. 4 territorial males per 100 acres (40 ha) in pine-oak forest (Stewart and Robbins 1958:246).

**Foraging**: Major foods: Insects, fruits. Substrates: leaf litter on ground, understory vegetation. Techniques: Ground gleanng, scratching, turning leaves over with bill.

**Comments**: Stomach analyses revealed a diet of 62 percent animal and 38 percent vegetable matter (Bent 1949:13).

American Robin
(Turdus migratorius)

A.O.U. No. 761.0

RANGE: Breeding: Newfoundland w. to Alaska, s. to South Carolina, Texas, Mexico and s. California. Winter: Southern Maine w. to British Columbia, s. to Mexico and Gulf Coast.

RELATIVE ABUNDANCE IN NEW ENGLAND: Abundant.

HABITAT: Breeding: Open woodlands and woodland edges and clearings, fields, orchards, shade trees in residential areas. Densities are frequently greater in residential areas than in the wild (Pough 1949: 113), though urban populations may not be self-supporting (Howard 1974). Wintering: Frequent sheltered wooded areas more than open exposed pastures. Roosts among evergreens in swamps and feeds on persistent wild and cultivated fruits.

NESTING: Egg dates: March 23 to July 19, New York (Bull 1974: 438). Clutch size: 2 to 7, typically 3 to 4. Incubation period: 11 to 14 days. Nestling period: 14 to 16 days. Broods per year: 2. Age at sexual maturity: 1 year. Nest height: to 70 feet (21.3 m), typically 5 to 15 feet (1.5 to 4.5 m). Nest site: Robins use a variety of sites for nesting. They prefer to build on a horizontal branch or in a fork of a tree but commonly use shrubs and ledges of buildings. First nest of season is often in a conifer and successive nests in hardwoods. White pine, maple, and apple trees are preferred nest trees (DeGraaf et al. 1975).

SAMPLE DENSITIES: 132 birds per 100 acres (40 ha) in urban residential areas in Illinois (Graber et al. 1971). 56 birds per 100 acres (40 ha) in edge shrubbery in central Illinois (Graber et al. 1971). 14 birds per 100 acres (40 ha) in second-growth or cut-over woods in Illinois (Fawkes 1937, 1938).


COMMENTS: A study of banding returns by Hickey (1943) indicated that almost three-fourths of the young robins that survived their first winter returned to nest within 16 km (10 miles) of their birthplaces. About 60 percent of the diet is vegetable matter and 40 percent animal matter (Bent 1949: 25).


TERRITORY SIZE: 0.30 to 0.75 acre (0.1 to 0.3 ha) (Collins and Boyajian 1969: 133). 0.11 to 0.40 acres (0.4 to 0.24 ha) (average 0.30 acres (0.1 ha)) in Wisconsin (Young 1951).
Gray Catbird
(Dumetella carolinensis)

A. O. U. No. 704.0

Range

Gray Catbird

**Range:** Breeding: Nova Scotia w. to British Columbia, s. to Florida and New Mexico. Winter: Coastal sections from Long Island (a few) s. to Mexico.

**Relative Abundance in New England:** Common in breeding season.

**Habitat:** Breeding: Dense thickets of shrubs, briars, vines along woodland borders,低位ed tangles near streams, ponds and swamps, shurbbery around buildings especially in hedgerows and gardens, forest clearings with brusly edges. Rare at high elevations. Wintering: Milder coastal regions where persistent fruits are available throughout the winter.

**Special Habitat Requirements:** Low, dense, woody vegetation for nesting, usually with an overtopping deciduous tree layer 10 to 30 feet (3 to 9 m) above (DeGraaf 1975).

**Nesting:**
- **Egg dates:** May 5 to June 13, New York (Bull 1974:422). Clutch size: 3 to 5, typically 4. Incubation period: 12 to 15 days. Nesting period: 9 to 15 days, typically 11 days. Age at sexual maturity: 1 year. Nest height: 3 to 10 feet (0.9 to 3.0 m). Nest site: Builds in dense thickets of briars, vines, shrubs or low trees. Nests are typically well hidden by foliage. Grape vines, hawthorns, and multiflora rose are favored sites.

**Homing Range:** 0.16 to 0.36 acres (0.06 to 0.1 ha) (average 0.25 acres (0.1 ha)) in swamp-thicket in Illinois (Brewer 1935).

**Sample Density:** 1 nest per 8 acres (3.2 ha) in mixed shrub—small tree habitat within beech-maple-hemlock community in New York (Kendeigh 1946). 40 pairs per square mile (15 pairs/km²) (maximum density) in favorable habitat in North Dakota (Stewart and Kantrud 1972). 80 territorial males per 100 acres (40 ha) in shrub swamp. 35 territorial males per 100 acres (40 ha) in brushy abandoned farmland in Maryland (Stewart and Robbins 1958:24).

**Foraging:** Major foods: Small fruits, insects. Substrates: Fruit-bearing shrubs, leaf litter on ground. Technique: Ground gleaning.

**Comments:** Catbirds use a variety of habitats. Tree and shrub associations are not as important as edge and density of vegetation within the edges (Nickell 1965). Forest edge is preferred to hedgerows in open (Graber et al. 1970).

Northern Mockingbird
(Mimus polyglottos)

A.O.U. No. 703.0

Range: Breeding: Southern Maine w. through Ohio to c. California, s. to the Gulf Coast and s. Mexico. Wintering n. Winter: Southern New England, s. and w.

Relative Abundance in New England: Common.

Habitat: Breeding: Woodland edges, pastures with scattered fruit bearing shrubs, small trees or groves of large trees, often in cities and habitat. Wintering: Similar to breeding habitat; among thickets that bear persistent fruits, especially multiflora rose.

