

In Pursuit of the Dark-Eyed Junco

With a light mist dusting my windbreaker, I ducked farther into the jacket's hood with a shiver. A tropical mist. Nothing to bring on a chill, but a sure reminder of the early hour. Crouching beside the protective bole of a tree, I sighted my quarry alighting on a nearby branch. Shrugging the weathered binoculars from beneath my jacket, I fumbled, turning the focus knob. My mark eyed me curiously, cocking its head as if to question my pursuit,



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shrouded too in a shadowy hood — a positive ID. With a practiced glance my eyes darted to the spindly legs for the innocuous colored bands that distinguished each individual.

Without warning, a stygian mass loomed shapelessly in the view's backdrop, and a flash of white flickered in my peripheral vision. The blinds snapped shut, the binoculars fell to my chest. A sophomore — no doubt of the female persuasion. Sensing the awkwardness of the situation, the junco slipped from its perch as if to mock me and winged its way across the prim, manicured lawn towards a cluster of eucalyptus. Back at the window, a finger tenderly peeled away a blind-slat. I resigned myself to wait with a helpless shrug. The police would be there any minute...

It's strange to think that in years past, the world of the winged had gone all but unnoticed to me, with the megafaunal exceptions of raptors, owls, and the devious corvids. Despite my years of experience in a natural wildlife museum, blasé songbirds had seemingly little to offer — the backyard equivalent of the pigeon or seagull. But as my college years drew to a close, I had an urge to put my biology degree to use and an opportunity to study the dark-eyed junco on campus presented itself at an opportune time.

The dark-eyed junco is a species of sparrow most often found in the mountains in coniferous and live-oak woodlands. Though in the past juncos were divided into a number of distinct species, in 1973 the American Ornithologists' Union determined that they were in fact simply subspecies of the dark-eyed junco, *Junco hyemalis*. The Oregon junco frequents San Diego County annually and is a common winter visitor. Typically,

they descend to lower elevations between mid-September and mid-October and return to higher elevations anywhere from mid- to late April. Within the last nineteen years, juncos have taken up a year-round residence at UC San Diego. The breeding population now includes as many as 130 individuals.

I was assigned the task of locating nesting sites so that we could band nestlings before they fledged. Days later, I found myself armed with a campus map and a worn pair of binoculars distinguished by a stark "26" emblazoned in red nail polish along the grip. And that was how I ended up on the lawn outside the sophomore apartments, wondering who would arrive first: the campus police or a hell-bent boyfriend with murder on the mind.

Nest searching — not to mention bird watching — requires patience and vigilance. And the self-

confidence essential to parading about in public areas training a pair of binocs at seemingly nothing. If there's one thing I've learned, it is that Mother Nature is a humbling professor. Imagine, for a moment, hunting for a nest four inches in diameter, nestled in a low-lying shrub, on a 1,202-acre campus. Far from the vast rain forests or forlorn savannas, I was traipsing through a preserve of the UC Regents' design. I had to contend with the cyclic flow of close to 33,000 people and 25,000 vehicles daily. Moreover, the campus was growing, and these nests were still no larger than my fist. There had to be a method to my madness.

Scouring each shrub was a futile task. The key, I learned, was to let the junco do the work for you. By pinpointing them via song, I could watch them forage until they returned to their nest. Easier said than done? Of course. Essential to our study? Indubitably. My mantra became "know thine enemy" — I set out to learn every last quirk of the mythological junco.

Dark-eyed juncos have very distinct markings, which make them easily identifiable in the field. Males have a characteristically dark hood ranging from an austere black to a dark gray, with an almond-colored back and white belly. The white outer tail feathers are easy to spot in flight, and are often displayed with a quick flicking motion while foraging on the ground. Their bills are pinkish tan and their eyes brown. Females are similar to males with the exception of a paler hood, often a soft brown or smoky gray. Immature juncos resemble sparrows with a streaked toffee plumage that develops into an adult plumage within two to three months after hatching. Until its hood darkens, an immature's sex is difficult to

visually determine. Juncos reach adulthood following their first molt.

To recognize individuals in the field, every bird must be "fingerprinted." Each bird is caught for a short time and banded with colored plastic bands and an aluminum ID band authorized by the Bird Banding Laboratory and the US Fish and Wildlife Service. In recording the color sequence of bands and their left- and right-leggedness, each bird can be given a unique color combination.

With three bands and nine colors, there are roughly 60,000 possible combinations. Red, Yellow, Orange; Blue, Dark Blue, White... a safecracker's nightmare, but a sure way to fingerprint a bird.

When the chicks are banded, a number of data are recorded for the nestlings. Once a chick is fitted with the metal and color bands whose number and color sequence are permanently recorded, it is weighed and the length of its tarsus (thigh) measured. Blood samples are also taken to help determine its sex prior to maturation.

The timing of nestling banding is critical, the appropriate time being roughly the seventh day. Nestlings banded day six or earlier risk being removed from the nest by the mother and discarded like foreign debris such as an intrusive twig or a small stone. And yet, if nestlings are prematurely banded with material that is easily removed, only the banding material is discarded. Banding after the ninth day, when the instinct to fledge kicks in, can lead to the nestlings fledging before they're capable of surviving on their own.

