



## Blue Jay

The blue jay, *Cyanocitta cristata*, belongs to Family Corvidae, the Corvids, which includes crows, ravens, jays, and magpies in North America, and jackdaws, choughs and rooks in the Old World. Corvids have the largest cerebrums, relative to body size, of all birds, and scientists believe them to be among the smartest. The members of this family are especially noted for their excellent spatial memory and problem-solving skills. Corvids are social birds, and many species live in flocks when not nesting. The bold, colorful blue jay breeds from southern Canada south to Florida and west to the Rocky Mountains. This species was first described scientifically by Alexander Wilson, a Pennsylvania resident and acknowledged “father of American ornithology.”

**Biology** – The blue jay is 11 to 12 inches in length (larger than a robin) and has a blue back marked with black and white; its underparts are off-white, and it has a prominent blue crest on its head. The sturdy beak is straight and sharp, well suited for a variety of tasks including hammering, probing, seizing, and carrying. They often hold down objects with their feet against a limb and manipulate the food item, much like a parrot. To open an acorn, the bird grips the nut in one foot and hammers the shell apart with its bill.

Blue jays live in wooded and partly wooded areas, including extensive forests, farm woodlots, suburbs, and towns. About three-quarters of their diet is vegetable matter: acorns, beechnuts, various seeds (including sunflower seeds from feeding stations), corn, grain, fruits, and berries. The remaining 25% includes insects—ants, caterpillars, beetles, grasshoppers and others—along with spiders, snails, frogs, small rodents, carrion, and eggs and nestlings of other birds. They are quite opportunistic about feeding on the human landscape and will raid compost bins and garbage or any kind of bird feed including bread crumbs, suet, corn, and peanuts. In the spring, blue jays eat many kinds of caterpillars including those of the gypsy moth and the tent moth, major forest pests. Blue jays accomplish the difficult task of eating large, hairy caterpillars by skinning the caterpillar before eating it. In autumn, jays cache many seeds, especially acorns and beech nuts, under the leaf duff in forest clearings, plowed land, edges, and meadows. Confronted with abundant nuts and seeds, a jay may fill its expandable throat with several acorns or nuts; later, it will disgorge the food and cache or eat



it. Some research on jays equipped with radio transmitters revealed that individuals cache thousands of seeds each autumn. They retrieve some of the nuts later, but since even jays are forgetful or do not survive the winter, many of these seeds sprout the following spring. This helps forests to regenerate, particularly on cut-over and burned lands. For this reason, blue jays provide a very important ecological service to the forests and the wildlife that live there. Since the trees have value as timber, erosion control, and wildlife home and food production, jays also have significant economic value.

Blue jays are quite vocal. They sound a raucous *jaay-jaay* to attract other jays and as an alarm call. A bell-like *toolool* is given during courtship, as is a *wheedelee* call, sometimes referred to as the “squeaky hinge” call. Blue jays are good mimics and often imitate the *kee-yer* calls of hawks as well as crows, cats, and some human sounds. Adults give these calls in the presence of their young who imitate them, a kind of cultural transmission of information.

Blue jays have an interesting social courtship. In early spring, from 3 to 10 males (thought to be yearling birds) shadow one female, bobbing their bodies up and down and sounding *toolool* calls. Aggressive displaying apparently scares off the competitors one by one until a single male is left as the female’s mate. Ornithologists believe that older jays, ones that have bred in the past, pair up earlier and do not participate in courtship flocks. Some pairs remain partnered in multiple



years, occupying the same home range each year. Once paired, birds move about quietly, with the female giving *kueu kueu* calls to the male when he brings her food. Later the female, with help from her mate, assembles the breeding nest, often in a dense conifer or shrub, 5 to 50 feet above the ground. Jays are very cautious around their nest and seem to readily abandon a partially built nest if it is discovered by a potential predator. The nest is 7 to 8 inches across, built of twigs, bark, mosses and leaves, with a 4-inch central cup lined with rootlets and other fine plant materials including small flower clusters. In a survey of blue jay nests in Pennsylvania, 20 were in white pine, 18 in hemlock, 2 in red spruce, 2 in fir, 12 in white oak, 5 in alder, with others in sour gum, viburnum, pitch pine, and dogwood. Jays tend to build their nests on horizontal limbs that are well hidden but afford a good view of their surroundings. Female jays sit very tight on nests when intruders get close.

In May or June the female lays three to six eggs, pale olive or buff, spotted with brown or gray. Both sexes incubate. Blue jays are silent and furtive around the nest. Pairs can nest very close to a house without making many sounds or otherwise attracting attention to themselves. Many jay nests go undetected in neighborhoods. Blue jays strongly defend their nest against intruders, calling loudly and diving at and mobbing hawks, owls, crows, squirrels, cats, and ground predators. Yet they will allow other jays to land quite near the nest. In this way, blue jays do not defend classic exclusive nesting territories but rather a home range where they forage near the nest and tolerate some jays nearby. Pairs of jays nesting nearby often assist each other in defending against

predators. The eggs hatch after 17 to 18 days. Both parents feed the young, bringing them insects, other invertebrates, and carrion. Adult blue jays sometimes raid the nests of smaller birds, including vireos, warblers, and sparrows, eating eggs and nestlings. Biologists believe that forest fragmentation is giving jays and other nest predators greater access to the nests of woodland birds. Although jays have the reputation of nest-robbers, there is a lack of evidence that this is a large part of their diet or that they are a significant contributor to declines of songbirds. Like other songbirds, jays have their own nest predators and need to defend their nests from chipmunks, squirrels, grackles, crows, hawks, owls, and snakes. Jays often drive off nest predators, inadvertently assisting the nest defense of other birds nearby.

The young leave the nest after 17 to 21 days. The family stays together for another month or two, with the fledglings clamoring for food and their parents obliging them, even when the juveniles are almost adult-size. In the North, blue jays raise one brood per summer; jays in the South may rear two broods. When the adults molt in July and August, their new plumage comes in a lustrous, beautiful blue. (In fact, the blue of the birds' plumage is not caused by pigmentation but by feather structure: small air pockets in the feathering do not absorb the blue part of the light spectrum and instead cause it to scatter, giving an appearance of blue. Grind up a jay's feather and all that is left is a blackish powder.)

In late summer and early fall, family groups merge into larger foraging flocks. As the weather grows colder these groups fragment again into smaller bands. Birds from Canada shift southward in September and October, and juveniles from the northern United States also drift to the south. In some years—perhaps when wild nuts or mast are scarce—blue jays move in large numbers. Accipiters, particularly sharp-shinned and Cooper's hawks, accompany the flocks, picking off unwary members. Blue jays are common migrants in Pennsylvania in April and early May. Jays commonly cross open areas very carefully in a single file. The longevity record for the species is 16 years in the wild, but a captive jay lived 26 years and three months. Among adults, the annual survival rate is estimated at 55%.

**Habitat** – Blue jays are fairly cosmopolitan, living in a wide variety of wooded habitats but avoid strictly coniferous forests and are less common in deep forests than in smaller woodlots. They thrive in areas with plentiful nut-bearing oak and beech trees. Although primarily forest birds, blue jays have adapted to breed in cities and towns, where they nest in parks, cemeteries, yards, and along tree-lined streets.

**Population** – The population in Pennsylvania and the Northeast is healthy. On a continental scale, the species is expanding northwest into Canada. Blue jays, like other members of the crow family, are susceptible to West Nile virus, but the population seems somewhat resilient despite this vulnerability. Biologists estimate there are two or three breeding pairs of blue jays per 100 acres of suitable habitat.