Special Habitat Requirements: Low, dense woody vegetation, elevated perches, a variety of edible fruits.

Nesting: Egg dates: April 27 to July 21, New York (Bull 1974:425). Clutch size: 3 to 4 or 5. Incubation period 14 days. Nestling period: 10 to 12 days in Tennessee (Laskey 1962). Broods per year: 2. Age at sexual maturity: 1 year. Nest height: 1.5 to 10 feet (0.5 to 3.0 m). Typically 3 to 10 feet (0.9 to 3.0 m). Nest site: Usually in a thicket of shrubbery or vines or in a dense tree (often an evergreen). Prefers sites near houses, especially porch vines, garden, lawn and foundation plantings. Prefers to nest in multiflora rose (DeGraaf et al. 1975).

Home Range: 2 pairs in Michigan occupied home ranges of 45 acres (18.2 ha) compared with an average of 2.5 acres (1.0 ha) in Tennessee (Adkisson 1966:104).

Sample Densities: Maryland: 15 territorial males per 100 acres (40 ha) in suburban-residential habitat. 2 territorial males per 100 acres (40 ha) in mixed agricultural habitats (Stewart and Robbins 1958:239).


Comments: Studies by Beal and others (1916) revealed that in May the bulk of the diet consists of animal matter (85 percent) and in December and January mockingbirds eat mainly vegetable matter (87 percent) (Bent 1948:305).

Key References: Bent 1948, Laskey 1962, Michener and Michener 1935.
Brown Thrasher

**(Toxostoma rufum)**

**A.O.U. No. 705.0**

**RANGE:** Breeding: Maine w. to s. Alberta s. to Florida and the Gulf Coast. Winter: Long Island and coastal sections of New Jersey s. to Maryland, coastal and inland Virginia to Missouri s. to Florida and Texas.

**RELATIVE ABUNDANCE IN NEW ENGLAND:** Common (Maine).

**HABITAT:** Breeding: Bushes, low trees, tangle of vines in open pastures or woodland edges and clearings in early stages of second growth. Hedgerows along roadsides and fields are preferred (Graber et al. 1970). Absent from higher mountains of New England. Wintering: Coastal areas where climate is mild and sparse snow cover allows birds to find fruits.

**SPECIAL HABITAT REQUIREMENTS:** Low, dense woody vegetation for nesting and cover (Graber et al. 1970).

**NESTING:** Egg dates: May 6 to June 26, New York (Bull 1974:423). Clutch size: 3 to 6, typically 4. Incubation period: 12 to 13 days. Nestling period: 12 to 13 days. Broods per year: 1 or 2. Age at sexual maturity: 1 year. Nest height: To 14 feet (4.3 m), typically 2 to 7 feet (0.6 to 2.1 m). Nest site: On ground or low in dense cover of a shrub or vine. Less often in a low tree.

**TERRITORY SIZE:** Average 1.6 acres (0.6 ha) in forest edge in Illinois (Graber et al. 1970).

**FORAGING:** Major foods: Insects (about 66 percent); berries, mast (acorns), and grain (about 33 percent) (Pough 1949:110). Substrates: Leaf litter, soft earth, low vegetation. Techniques: Ground and shrub gleaning.


**SAMPLE DENSITIES:** 3 pairs per 100 acres (40 ha) in forest edge (Holmes 1950 in Graber et al. 1970). 86 birds per 100 acres (40 ha) in edge shrubbery (Graber and Graber 1963). 86 birds per 100 acres (40 ha) in second-growth or cut-over woods (Fawks 1927).
Bohemian Waxwing
(Bombycilla garrulus)

A.O.U. No. 618.0

RANGE: Breeding: Boreal and temperate areas of North America. Winter: Irregularly to s. California, the Prairie States, and the Mid-Atlantic states.

RELATIVE ABUNDANCE IN NEW ENGLAND: Rare.

HABITAT: Unreported.


KEY REFERENCE: Forbush 1929.
Range: Breeding: Nova Scotia, w. to British Columbia, s. to Georgia, New Mexico and n. California. Winter: Central New England, w. to Oregon, s. to Central America.

Relative Abundance in New England: Locally common to uncommon.

Habitat: Breeding: Open deciduous and coniferous woodlands (avoids dense forests), orchards, shade trees. Semi-open country, commonly in agricultural areas and near water. Wintering: same.

Nesting: Egg dates: June 5 to September. New York (Bull 1974:450). Clutch size: 2 to 6, typically 4 or 5. Incubation period: 12 to 16 days. Nesting period: 12 to 18 days. Broods per year: 1 or 2. Age at sexual maturity: 1 year. Nest height: 4 to 50 feet (1.2 to 15.2 m). Typically 6 to 20 feet (1.8 to 6.1 m). Nest site: Prefers dense coniferous thickets (often cedar) but nests in a variety of deciduous trees and shrubs. Nest is placed on a horizontal limb, often in a crotch next to main trunk.

Territory Size: Territories on an island in Lake Erie had the following areas: 0.06 acre, 0.5 acre and 0.23 acre (0.02, 0.2, and 0.09 ha) (Putnam 1949).

Sample Densities: 20 nests were found in a 2.3-acre (0.9-ha) pine plantation in Michigan (Rothstein 1971). 11 nests were located within a radius of 25 feet (7.6 m) in Ontario (Harrison 1975:166). 16 pairs per 100 acres (40 ha) in open hemlock-spruce bog in Maryland (Stewart and Robbins 1958).


Comments: Waxwings tend to nest late in summer when there is an abundant supply of wild fruits. Birds nest singly or in loose colonies. A second nest is often begun and eggs laid before the young in the first nest have fledged. During most of the year they roam the countryside in small to large flocks.