Throughout the year, a junco's diet consists primarily of weed seeds such as hairy vetch (*Vicia villosa*), sweet clover (*Melilotus officinalis*), foxtail (*Setaria glauca*), niger thistle (*Guizotia abyssinica*), canary grass (*Phalaris canariensis*), millet (*Panicum*



milliaceum) and flax (*Linum usitatissimum*), as well as waste grain during the fall and winter, and insects while nesting. Juncos spend a great percent of the day foraging for food on forest litter, foliage, and bark.

next page: Risks to the bird... and to the birder

During the breeding season male juncos tend to sing more often, perhaps to attract mates or for territorial defense. Songs are usually sung in bouts from exposed, elevated perches such as tree branches and dead limbs, telephone wires, street lamps and rooftops. Juncos have been noted to have repertoires of as many as seven different song types, each of which is highly stereotyped. Within a bout, the same song can be repeated as many as 120 times



Juncos in the nest. Photo by Dr. Lloyd Glenn Ingles, © 1999 California Academy of Sciences

in succession, with intervals of two to seven seconds between each song. Before changing song types, however, juncos usually move to another perch or perform another activity. Juncos are sensitive to ambient temperatures and are most active early in the morning and in the afternoons.

Nests are built in cup-shaped depressions near the ground. They are often concealed at the bases of shrubs and weeds; beneath tree roots, stumps, and fallen logs; in small trees and bushes; nestled in patches of ivy; beneath embankments along roads and streams; and in areas with high ground cover. In more urban environments, juncos take advantage of buildings, climbing ivy, lighting

fixtures, enclosed courtyards, flowerpots, and trellises.

Typically, nests are built out of mosses, twigs, grasses, strips of bark and rootlets, and are lined with grasses, sedges and hairs. The breeding season usually lasts from March to August, during which time about four eggs are laid. Eggs are characteristically white or pale blue-white, with brown and gray crown of blotches or fine speckles at the ticking and a cinnamon larger end. Juncos are monogamous and raise two or three broods a year. After the female has initiated incubation of a second clutch, she essentially ignores her first brood's fledglings and the male assumes responsibility for feeding them.

Female juncos are predominantly responsible for building the nest. As soon as a suitable nest site has been chosen, loose debris is removed and a depression is scratched out. Prior to the actual construction of the foundation, females test nesting material, picking up branches and twigs and then dropping them. Once she has found a suitable site she will pick up clumps of rootlets, dried leaves and bark. These are laid haphazardly, covering the entire depression. As soon as the foundation is complete, the female builds a cup of fine rootlets and grass stems, weaving them with her bill and feet, and then defines the shape of the cup by sitting in the nest, fluffing herself and vibrating. Last, she lines the cup with the finest grass stems, hairs, and moss setae, delicately interweaving them.

Once the nest is finished, the female lays her eggs, one per day in succession. The incubation period follows soon after the third egg is laid and lasts about 11 to 12 days. During this time, males tend to sing and forage ceaselessly without returning to the nest, while females rarely leave the eggs except for brisk, hurried foraging bouts.

After the young hatch, both parents begin to feed the nestlings throughout the day. The foraging behavior of the pair during this period is hurried as well, characterized by repeated trips back and forth to the nest. Parents pick up moths, worms and small insects and return to the nest with the prey tucked in their bills. As they approach the nest, however, they tend not to enter immediately. Instead, they often perch within the vicinity of the nest and check for possible predators. Once assured, they will enter the nest in a decisive, deliberate manner as quickly as possible.

In heavier ground cover and shrubs, juncos may access the nest through one opening and leave through another. Junco nests are kept meticulously clean. Females might be observed eating both the discarded egg shells from hatchlings as well as their excretory sacs. After day four or five, however, the excretory sacs are habitually removed by the parents and deposited elsewhere.

Brood parasitism by brown-headed cowbirds (*Molothrus ater*) is not uncommon. Cowbirds don't build their own nests: they are opportunistic parasites that lay their eggs in the nests of other small passerine birds, most often sparrows, warblers, vireos and flycatchers. Dark-eyed juncos are frequent hosts to cowbird parasitism. A cowbird can lay anywhere from a 11 to 40 eggs per season. Typically, when a cowbird lays an egg in the nest of her host, she removes one of the host eggs at the same time. A cowbird might also pierce one host egg with her bill, in effect killing the egg. Sometimes, more than one cowbird egg, each from a separate female, is found within the same nest.

Once parasitized, host parents have a number

options, including ejection of the parasitic egg, nest desertion, piercing the parasitic egg's shell, or egg burial (rebuilding a new nest atop the parasitized one). The cowbirds' parasitism of host nests is timed in such a way that their young tend to hatch earlier than junco young, resulting in cowbird young dwarfing their junco nest-mates.

Bird watching is not without its risks. As passive as your interests might be, juncos — not to mention the rest of the forest's inhabitants — are sensitive to predators and protective of their young. