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13.1.8. Life History and Management of the Blue-winged Teal

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The blue-winged teal is a small dabbling duck that is common in North America and northern South America. The species is highly mobile and has an opportunistic life history strategy. Breeding populations respond to variable wetland conditions in the drought-prone prairie regions of the north-central United States and southern Canada. Extensive habitat loss and degradation has occurred on the prairies and on neotropical wintering areas in recent decades. Renewed interest in the ecology and management of blue-winged teal has resulted from these environmental pressures. We review life history characteristics of blue-winged teal that are important to managers. Readers should consult Bennett (1938) and Bellrose (1980) for general references on the biology of blue-winged teal.



Species Profile—Blue-winged Teal

Scientific Name: *Anas discors*

Weight in pounds (grams):

Adults—male 1.0 (454), female 0.9 (410)

Immatures—male 1.0 (454), female 0.9 (410)

Age at first breeding: 1 year

Clutch size: 10, range 6 to 15

Incubation period: 23 days

Age at fledging: 35–44 days

Nest sites: Herbaceous vegetation, primarily grasses and sedge meadows, at variable distances from water up to 1 mile (1.6 km)

Food habits: Omnivorous; plant foods include vegetative parts of duckweeds, coontail, muskgrass and pondweeds, and seeds of bulrushes, sedges, spikerushes, water lilies, and grasses. Animal foods predominate in diet during breeding and include snails, aquatic insects, fairy shrimp, and crustaceans

Distribution

Blue-winged teal concentrate breeding in the Prairie Pothole Region (PPR) of the north-central United States and southern Canada (Fig. 1). Breeding pairs are especially abundant in mixed-prairie grasslands of North and South Dakota and southern Canada, and highest densities occur in southwestern Manitoba. The proportion of blue-winged teal breeding in the PPR

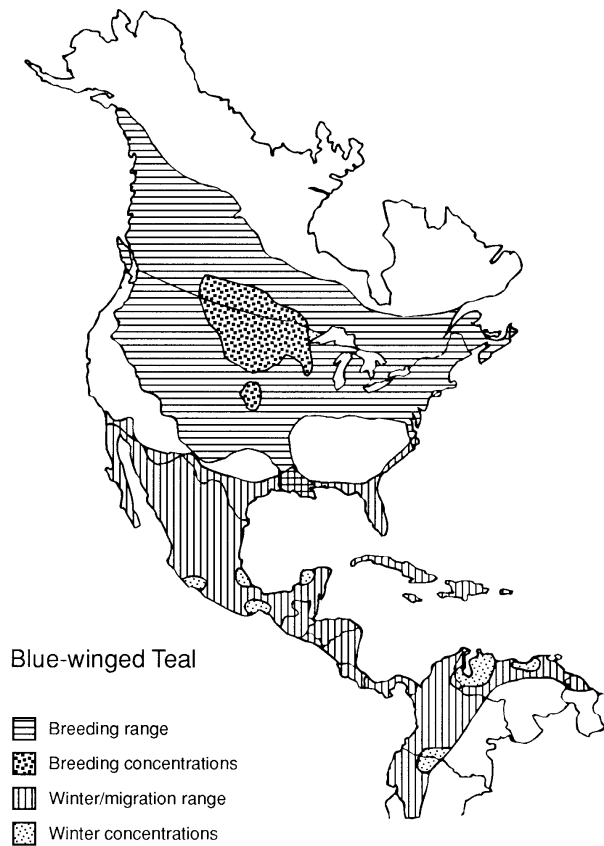


Fig. 1. Breeding, wintering, and migration areas for blue-winged teal.

is correlated with annual numbers of ponds in May. Blue-winged teal are also common in parts of the northeastern United States and the Great Lakes region. Few blue-winged teal nest in northern boreal forest or arctic habitats, although some birds are displaced to these areas when drought conditions occur in the PPR. Significant breeding populations also occur in Kansas and Nebraska, and blue-winged teal regularly breed along the Gulf Coast of the United States. Blue-winged teal are largely replaced by the cinnamon teal in the Great Basin and western intermountain regions, but small breeding populations are present.

Blue-winged teal winter farther south than other ducks that breed in North America. Major wintering concentrations occur along the Gulf Coast of Mexico and in Caribbean coastal areas of Venezuela, Colombia, and Guyana (Fig. 1). In these areas, blue-winged teal occupy coastal lagoons and lowland marshes, as well as large interior wetland systems. In recent decades, large numbers of

blue-winged teal have wintered along the Gulf Coast of the United States.