Northern Shrike

(Lonius excubitor)

A.O.U. No. 621.0

Range: Breeding: Northern North America, n. to s. Canada. Winter: Same as above but occasionally wanders s. to Virginia, New Mexico and n. California.

Relative Abundance in New England: Rare (winter).

Habitat: Wintering: Semi-open country with short grasses and scattered trees or shrubs for perches. Fences and utility wires also used.

Special Habitat Requirements: Elevated perches, short vegetation.

Foraging: Major foods: Rodents, especially mice, small birds. Substrates: Meadow grasses, air. Techniques: Hawking, diving and pouncing from a perch, hovering. Preferred feeding habitat: Open fields with scattered perches.

Comments: Northern shrikes are seen in the Northeast in winter when northern rodent populations are low—about every 4 years (Pough 1969:133).

Key References: Bent 1950, Cade 1967, Miller 1931.
Loggerhead Shrike
(Lanius ludovicianus)

A.O.U. No. 622.0

**Range:** Breeding: New Brunswick, w. to British Columbia, s. to s. Florida and s. Mexico. Winter: s. New Jersey, w. to n. California, s. to s. Mexico.

**Relative Abundance in New England:** Rare and local breeder in Northeast.

**Habitat:** Breeding: Open country with scattered trees, shrubs, roadside hedges. Is attracted to areas with thorny trees such as hawthorn and honey locust. Favors low elevations.

**Special Habitat Requirements:** Open areas with short grasses, elevated perches from which to spot prey.

**Nesting:** Egg dates: April 18 to June 28, New York (Bull 1974:453). Clutch size: 4 to 7, typically 4 or 5. Incubation period: 16 days. Nestling period: 16 to 20 days. Broods per year: 2. Age at sexual maturity: 1 year. Nest height: 5 to 30 feet (1.5 to 9.1 m). Typically 8 to 15 feet (2.4 to 4.6 m). Nest site: Builds in the dense foliage of a tree or shrub. Prefers to nest in thorny plants but is known to nest in oaks, pines, orchard trees, and grapevines.

**Territory Size:** 16.7 acres (7.6 ha) (Miller 1931).

**Sample Densities:** 1.9 nests per mile (1.6 km) of hedge in Illinois (Graber et al. 1973).

**Foraging:** Major foods: Insects, small reptiles, amphibians, birds, and mammals. Substrate: Meadow grasses. Techniques: Hovering or perching and diving, hawk- ing.

**Comments:** Beal (1912 in Bent 1950:137) found that the contents of 88 stomachs held mainly animal matter (97.5 percent) and a trace of vegetable matter (2.5 percent). Shrikes habitually impale their prey in thorn trees or on barbed wire fences or hang the prey in the fork of a branch. Formerly nested in New Hampshire (C. Anderson, personal communication).

**Key References:** Bent 1950, Graber et al. 1973, Miller 1931.
European Starling
(Sturnus vulgaris)

A.O.U. No. 493.0

RANGE: Breeding: Southern half of Canada s. throughout most of United States except in extreme w. portions, though now invading n. Sonoran Desert. Winter: Throughout United States.

RELATIVE ABUNDANCE IN NEW ENGLAND: Abundant.

HABITAT: Breeding: Farms, cities, orchards, gardens, parks. Prefers rural areas with pastures, cultivated fields and hayfields. Wintering: Roost in dense vegetation or on buildings in villages and cities. Probably absent from high mountains.

SPECIAL HABITAT REQUIREMENTS: Cavities for nesting. Minimum d.b.h. of trees suitable for nesting is 10 inches (25.4 cm) (Thomas et al. 1979).

NESTING: Egg dates: April 10 to June 15, New York (Bull 1974:541). Clutch size: 2 to 7, typically 4 to 6. Incubation period: 11 to 13 days. Nestling period: 18 to 22 days. Broods per year: 1 or 2. May be single-brooded north of 48° latitude (Kessel 1953). Age at sexual maturity: 1 year. Nest height: 2 to 60 feet (0.6 to 18.3 m). Typically 10 to 25 feet (3.0 to 7.6 m). Nest site: A cavity almost anywhere, including crevices created by highway construction in exposed rock ledges. Often in natural or existing excavated cavities in trees, barns and other buildings, drain pipes, cupolas.

SAMPLE DENSITIES: 78 breeding females per square mile (20 breeding females/km²) (some in nest boxes) on a farm in Scotland (Dunnet 1955).

FORAGING: Major food: Insects, seeds, fruits, cultivated grains. Substrates: Soil surface, sub-surface to depths not exceeding length of bill. Techniques: Ground glean-ing, probing. Preferred feeding habitat: Lawns, meadows, grazed fields; starlings prefer to forage in low vegetation; feeds up to three-fourths of a mile from nest site (Kessel 1957).

COMMENTS: Introduced from Europe, starlings are highly adaptable and compete successfully with other birds for nest cavities. Stomach analyses of 2,301 birds taken throughout the United States in all seasons reveals a diet of 57 percent animal and 43 percent vegetable matter (Kalmbach and Gabrielson 1921 in Bent 1950:194).

White-eyed Vireo
(Vireo griseus)

A.O.U. No. 631.0

RANGE: Breeding: Southern New England and se. New York, w. to Wisconsin and Nebraska, s. to Mexico and the Gulf Coast. Winter: South Carolina w. to s. Texas.

RELATIVE ABUNDANCE IN NEW ENGLAND: Locally common (Long Island) to rare (Maine).

HABITAT: Breeding: Dense shrubby lowlands, briar patches, deciduous forest undergrowth and forest edges, hedgerows, old fields, low swampy areas. Less often on drier hillside and along rural roads.

SPECIAL HABITAT REQUIREMENTS: Low shrubby vegetation that provides foraging and nesting substrates.

NESTING: Egg dates: May 17 to July 17, New York (Bull 1974:454). Clutch size: 3 to 5, typically 4. Incubation period: 14 to 15 days. Broods per year: 1. Age at sexual maturity: 1 year. Nest height: 1 to 8 feet (0.3 to 2.4 m). Typically 2 to 6 feet (0.6 to 1.8 m). Nest site: Suspended from the fork of a low branch, usually well hidden by surrounding vegetation. Most often placed in a small sapling or shrub.

TERRITORY SIZE: Approximately 2.5 to 3.5 acres (1.0 to 1.4 ha) per male (Stewart and Robbins 1958). Territories may be as small as 0.33 (0.13 ha) acre per male (Brewer 1955). 6.5 and 5.4 acres (2.6 to 2.2 ha) in stream and woodland edge thickets in Kansas (Fitch 1958).


COMMENTS: The White-eyed Vireo prefers close-growing stands of trees 8 to 25 feet (2.4 to 7.6 m) tall (either saplings or mature low trees such as Crotalaria spp.) (Nolan 1960). The bird is a common victim of cowbird parasitism.


SAMPLE DENSITIES: Maryland—40 territorial males per 100 acres (40 ha) in shrub swamp. 28 territorial males per 100 acres (40 ha) in second growth river swamp. 28 territorial males per 100 acres (40 ha) in brushy abandoned farmland (Stewart and Robbins 1958:263).
A.O.U. No. 629.0

Range: Breeding: Nova Scotia, w. to British Columbia, s. to Connecticut (uplands), Georgia (mountains), c. Minnesota and Mexico (mountains). Winter: South Carolina to Central America.

Relative Abundance in New England: Common (Maine) to uncommon (s. Connecticut).

Habitat: Breeding: Coniferous or mixed woodlands especially those with openings in canopy and a dense understory. Shows preference for pine, hemlock, or spruce. Prefers mountain elevations but occurs locally in highlands.

Nesting: Egg dates: May 14 to July 22, New York (Bull 1974:459). Clutch size: 3 to 5, typically 4. Incubation period: 13 to 15 days. Nestling period: 15 to 17 days. Broods per year: 1 or 2. Age at sexual maturity: 1 year. Nest height: 3.5 to 20 feet (1.1 to 6.1 m). Typically less than 10 feet (3.0 m). Nest site: Suspended from a forked horizontal branch, usually a conifer.

Sample Densities: Average 29 birds per 100 acres (40 ha) in ponderosa pine forest in Colorado (Cruz 1975). 27 territorial males per 100 acres (40 ha) in virgin hemlock forest in Maryland. 17 territorial males per 100 acres (40 ha) in mature northern hardwood forest in Maryland (Stewart and Robbins 1958:265).

Foraging: Major foods: Insects, especially moths and caterpillars, small amounts of fruits. Substrates: Bark of branches, often at bases of horizontal branches and dead stubs. Techniques: Gleaning, hover-gleaning, hawking. Preferred feeding habitat: Lower and middle canopy.

Comments: Chapin (1925 in Bent 1950:296) found the bulk of diet (306 stomachs) to be animal matter (96 percent) supplemented by small amounts of vegetable matter (4 percent).

Key References: Bent 1950, Cruz 1975, James 1976.
Yellow-throated Vireo

(Vireo flavifrons)

A.O.U. No. 628.0

Range

Breeding

RANGE: Breeding: Maine, w. to Saskatchewan, s. to Florida and Texas. Winter: Southern Mexico to South America.

Relative Abundance in New England: Rare (Maine).

Habitat: Breeding: Tall deciduous trees in woodlands with partially opened canopy, seldom in dense forests, rarely in conifers. Frequents roadides, borders of streams, orchards and woodland borders, swampland woods.

Special Habitat Requirements: Tall deciduous trees.

Nesting: Egg dates: May 24 to June 18, New York (Bull 1974:457). Clutch size: 3 to 5, typically 4. Incubation period: 14 days. Nesting period: About 14 days. Broods per year: 1. Age at sexual maturity: 1 year. Nest height: 3 to 60 feet (0.9 to 18.3 m). Typically over 20 feet (6.1 m). Nest site: Suspended between a fork formed by slender branches of a horizontal limb, typically over 20 feet (6.1 m) above ground.

 Territory Size: About 10 acres (4.0 ha) (Robbins, unpublished data cited in Williamson 1971).

Foraging: Major foods: Insects, especially adult and larval moths. Substrates: Twig and branch surfaces, less often on leaf surfaces. Techniques: Gleaning—typically feeds slowly and deliberately, occasionally hovering or hawking. Preferred feeding habitat: Top of canopy (upper half), periphery and central portions (Williamson 1971).

Comments: Chapin (1925 in Williamson 1971) found that the diet over a 1-year period consisted of 98 percent animal and 2 percent vegetable matter.


Sample Densities: Maryland: 19 territorial males per 100 acres (40 ha) in virgin hardwood deciduous forest. 8 territorial males per 100 acres (40 ha) in second growth riparian swamp. 7 territorial males per 100 acres (40 ha) in mixed oak forest. 3 territorial males per 100 acres (40 ha) in well-drained floodplain forest (Stewart and Robbins 1958:264).
Warbling Vireo
(Vireo gilvus)

A.O.U. No. 627.0


**Relative Abundance in New England:** Locally common to uncommon and widespread.

**Habitat:** Breeding: Open mixed or deciduous woodlands, roadside and village shade trees, riverbottoms with mature trees, orchards. Avoids high elevations.

**Special Habitat Requirements:** Deciduous trees.


**Sample Densities:** 10 territorial males per 100 acres (40 ha) in field with shrubs and stream-bordered trees in Maryland (Stewart and Robbins 1958:269).

**Foraging:** Major foods: Insects, especially caterpillars. Substrates: Leaf surfaces. Techniques: Flight-gleaning, gleaning. Preferred feeding habitat: Middle and upper canopy of tall deciduous trees, largely on branch tips.

**Key References:** Bent 1950, James 1976.
Philadelphia Vireo
(Vireo philadelphicus)

A.O.U. No. 626.0

Range

RANGE: Breeding: New Brunswick, w. to Alberta, s. to n.
New England (rarely); Michigan and North Dakota. Win-
ter: Central America.

RELATIVE ABUNDANCE IN NEW ENGLAND: Uncommon
(Maine).

HABITAT: Breeding: Deciduous, coniferous or mixed for-
est, woodland edges, clearings, and burned-over areas
with young deciduous second growth, neglected farm-
lands grown up to small trees and tall shrubs inter-
spersed with clearings, willow and alder thickets along
streams. Rarely in villages.

SPECIAL HABITAT REQUIREMENTS: Deciduous trees for
nesting.

NESTING: Egg dates: June 15 to July 15, Maine (Bent
1950:362). Clutch size: 3 to 5, typically 4. Incubation
period: 14 days. Nestling period: 13 days. Brood per
year: 1. Age at sexual maturity: 1 year. Nest height: 10
to 40 feet (3.0 to 12.2 m). Nest site: Nest is hung in the fork a
slender horizontal twig of a deciduous tree or shrub.

FORAGING: Major foods: Insects, especially caterpillars;
some wild fruits in autumn (less than 10 percent). Sub-
strates: Leaf surfaces, branches. Techniques: Flight-
gleaning, gleaning, hawking. Preferred feeding habitat:
Tree top, dense shrubbery.

COMMENTS: Animal matter represented 73 percent of the
diet during the breeding season (McKee 1926 in Bent

KEY REFERENCES: Bent 1950. Lewis 1921.
**Red-eyed Vireo**

*(Vireo olivaceus)*

A.O.U. No. 624.0

**Range:** Breeding: Quebec, w. to British Columbia, s. to Florida and s. South America. Winter: South America.

**Relative Abundance in New England:** Abundant.

**Habitat:** Breeding: Open deciduous and second-growth woodlands (less often in mixed woods) with thick undergrowth of saplings. Frequent residential areas with abundant shade trees that provide a continuous canopy. Ubiquitous and common in deciduous woodland, yet shows preference for mesic stands in the deciduous forest (Bond 1957).

**Special Habitat Requirements:** Deciduous trees. A continuous canopy rather than presence of an understory may be the chief habitat requirements (Lawrence 1953).

**Nesting:** Egg dates: May 13 to July 7, New York (Bull 1974:469). Clutch size: 2 to 5, typically 4. Incubation period: 12 to 14 days. Nestling period: 10 to 12 days. Broods per year: 1 or 2. Age at sexual maturity: 1 year. Nest height: 2 to 60 feet (0.6 to 18.3 m). Typically 5 to 10 feet (1.5 to 3.0 m) DeGraaf and others (1975) found Red-eyed Vireos (n = 20) nesting at an average height of 17 feet (5.2 m) in a nest site study in Massachusetts. Nest site: Suspended in the fork of a horizontal limb often in a sapling, usually in a peripheral area of canopy.

**SAMPLE DENSITIES:** Maryland — 60 territorial males per 100 acres (40 ha) in mature northern hardwood forest. 100 territorial males per 100 acres (40 ha) in virgin hard-wood deciduous forest. 52 territorial males per 100 acres (40 ha) in dense second-growth forest. 34 territorial males per 100 acres (40 ha) in pine-oak forest. 10 territorial males per 100 acres (40 ha) in open slash area (Stewart and Robbins 1958:266).

**Foraging:** Major foods: Insects (more than 85 percent of diet), mainly caterpillars, moths, beetles, bugs, ants. Substrates: Leaf surfaces, especially undersides. Techniques: Gleaning, flight-gleaning, hawking (uncommon), glides rather than hops from branch to branch. Preferred feeding habitat: Uppermost branches of trees; most feeding occurs in periphery of middle and upper canopy; little feeding takes place in core.

** Territory Size:** 45 territories in Michigan averaged 1.7 acres (0.7 ha) per pair (Harrison 1975:172). 5 territories in mixed woods in Ontario ranged from 0.7 to 2.4 acres (0.3 to 1.2 ha) (average 1.4 acres (0.6 ha)) (Lawrence 1953).

**Key References:** Bent 1900, James 1976, Lawrence 1953, Southern 1959, Williamson 1971.
Blue-winged Warbler
(Vermivora pinus)

A.O.U. No. 641.0


Relative Abundance in New England: Uncommon to locally common.

Habitat: Breeding: Edges of woods, bushy overgrown fields or borders of wooded swamps. Prefers old fields with saplings greater than 10 feet tall (Robbins et al. 1966:254). Often near streams.

Special Habitat Requirements: Old fields with scattered shrubs and small trees.


Territory Size: Less than 1 acre (0.4 ha) to almost 2 acres (0.8 ha) per pair (New York) (Ficken and Ficken 1968). Burke Lake, Michigan (2.0 ha (5 acres) per pair) — habitat: an extensive tamarack swamp surrounded by higher, drier oak-hickory woods. Island Lake, Michigan (1.3 ha (4.6 acres) per pair) — habitat: a low swamp of tamarack, poison sumac, red osier and gray dogwoods and poplars (Murray and Gill 1970).


Key References: Bent 1953, Short, 1962.
Golden-winged Warbler
(Vermivora chrysoptera)

A.O.U. No. 642.0


RELATIVE ABUNDANCE IN NEW ENGLAND: Rare (Vermont).

