

## INDIGO BUNTING - PASSERINA CYANEA

The brown-headed cowbird may parasitize this species. Indigo buntings abandon their nest if a cowbird egg appears before they lay any of their own eggs, but accept the egg after that point. Pairs with parasitized nests have less reproductive success. The bunting chicks hatch, but have lower survival rates as they must compete with the cowbird chick for food.

**Taxonomy:** Kingdom: Animalia Phylum: Chordata Class: Aves Order: Passeriformes Family: Cardinalidae Genus: Passerina Species: P. cyanea

### **Habitat:**

**Biomes:** Indigo Buntings breed in brushy and weedy areas. They're common on the edges of woods and fields; along roads, streams, rivers, and powerline cuts; in logged forest plots, brushy canyons, and abandoned fields where shrubby growth is returning. While migrating and in winter, Indigo Buntings forage in fields, lawns, grasslands, rice fields, as well as in shrubs, and trees.

### **Distribution:**

**In US:** The breeding range stretches from southern Canada to Maine, south to northern Florida and eastern Texas, and westward to southern Nevada. The winter range begins in southern Florida and central Mexico and stretches south through the West Indies and Central America to northern South America. It has occurred as a vagrant in Antigua and Barbuda, Barbados, Denmark, Ecuador, Germany, Iceland, Ireland, Netherlands, the Netherlands Antilles, Saint Pierre and Miquelon, Serbia and the United Kingdom.

**In Other Countries:** ^^^^^^^

**Holistic Description:** The all-blue male Indigo Bunting sings with cheerful gusto and looks like a scrap of sky with wings. Sometimes nicknamed "blue canaries," these brilliantly colored yet common and widespread birds whistle their bouncy songs through the late spring and summer all over eastern North America. Look for Indigo Buntings in weedy fields and shrubby areas near trees, singing from dawn to dusk atop the tallest perch in sight or foraging for seeds and insects in low vegetation.

**Species Richness:** NO SUBSPECIES

**Population Dynamic:** The species is classified as being of least concern according to the IUCN, with an estimated range of 5,900,000 km<sup>2</sup> (2,300,000 sq mi) and a population of 28 million individuals. Global population trends have not been quantified, but the species is not believed to approach the thresholds for a population decline warranting an upgrade in conservation status. The criteria for a change in conservation status are a decline of more than 30% in ten years or over three generations.

### **Evolution and Systematics:**

**Evolution:** NONE

**Systematics:** The indigo bunting is included in the family Cardinalidae, which is made up of passerine birds found in North and South America, and is one of seven birds in the genus Passerina. It was originally described as *Tanagra cyanea* by Linnaeus in his 18th-century work, *Systema Naturae*. The current genus name, *Passerina*, is derived from the Latin term *passer* for true sparrows and similar small birds, while the species name, *cyanea*, is from the Latin word meaning dark or sea blue. The indigo bunting is a close relative of the lazuli bunting and interbreeds with the species where their ranges overlap, in the Great Plains.

**Number of Species:** NO SUBSPECIES

**Number of Genera:** NO SUBSPECIES

### **Physical Characteristics:**

**Size and Length:** Length: 4.7-5.1 in (12-13 cm) Weight: 0.4-0.6 oz (12-18 g)

**Wingspan:** 7.5-8.7 in (19-22 cm)

**Coloration:** A breeding male Indigo Bunting is blue all over, with slightly richer blue on his head and a shiny, silver-gray bill. Females are basically brown, with faint streaking on the breast, a whitish throat, and sometimes a touch of blue on the wings, tail, or rump. Immature males are patchy blue and brown.

**General Body Features:** Indigo Buntings are small (roughly sparrow-sized), stocky birds with short tails and short, thick, conical bills. In flight, the birds appear plump with short, rounded tails.

**Special Features of the Body:** NONE

*Special Features of the Head and Sensory Organs:* On the other hand, a songbird such as the Indigo Bunting has eyes on the sides of its head. This arrangement gives these birds very little binocular vision, but gives them better vision all around them, which allows them to watch for predators. They get the whole picture all at once. This type of sight is called monocular vision.

*Dentition:* BEAK/LAMELLAE/GIZZARD

*Special Features of the Limbs and Digits:* NONE

*Any Special Internal Anatomy:* NONE

*Sexual Dimorphisms:* In fall and winter plumage, the male has brown edges to the blue body and head feathers, which overlap to make the bird appear mostly brown. The adult female is brown on the upperparts and lighter brown on the underparts. It has indistinct wing bars and is faintly streaked with darker markings underneath.

*Differences Between Juvenile Stage and Adult:* The immature bird resembles the female in coloring, although a male may have hints of blue on the tail and shoulders and have darker streaks on the underside.

### **Behavior:**

*Diurnal, Nocturnal, or Crepuscular:* Diurnal

*Activity:* Foraging for seeds and gleaning insects off branches in low vegetation, Indigo Buntings hop along the ground and cling athletically to stems and reeds. Singing males tend to perch high in shrubs, trees, or on telephone lines. When disturbed, an Indigo Bunting may fly to the top of a shrub, raise its crest feathers, and swing its tail from side to side. Indigo Buntings usually forage alone during the breeding season; on their wintering grounds and during spring and fall migration, they feed in flocks on lawns and open grasslands. Males defending territory approach each other with slow, fluttering "butterfly" display flight, holding their wings at right angles to their bodies. Early in the breeding season, you may see two males grappling in the air and falling to the ground, singing loudly, clasp each other's feet.