Spring Migration and Breeding

Blue-winged teal are one of the last species of ducks to arrive on northern breeding areas. Those wintering in South America begin moving north through Mexico in January, but the majority of spring migrants does not arrive on prairie breeding areas until late April or May (Fig. 2). Courtship occurs on wintering areas and continues during spring migration, and most blue-winged teal are paired before arrival at the nesting location. Nest initiation begins shortly after arrival; peak nesting usually occurs in late May in the United States and in early June in Canada. Most yearling females nest.

Blue-winged teal have low rates of breeding philopatry when compared with other dabbling ducks. Females change breeding sites from year to year in response to changes in wetland conditions. When habitat conditions in the PPR are unfavorable, large portions of the breeding population may occupy other parts of the breeding range. Males defend discrete breeding territories, usually consisting of one or two small ponds within the home range. Breeding pairs prefer shallowly flooded temporary and seasonal wetlands, and pair densities are correlated with densities of flooded wetland basins. In years when temporary and seasonal wetlands are dry, gently sloping semipermanent basins that provide shallow water are important.

Typically, nests are located in upland grasses or wet meadow sedges. Nest cover is provided by matted residual herbaceous vegetation. Nests usually are located near water, but may be as far as 1 mile (1.6 km) from the nearest wetland. Cereal grain and forage production and livestock grazing limit available nesting cover throughout the prairie region, although alfalfa and bluegrass in cultivated or grazed areas can provide suitable nesting cover. Blue-winged teal seem to prefer to nest in native grass communities in good range condition. Success of breeding pairs is higher in native plant communities than in exotic vegetation communities.

Clutch size ranges from 6 to 15 eggs, and averages 10. Females incubate for 23 days. As with most upland-nesting ducks in the PPR, large numbers of nests are lost to mammalian and avian predators. Nests in hay fields (e.g., alfalfa) often are destroyed during harvest. Females commonly

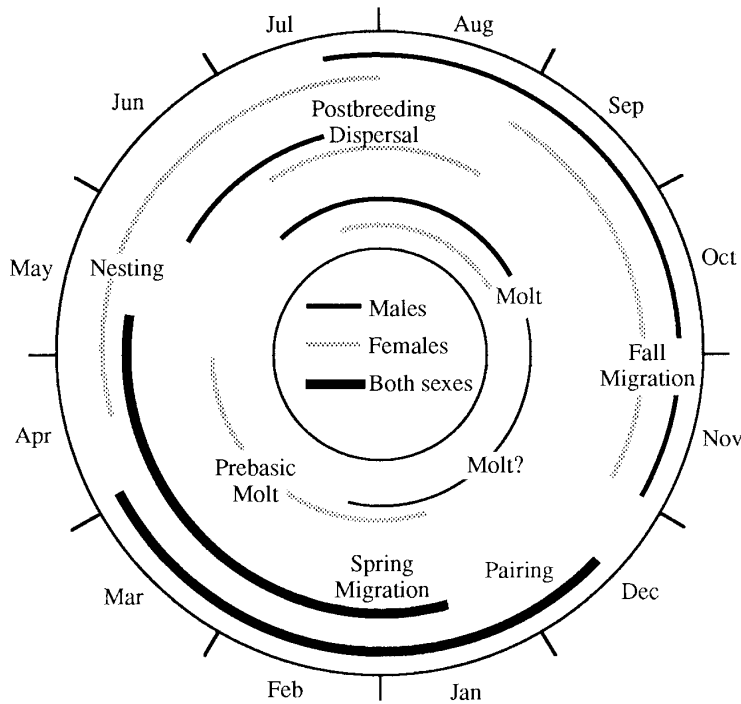


Fig. 2. Important life history events in the annual cycle of the blue-winged teal.

renest if nest loss occurs early in laying, but hens that lose clutches during incubation are less likely to renest. Renesting, even by hens losing clutches late in incubation, is more likely to occur when wetland conditions are good.

Semipermanent wetlands located near nests are important habitats for broods. Stock ponds with well-developed emergent vegetation provide locally important brood habitat. Seasonal wetlands also provide excellent brood habitat, but because blue-winged teal are relatively late nesters, seasonal wetlands are often unavailable when ducklings leave nests. Females lead newly hatched ducklings overland to wetlands with suitable brood habitat. Broods are more active and more easily observed in early morning and late afternoon. Most duckling mortality occurs within the first 14 days after hatch. Young are able to fly at 35–44 days of age.