HABITAT: Breeding: Damp fields heavily vegetated with thick grass, clumps of bushes and brambles, deciduous damp woods, especially gray birch stands; sometimes found on higher ground. Avoids mountains.

SPECIAL HABITAT REQUIREMENTS: Brushy open areas, especially clearings in deciduous woodlands with saplings, forbs, grasses.


TERRITORY SIZE: Less than 1 acre (0.4 ha) to almost 2 acres (0.8 ha) per pair (New York) (Ficken and Ficken 1968). Territories usually consisted of overgrown fields with many shrubs and small trees (under 10 feet (3.0 m), bordered by taller deciduous trees. Burke Lake, Michigan (2.7 ha (6.7 acres) per pair) — habitat: an extensive tamarack swamp surrounded by higher, drier oak-hickory woods. Island Lake, Michigan (1.9 ha (4.7 acres) per pair) — habitat: a low swamp of tamarack, poison sumac, red osier and gray dogwood and poplars (Murray and Gill 1976).

SAMPLE DENSITY: 17 territorial males per 100 acres (40 ha) in dense second-growth forest in Maryland (Stewart and Robbins 1958:276).

FORAGING: Major foods: Small bugs and larvae, cankerworms, spiders. Substrates: Terminal twigs of high branches in tall trees. Techniques: Twig hopping and glean ing.

COMMENTS: Chickadee-like in feeding habits. Occupies similar habitat as Blue-winged Warbler with which it interbreds. Golden-winged Warblers may breed at higher elevations and slightly farther north than Blue-winged Warblers (Bull 1974:469).

KEY REFERENCES: Griscom and Sprunt 1957, Short 1962.
Tennessee Warbler
(Vermivora peregrina)

A.O.U. No. 647.0

Range

Breeding


RELATIVE ABUNDANCE IN NEW ENGLAND: Common (Maine) (Bull 1974:475)).

HABITAT: Breeding: Associated with openings in northern deciduous or mixed woodlands with grasses, dense shrubs, and scattered clumps of young deciduous trees (Pough 1949:156). Often in boggy areas, occasionally on dry pine lands.

SPECIAL HABITAT REQUIREMENTS: Brushy, semi-open country.


FORAGING: Major foods: Almost entirely insectivorous, takes weevils, flies, plant-lice, grasshoppers, caterpillars, grubs, beetles, spiders, some fruit. Substrates: The terminal foliage of trees, generally feeding to 40 feet (12.2 m) high (MacArthur 1958). Techniques: Branch hopping and foliage gleaning.

Nashville Warbler
(Vermivora ruficapilla)
A.O.U. No. 645.0

Range: Breeding: Southern Canada and n. United States. In the Northeast the range extends s. to Maryland (mountains) and rarely to Connecticut and Long Island. Winter: Central America.

Relative Abundance in New England: Common.


Special Habitat Requirements: Scattered trees interspersed with brush.


Territory Size: About 1/2 acre (0.2 ha) per pair in Ontario (Lawrence 1948).

Sample Densities: 39 territorial males per 100 acres (40 ha) in scrub spruce bog in Maryland. 21 territorial males per 100 acres (40 ha) in open hemlock-spruce bog in Maryland (Stewart and Robbins 1958:280).
Northern Parula
(Parula americana)

A.O.U. No. 648.0

**Range:** Breeding: Southern Canada to the Gulf States. Winter: Central America and the West Indies.

**Relative Abundance in New England:** Common (Maine).

**Habitat:** Breeding: Wooded bogs, swamps, prefers conifers in areas where bearded lichen (Usnea) grows.

**Special Habitat Requirements:** Prefers to nest in bearded lichen or use the lichen as nesting material.

**Nesting:** Egg dates: May 17 to June 27, New York (Bull 1974:480). Clutch size: 3 to 7, typically 4 or 5. Incubation period: 12 to 14 days. Nesting period: 11 days. Broods per year: 1. Age at sexual maturity: 1 year. Nest height: 6 to 100 feet (1.8 to 30.5 m). Nest site: Usually hanging near the distal end of a limb that is covered with Usnea.

**Sample Densities:** Maryland — 47 territorial males per 100 acres (40 ha) in well-drained floodplain forest. 29 territorial males per 100 acres (40 ha) in poorly drained floodplain forest. 19 territorial males per 100 acres (40 ha) in second-growth river swamp. 12 territorial males per 100 acres (40 ha) in pine-oak forest (Stewart and Robbins 1958:281).

**Foraging:** Major foods: Beetles, plant-lice, inchworms, small hairy caterpillars, spiders. Substrates: Branches, twigs, and leaves of trees. Techniques: Foliage and twig gleaning — often hangs upside down, chickadee fashion.

**Comments:** Composition of diet is 98 percent animal, 2 percent vegetable (Wetmore 1916 in Bent 1953:143).

**Key References:** Bent 1953, Forbush 1929, Graber and Graber 1961.
**Yellow Warbler**

*(Dendroica petechia)*

**Range:** Breeding: Canada and Alaska to n. South America. Winter: Central and South America.

**Relative Abundance in New England:** Common.

**Habitat:** Breeding: Farmlands, orchards, roadsides and along streams and lakes.

**Special Habitat Requirements:** Scattered small trees or dense shrubbery.

**Nesting:** Egg dates: May 15 to July 3, New York (Bull 1974:481). Clutch size: 3 to 5, typically 4 or 5. Incubation period: 10 or 11 days. Nesting period: 9 to 12 days. Broods per year: 1. Age at sexual maturity: 1 year. Nest height: 2 to 15 feet (0.6 to 4.6 m). Typically 3 to 8 feet (0.9 to 2.4 m). DeGraaf and others (1975) found 19 Yellow Warbler nests at an average height of 22 feet (6.6 m) in five habitat types ranging from rural to urban in Massachusetts. Nest site: Securely placed in a fork or crotch of a shrub, sapling, or tree; often in stream-side thickets and shrubbery associated with suburban gardens. Adaptable in choice of nest site.

**Foraging:** Major foods: insects — caterpillars of gypsy moth and brown-tail and tent caterpillars, cankerworms, beetles, weevils, plant-lice, and grasshoppers. Also takes spiders. Substrates: Small tree limbs generally 4 to 40 feet (1.2 to 12.2 m) high (MacArthur 1958). Techniques: Branch hopping and gleaning, hawking.

**Comments:** Food composition is 94 percent animal, 6 percent vegetable (Forbes 1883 in Bent 1953:171).

**Key References:** Bent 1953, Forbush 1929, Schrantz 1943.
Chestnut-sided Warbler
(*Dendroica pensylvanica*)

**Range:** Breeding: Southern Canada s. through mountainous uplands to e. Tennessee and n. Georgia. Winter: Central America.

**Relative Abundance in New England:** Common.

**Habitat:** Breeding: Second growth woodland edges and abandoned fields; along brushy brookside and hillside, roadside thickets, woodland clearings and burns.

**Special Habitat Requirements:** Early second growth — sprouts and bush at wood margins, hardwood regeneration.

**Nesting:** Egg dates: May 20 to July 25, New York (Bull 1934:63). Clutch size: 4 to 5, typically 4. Incubation period: 12 to 13 days. Nesting period: 10 to 12 days. Broods per year: 1. Age at sexual maturity: 1 year. Nest height: 1 to 4 feet (0.3 to 1.2 m), typically 2 feet (0.6 m). Nest site: Well concealed in low bush, sapling, briar, or vine.

**Territory Size:** Prior to mating, 4 territories measured 1.2, 1.3, 1.3, and 2.5 acres (0.5, 0.5, 0.5, 1.0 ha). During incubation, males increased territory size by 200 to 700 feet (61 to 213.4 m) to encompass 2 to 12 acres (0.8 to 4.9 ha) in New York (Kendeigh 1945b).

**Foraging:** Major foods: Beetles, caterpillars, plant lice, leaf hoppers, ants, spiders. Substrates: Foliage of shrubs or low plants to 35 feet (10.7 m) tall. Techniques: Hopping along branches and gleaning foliage.

**Key References:** Griscom and Sprunt 1957, Kendeigh 1945b, Lawrence 1948.
Magnolia Warbler
(Dendroica magnolia)

A.O.U. No. 657.0

Range: Breeding: Newfoundland w. across Canada to c. Northwestern Territory, s. to c. British Columbia, Alberta, and e. to Wisconsin, s. Ontario and w. Massachusetts; southward in the mountains to sw. North Carolina. Winter: Mexico s. to Panama.

Relative Abundance in New England: Common (mountains).

Habitat: Breeding: Usually in small clumps of spruces or hemlocks, or in small coniferous saplings in old fields. Associated with woodland edges and clearings.

Special Habitat Requirements: Stands of young conifers.

Nesting: Egg dates: May 25 to July 11, New York (Bull 1974:482). Clutch size: 3 to 5, typically 4. Incubation period: 12 days. Nesting period: 10 days. Broods per year: 2. Age at sexual maturity: 1 year. Nest height: 1 to 35 feet (0.3 to 10.7 m). Typically 1 to 10 feet (0.3 to 3.0 m). Nest site: Commonly in young conifers, rarely in hardwoods, on a horizontal branch.

Sample Densities: 22 pairs per 40 ha (100 acres) Loud's Island, Maine — forest is 83 percent red spruce, 14 percent white spruce; 15 pairs per 40 ha (100 acres) Marsh Island, Maine — 100 percent white spruce; 42 pairs per 40 ha (100 acres) Harbor Island, Maine — 100 percent white spruce (Morse 1976). 80 males per 100 acres (40 ha) in virgin hemlock forest in Maryland. 63 males per 100 acres (40 ha) in open hemlock-spruce bog in Maryland. 33 males per 100 acres (40 ha) in scrub spruce bog (Stewart and Robbins 1958:283).


Comments: Mostly insectivorous (King 1883 in Bent 1953:204). In New York, birds inhabit forests at higher elevations (Bull 1974:481).

Key References: Bent 1933, Forbes 1932, Kendeigh 1945, Morse 1976, Stenger and Falls 1959.
Cape May Warbler
(\textit{Dendroica tigrina})

A.O.U. No. 650.0


**Relative Abundance in New England:** Common (Maine).

**Habitat:** Breeding: Fairly open coniferous forest with a high percentage of mature spruces; dense spruce forest with a scattering of taller spires above the canopy level; in more open land among small trees.

**Special Habitat Requirements:** Tall stands of spruce.

**Nesting:** Egg dates: June 10 to June 29. Peak: June 12 to June 20. New Brunswick (Bent 1953:224). Clutch size: 4 to 9, typically 6 or 7. Broods per year: 1. Age at sexual maturity: 1 year. Nest height: 2 to 60 feet (0.6 to 18.3 m). Typically 30 to 60 feet (9 to 18 m). Nest site: Usually in the top of a coniferous tree.

**Sample Densities:** 28 pairs per 100 acres (40 ha) spruce-fir forest near Lake Nipigon, Ontario (Kendeigh 1947 in Griscom and Sprunt 1957:118).

**Foraging:** Major foods: Insects, ants, small adults and larvae of moths, flies, beetles, small crickets, termites, and larvae of dragonflies. Also takes spiders. Substrates: Tips of dense branches and new buds of firs and spruces near tops of trees. Techniques: Glancing, bawking.

**Comments:** Cape May Warblers are probably dependent on sporadic outbreaks of insects such as the spruce budworm that result in super-abundant food supplies (MacArthur 1958).

**Key References:** Forbush 1929, Griscom and Sprunt 1957, MacArthur 1958.
Black-throated Blue Warbler
(Dendroica caerulescens)

A.O.U. No. 654.0


Relative Abundance in New England: Common.

Habitat: Breeding: Commonly found in or near mixed and deciduous forests with heavy undergrowth or at edges of woodland clearings generally in moist places.

Special Habitat Requirements: Woodlands with thick, shrubby undergrowth (Pough 1949:164).


Sample Densities: Maryland — 58 territorial males per 100 acres (40 ha) in virgin hemlock forest. 46 territorial males per 100 acres (40 ha) in young second growth. 17 territorial males per 100 acres (40 ha) in scrub spruce bog (Stewart and Robbins 1958:286).


Comments: Considered a deep woods Warbler, but also common in clearcuts after 15 years.

Key Reference: Bent 1953, Griscom and Sprunt 1957, Nice 1930.
**Yellow-rumped Warbler**

*(Dendroica coronata)*

A.O.U. No. 655.0

**RANGE:** Breeding: Alaska and Canada s. to Massachusetts (Berkshires), Pennsylvania (Poconos), and New York (Catskills). Winter: Central New England. s. through the United States, Central America, Bermuda, Bahamas, and the Virgin Islands.

**RELATIVE ABUNDANCE IN NEW ENGLAND:** Common breeder at higher elevations.

**HABITAT:** Breeding: Coniferous woods (especially in spruce-fir) or in young coniferous growth near the edges of woods; sometimes in mixed woods. Wintering: Along the coast in any type of woodland, in thickets, gardens.

**SPECIAL HABITAT REQUIREMENTS:** Coniferous trees (summer), bayberry thickets (winter).

**NESTING:** Egg dates: May 19 to July 10, New York (Bull 1974:486). Clutch size: 3 to 5, typically 4. Incubation period: 12 to 13 days. Nesting period: 12 to 14 days. Broods per year: 1 or 2. Age at sexual maturity: 1 year. Nest height: 4 to 50 feet (1.2 to 15.2 m). Typically 15 to 20 feet (4.6 to 6.1 m). Nest site: Usually in a small coniferous tree, typically saddled on a branch of spruce, hemlock, or birch.

**FORAGING:** Major foods: Insects in summer—plant lice, caterpillars, small grubs, ants, and leaf beetles. In winter—eggs and larvae of some insects, bayberries, berries of red cedar, woodbine, viburnums, honeysuckle, mountain ash, poison ivy, and so on. Substrates: Trunks and branches from tops of trees to ground level, air. Techniques: Trunk and branch gleaning and hawking.

**COMMENTS:** Also uses evergreen plantations (New York) (Bull 1974:486).

**KEY REFERENCES:** Bent 1953, Forbush 1929, MacArthur 1958, Morse 1976.

**SAMPLE DENSITIES:** 30 pairs per 40 ha (100 acres) Loud’s Island, Maine, 83 percent red spruce and 14 percent white spruce (Morse 1976). 39 pairs per 40 ha (100 acres) Marsh Island, Maine, 100 percent white spruce (Morse 1976). 31 pairs per 40 ha (100 acres) Harbor Island, Maine, 100 percent white spruce (Morse 1976).
Black-throated Green Warbler
(Dendroica virens)
A.C.U. No. 667.0

**Range:** Breeding: Central Canada to c. New Jersey and s. in the mountains to Alabama and Georgia. Winter: Southern Texas and sc. Florida s. to Greater Antilles, e. Mexico to Panama.

**Relative Abundance in New England:** Common.

**Habitat:** Breeding: Usually in hemlocks, but sometimes in other northern conifers: pine, spruce, fir, and cedar. Rarely in maples, birches, and other hardwoods.

**Special Habitat Requirements:** Coniferous or mixed woodlands.

**Nesting:** Egg dates: May 24 to July 2, New York (Bull 1974:490). Clutch size: 4 to 5, typically 4. Incubation period: 12 days. Nestling period: 8 to 10 days. Broods per year: 1. Age at sexual maturity: 1 year. Nest height: 1 to 70 feet (0.3 to 21.3 m). Typically 15 to 20 feet (4.6 to 6.1 m). Nest site: Usually on a horizontal or drooping branch.

**Territory Size:** 21 territories ranged from 0.6 to 2.5 acres (0.2 to 1.0 ha); average size 1.6 acres (0.6 ha) (New York) (Kendeigh 1945); habitat: hemlock beech.

**Sample Densities:** 71 pairs per 40 ha (100 acres) Loud's Island, Maine; 80 percent red spruce, 14 percent white spruce (Morse 1976). 61 pairs per 40 ha (100 acres) Marsh Island, Maine 100 percent white spruce (Morse 1976). 83 pairs per 40 ha (100 acres) Harbor Island, Maine, 100 percent white spruce (Morse 1976). 36 territorial males per 100 acres (40 ha) in mature oak-maple forest in Maryland. 9 territorial males per 100 acres (40 ha) in mature northern hardwood forest (Stewart and Robbins 1956:288).

**Foraging:** Major foods: Insects—leaf rollers, leaf-eating caterpillars, beetles, flies, gnats, and plant lice. Also takes mites, cankerworms, spiders, some berries. Substrates: Often limbs and foliage of evergreens 10 to 50 feet (3.0 to 15.2 m) above ground. Techniques: Hopping, rapid peering or hovering followed by gleaning, occasional hawking.

**Comments:** Strongly associated with hemlocks.

**Key References:** Forbush 1929, Kendeigh 1945, MacArthur 1958, Morse 1976.