*Locomotion:* Feeding adults hop on ground and branches. Flight is direct. In territorial encounters, males glide and use a slow, fluttering "butterfly flight" with wings held at right angles to the body, and quivering in position, in approaching another male.

*Communication and Perception:* Male Indigo Buntings whistle a bright, lively song of sharp, clear, high-pitched notes that lasts about 2 seconds. They are voluble, singing as many as 200 songs per hour at dawn and keeping up a pace of about one per minute for the rest of the day. Notes or phrases are often repeated in pairs: "what! what! where? where? see it! see it!" This pattern is recognizable, although the precise tune varies from place to place. Young Indigo Buntings learn their songs from males near where they settle to breed, and this leads to "song neighborhoods" in which all nearby males sing songs that are similar to each other and that are different from those sung more than a few hundred yards away.

*Home Range:* Nonbreeding buntings are not territorial; in winter and in migration when feeding they remain at least 30-50 cm apart in flocks. Breeding territory size averages 1.4 ha. Females generally nest on territory of their social mate but may nest in an area with no resident male or in an area defended by another male. Nesting males and females feed directly on their territory and sometimes feed off the male's territory.

*Degree of Sociality:* Solitary in breeding season, loose flocks in migration and winter. No aggressive behavior in winter, and sing in migration only when near the breeding destination. Breeding birds often live near each other, perhaps attracted to each other for extra mating opportunities; birds are absent from apparently similar habitat patches in the same area. Male remains nearby the female during the days before she completes laying the clutch.

*Level of Aggression:* Early in the breeding season, shortly after arrival, mated males chase intruding males in their territory, giving buzzy cheet calls and supplanting them on perches. Some males grapple in the air and fall to the ground, feet engaged, one or both sing loudly and continuously. Males establish territory by singing and chasing neighboring males. Intruding males chased throughout the season.

*Migration:* Long-distance migrant. Indigo Buntings fly about 1,200 miles each way between breeding grounds in eastern North America and wintering areas from southern Florida to northern South America. The birds tend to migrate more or less due south, so buntings that breed in the eastern part of their breeding range also winter in the eastern part of the winter range, while western breeders are western winterers.

### **Predators:**

*Predators:* Predators at the nest are thought to be raccoon (*Procyon lotor*), opossum (*Didelphis virginianus*), skunks (*Mephitis mephitis*), mink (*Mustella vison*), red fox (*Vulpes vulpes*), feral cat and Blue Jay (*Cyanocitta cristata*). Long-tailed weasel (*Mustela frenata*).

*Anti-Predator Defenses:* Indigo Buntings avoid predation by concealing their nests. Nests in abrupt and closely managed edges of agricultural fields are more likely to be taken by a predator than nests where plant succession provides a variety of

plant heights and cover. In Michigan, nests in *Rubus* were often built near the edge of the bush, concealed by leaves both above and below, and were less visible from outside the bush than inside.

#### **Diet and Nutrition:**

*Adult Diet:* Indigo Buntings eat small seeds, berries, buds, and insects. Common seed forage includes thistles, dandelions, goldenrods, and grain such as oats; berries eaten include blueberries, strawberries, blackberries, serviceberries, and elderberries. Spiders and insect prey, which form the majority of their diet during summer months, may include caterpillars, grasshoppers, aphids, cicadas and beetles such as canker worms, click beetles, and weevils. The brown-tail moth caterpillar, which is covered with noxious hairs that cause nasty rashes and respiratory problems in people, presents no obstacle to a hungry bunting. On arrival to breeding grounds in spring, Indigo Buntings may feed on twigs, buds, and leaves of trees including aspen, cottonwood, oaks, beech, elm, maple, and hickory.

*Juvenile Diet:* Foods brought to nestlings in Michigan include grasshoppers from the ground, smooth green caterpillars from the woodland canopy, dragonflies, spiders, spider egg cases, and berries. Other foods include spiders, mayflies and other caterpillars and moths.

*Special Adaptations for Getting Prey:* Takes seeds from standing grass and herbs when it lands on a stem and shuffles upwards along the stem towards the seed head, the stem bending downward under the bird's weight; removes seeds from fruiting head. Also takes fallen seeds on ground. Eats as it finds food, husking small grass seeds with bill and tongue, gleaning small insects and spiders from leaves as it perches on small branches and moves through the canopy, beating larger insects against a branch.

#### **Reproduction:**

*Mode of Reproduction:* Monogamous

*Mating System:* Most breeding males have a single female on their territory, but 15% of the breeding males have  $\geq 2$  females, either at the same time or serially over a season. Mating is monogamous in a social sense, insofar as one male and one female usually occupy the same territory.