Postbreeding Dispersal and Fall Migration

Males leave breeding territories 2 to 3 weeks after incubation begins to molt (Fig. 2). Males form groups on some breeding areas during molt, or congregate in large flocks of hundreds or thousands on large marshes away from areas used during

breeding. Males remain flightless for 26–36 days, feed at night, and conceal themselves in wetland vegetation during the day. Females begin wing molt after young are fledged, although some females may initiate molt in late stages of brood-rearing.

Blue-winged teal begin fall migration earlier than most other duck species. Upon regaining flight in mid- to late August, males begin moving southward in small groups. Males begin the prealternate molt in early fall, but often lack their characteristic white facial crescent during migration (Fig. 2). Successfully breeding females migrate after most males, and by late September migrating flocks are comprised primarily of adult females and immatures (Fig. 2). Most migrant blue-winged teal arrive at wintering areas along the U.S. Gulf Coast by late summer. Large numbers move through Mexico in August, and most continue on to wintering areas in Central and South America.

Winter

As on breeding areas, winter distribution is variable in response to habitat conditions. Standardized counts of wintering populations in Central and South America are lacking. In some

years, relatively large numbers remain on the lagoons and marshes of the Gulf Coast of Mexico (Tabasco and Yucatan). January surveys of wetlands in Mexico show wide fluctuations in numbers of blue-winged teal, due to annual differences in the chronology of spring migration from South American wintering areas. Blue-winged teal also pioneer into new winter habitats; after hurricanes opened marshes along the U.S. Gulf Coast in the 1950s, many thousands of teal began wintering in these habitats far north of traditional wintering sites.

Feeding

Blue-winged teal are omnivorous, and usually feed in portions of wetlands that are flooded less than 8 inches (20 cm) deep. During breeding, aquatic invertebrates provide most of the protein and minerals required for egg production. Endogenous lipid reserves contribute about 40% of egg lipid requirements. Additional lipids are obtained from foods consumed on wetlands used for breeding. Blue-winged teal do not store significant nutrient reserves on wintering areas, so most lipid storage apparently occurs during spring migration.

Diverse and abundant invertebrate populations develop in temporary and seasonal wetlands and are available to teal feeding in these shallow

basins. Snails, midge and mosquito larva and adults, fairy shrimp, beetles, amphipods, and isopods in these habitats are important foods for blue-winged teal during spring migration and breeding (Table). As seasonal wetlands dry over the summer, teal move to semipermanent wetlands to feed. Although diversity and availability of aquatic invertebrates is relatively low in more permanently flooded basins, emerging aquatic insects provide food for blue-winged teal in these wetlands.

During the postbreeding period, snails, midge and mosquito larva, water fleas, and amphipods were consumed by molting males on Delta Marsh in Manitoba (Table). Seeds and aquatic vegetation comprised 43% of these birds' diets. In Texas, fall migrants primarily consumed seeds of wild millet, milo, and other plant foods (Table).

Wintering blue-winged teal spent up to 50% of daylight hours feeding on marshes along the west coast of the Yucatan Peninsula in Mexico. Small snails (98%) and widgeongrass seeds were consumed early in winter, whereas muskgrass (98%), snails, odonates, and corixids comprised diets in late winter (Table). In Costa Rica, blue-winged teal fed at night on rice seeds (92%) and insects in cultivated rice fields (Table). In Colombia, blue-winged teal fed predominantly (54%) on plant foods (primarily water lily seeds) during one year, but switched to animal-dominated

Table. Percentage of animal foods in the diet of blue-winged teal during the annual cycle.

Season and sex	Animal diet (%)	Location
Spring migration Both sexes	65	Moist-soil impoundments Missouri
Breeding season Both sexes	89	Prairie wetlands North Dakota
Spring and summer Laying females	99	Prairie wetlands North Dakota
Post-breeding period Males	57	Delta Marsh, Manitoba Canada
Fall migration Both sexes	8	Playa wetlands Texas
Early winter Both sexes	98	Celestun Estuary Mexico
Late winter Both sexes	2	Celestun Estuary Mexico
Winter (Dec–Feb) Both sexes	8	Palo Verde refuge Costa Rica
Winter 1979–80 Females	46	Cienaga Grande Colombia
Winter 1985–88 Both sexes	73	Cienaga Grande Colombia

diets (snails, corixids, and insects) in years when water salinity increased (Table).