*Mating Season:* April to June

*Courtship:* Males do not sing often in courtship but they accompany their prospective mate, stay within a few meters of her, and chase other male buntings and sometimes other small songbirds foraging near the female. Female generally is not physically attacked by mate; occasionally male forces copulation with his mate.

*Territoriality:* HOME RANGE

*Mating:* In copulation, first the female crouches on a perch, calls twitter ti-ti-ti-ti, quivers wings, holds tail up; male flies to female, mounts her dorsally from rear, in flight, without song or other displays; female moves tail over her back during copulation. Copulation (cloacal contact) lasts about 2 s. Male often gives buzz during copulation, then flies from the female. Female often preens after copulation. Copulations are repeated 4-10 times/10 min.

*Nest Placement:* Indigo Buntings nest in fields and on the edges of woods, roadsides, and railroad rights-of-way. The female chooses a concealed nest site in low vegetation, within a meter of the ground. She locates the nest in a crotch or fork where branches meet, amid a supporting network of vertical and diagonal twigs. Occasionally an Indigo Bunting builds her nest in crop plants like corn or soybeans.

*Nest Description:* The female Indigo Bunting builds the nest alone—a process that takes up to 8 days early in the season and as little as 2 days later in the summer. The male may watch but does not participate. The nest is an open cup woven of leaves, grasses, stems, and bark, and wrapped with spider web. The inside of the cup is lined with slender grasses, tiny roots, strips of thin bark, thistle down, and sometimes deer hair. The cup is about 1.5 inches deep inside, with an outside diameter of 3 inches and an inside diameter of two inches.

*Egg-Laying:* Clutch Size: 3-4 eggs Number of Broods: 1-3 broods Egg Length: 0.7-0.8 in (1.7-2.1 cm) Egg Width: 0.5-0.6 in (1.3-1.5 cm) Incubation Period: 11-14 days Nestling Period: 8-14 days Egg Description: Unmarked white; a few have brownish spots.

*Hatching and Incubation/Gestation:* Naked except for sparse down; eyes closed; helpless.

*Development:* Altricial, naked except for sparse down, eyes closed, no visual response. Color of bare parts: skin pinkish orange, bill blackish, corners of mouth yellow, lining of mouth orange, no pattern, eyes closed, blackish through skin, egg tooth retained for 2 day.

*Parental Care:* Females feed young from day of hatching. Time of first feeding not described; females feed hatched young before all eggs hatch and some eggs hatch after young have been fed and brooded for a day. At most nests observed only females brought food to brood. After young leave the nest, females continue to feed them and males sometimes help in parental care. Females bring food to the nest, one or several insects held in the bill, and insert the insects into mouth of the nestlings when they gap.

Lifespan: Up to 13 years.

**Conservation:**

Official Federal Status: Least Concern

Special Statutes in Individual States: NONE

Threats: Indigo Buntings are generally abundant throughout their range, though populations declined by about 31% between 1966 and 2014, according to the North American Breeding Bird Survey. Partners in Flight estimates a global breeding population of 78 million with 98% spending some part of the year in the U.S., 51% in Mexico, and 2% breeding in Canada. The species rates a 9 out of 20 on the Continental Concern Score. Indigo Bunting is a U.S.-Canada Stewardship Species and is not on the 2014 State of the Birds Watch List. Indigo Bunting populations decrease with intensive agriculture, reforestation, frequent mowing of roadsides and fields, and increasing urbanization; they increase with the expansion of shrubby, weedy habitat. The males' showy plumage can be a handicap, as these bright blue birds are prized as cage birds in parts of Mexico, where they have been trapped for illegal sale. Indigo Buntings and many other small birds are commonly hunted on their tropical wintering grounds. During migration, many die after flying into buildings and transmission towers. These birds breed and sing along roadsides, and collisions with vehicles kill many birds in summer. In the 1970s, Indigo Buntings colonized Canada's Maritime Provinces, moving northward from their established breeding range in Maine. A warming climate may drive populations farther northward.

Conservation Efforts: ^^^^^^^

**Extra Facts:**

1. Indigo Buntings migrate at night, using the stars for guidance. Researchers demonstrated this process in the late 1960s by studying captive Indigo Buntings in a planetarium and then under the natural night sky. The birds possess an internal clock that enables them to continually adjust their angle of orientation to a star—even as that star moves through the night sky.
2. Indigo Buntings learn their songs as youngsters, from nearby males but not from their fathers. Buntings a few hundred yards apart generally sing different songs, while those in the same "song neighborhood" share nearly identical songs. A local song may persist up to 20 years, gradually changing as new singers add novel variations.
3. Like all other blue birds, Indigo Buntings lack blue pigment. Their jewel-like color comes instead from microscopic structures in the feathers that refract and reflect blue light, much like the airborne particles that cause the sky to look blue.
4. Bunting plumage does contain the pigment melanin, whose dull brown-black hue you can see if you hold a blue feather up so the light comes from behind it, instead of toward it.
5. Indigo and Lazuli buntings defend territories against each other in the western Great Plains where they occur together, share songs, and sometimes interbreed.
6. The oldest recorded wild Indigo Bunting was a male, and at least 13 years, 3 months old when he was recaptured and rereleased during banding operations in Ohio.

**Notable Species**: NONE