Population Status and Harvest Management

The target population for blue-winged teal in the North American Waterfowl Management Plan is 5,300,000 birds. Breeding population estimates have averaged 4,138,000 since 1955, ranging from 5,829,000 in 1975 to 2,776,000 in 1990 (Fig. 3). These estimates are subject to considerable bias and error, however. Annual surveys are conducted in May to coincide with the peak of mallard nesting, and in some years many blue-winged teal do not arrive on surveyed areas until after counts are conducted. Furthermore, significant proportions of the blue-winged teal breeding population may occupy locations outside the surveyed area, particularly in years when habitat conditions are poor in the PPR (e.g., the 1980s).

Based on annual breeding ground estimates, blue-winged teal comprise over 14% of the continental duck population. This species is lightly hunted, averaging less than 6% of the total annual duck harvest in the United States. Because blue-winged teal migrate earlier in fall than most other North American ducks, special harvest regulations have been used in some years since the 1960s to increase hunting opportunities for teal. September teal-only seasons of up to 9 days and bonus blue-winged teal bag limits have been used in some states in the Central, Mississippi, and Atlantic flyways. When offered, the teal harvest in September has averaged 201,991 birds, or 32% of

the total blue-winged teal harvested in the United States. Most blue-winged teal are harvested in the Mississippi (61%) and Central (21%) flyways during the combined September and regular seasons. September teal seasons were suspended in 1988, but were reinstated in many states in 1992.

Harvest rates south of the United States are less well-documented. Through 1980, 21% of all reported recoveries of leg-bands from blue-winged teal were from south of the United States. Most (37%) of these recoveries were from South America, followed by Mexico (28%), the Caribbean (25%), and Central America (10%). Many bands recovered in the neotropics may go unreported, however, complicating the use of banding data to determine blue-winged teal distribution and harvest.

Relatively low harvest and band recovery rates have also limited estimates of annual survival for blue-winged teal. Available estimates are similar to but slightly lower than those reported for other dabbling ducks: adult females—0.52, adult males—0.59, juvenile females—0.32, juvenile males—0.44. Females are more vulnerable to predators than males during nesting, but do not seem to suffer significantly greater mortality than females of other dabbling duck species. Factors affecting survival rates in winter are not well known.

Habitat Management

Blue-winged teal exploit a diversity of wetland habitats to meet their nutritional and behavioral requirements during the annual cycle. During spring migration and nesting, pairs find an

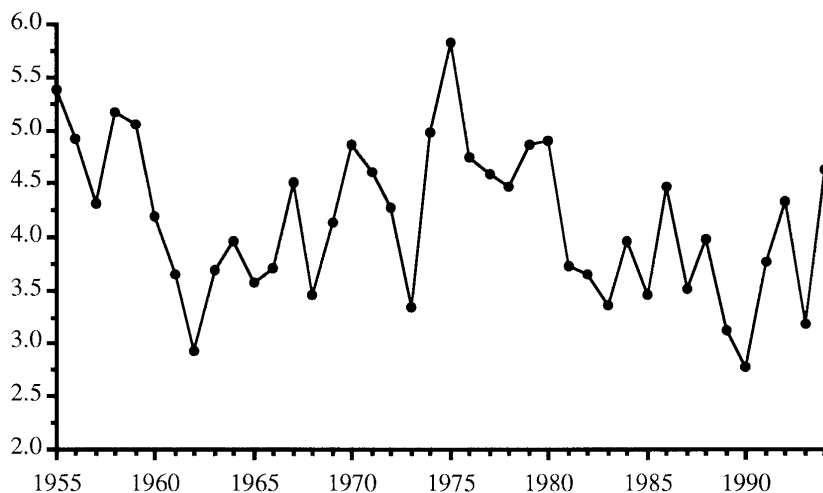


Fig. 3. Estimates of the continental breeding population (millions of birds) of blue-winged teal, 1955–1994.

abundance of aquatic invertebrates in highly productive temporary and seasonally flooded wetlands. Semipermanent wetlands with gently sloping basins and both emergent and submergent vegetation provide foraging and brood-rearing sites, and are very important in dry years on the drought-prone prairies. High densities of these wetland types in areas with high-quality nesting cover allow teal to establish nesting territories and avoid long overland brood movements. Restoration of temporary and seasonal wetlands is particularly needed in agricultural landscapes.

Breeding success of blue-winged teal is enhanced when extensive areas of suitable upland nesting cover are available near wetlands used by pairs and broods. In native prairie grass communities, dead vegetation should accumulate over several growing seasons to provide matted mulch used for nest sites. Periodic disturbance is required to keep grass cover from becoming too dense. Burning, mowing, and grazing can be used effectively to maintain range condition for blue-winged teal nesting. Optimal intervals between grassland disturbance are dependent upon local conditions. When possible, grassland disturbance should be performed after the peak hatching period of blue-winged teal. Seeded dense nesting cover used by mallards and gadwalls seems to be less attractive to blue-winged teal.

The high mobility and low breeding philopatry of blue-winged teal are important to the development and evaluation of management strategies for breeding populations. Breeding pairs may select home ranges opportunistically in response to wetland conditions encountered during spring moves. Use by blue-winged teal of areas that have undergone intensive habitat management may depend largely upon habitat quality in the surrounding regional landscape.

Development of partnerships by agencies in numerous countries is essential to ensure the

long-term availability of high-quality wetland systems for use by blue-winged teal. Wetland loss and degradation in neotropical wintering areas have been as great or greater than in northern prairie breeding habitats. Effective wetland management, protection, and restoration are important throughout the range of the blue-winged teal.

Suggested Reading

- Bellrose, F. C., editor. 1980. Ducks, geese, and swans of North America. 3rd ed. Stackpole Books, Harrisburg, Penn. 540 pp.
- Bennett, L. J. 1938. The blue-winged teal: its ecology and management. Collegiate Press, Inc., Ames, Iowa. 144 pp.
- Botero, J. E., and D. H. Rusch. 1994. Foods of blue-winged teal in two neotropical wetlands. *Journal of Wildlife Management* 58:561-565.
- Dubowy, P. J. 1985. Feeding ecology and behavior of postbreeding male blue-winged teal and northern shovelers. *Canadian Journal of Zoology* 63:1292-1297.
- Kaiser, P. H., S. S. Berlinger, and L. H. Fredrickson. 1979. Response of blue-winged teal to range management on waterfowl production areas in southeastern South Dakota. *Journal of Wildlife Management* 32:295-298.
- Swanson, G. A., M. I. Meyer, and J. R. Serie. 1974. Feeding ecology of breeding blue-winged teals. *Journal of Wildlife Management* 38:396-407.
- Swanson, G. A., and M. I. Meyer. 1977. Impact of fluctuating water levels on feeding ecology of breeding blue-winged teal. *Journal of Wildlife Management* 41:426-433.
- Taylor, T. S. 1978. Spring foods of migrating blue-winged teals on seasonally flooded impoundments. *Journal of Wildlife Management* 42:900-903.
- Weller, M. W. 1979. Density and habitat relationships of blue-winged teal nesting in northwestern Iowa. *Journal of Wildlife Management* 43:367-374.

Appendix. Common and Scientific Names of Plants and Animals Named in Text.

Plants

Muskgrass	<i>Chara</i> spp.
Duckweed	<i>Lemna</i> spp.
Coontail	<i>Ceratophyllum</i> spp.
Pondweed	<i>Potamogeton</i> spp.
Bulrush	<i>Scirpus</i> spp.
Sedge	<i>Carex</i> spp.
Spikerush	<i>Eleocharis</i> spp.
Water lily	<i>Nymphaea</i> spp.
Alfalfa	<i>Medicago sativa</i>
Bluegrass	<i>Poa pratensis</i>
Millet	<i>Echinochloa crusgalli</i>
Milo	<i>Sorghum vulgare</i>
Rice	<i>Oryza sativa</i>
Widgeongrass	<i>Ruppia maritima</i>

Birds

Blue-winged teal	<i>Anas discors</i>
Cinnamon teal	<i>Anas cyanoptera</i>
Mallard	<i>Anas platyrhynchos</i>
Gadwall	<i>Anas strepera</i>

Invertebrates

Snails	Gastropoda
Midges	Chironomidae
Isopods	Isopoda
Beetles	Coleoptera
Mosquitos	Culicidae
Fairy shrimp	Anostraca
Water fleas	Cladocera
Dragonflies	Odonata
Water boatmen	Corixidae



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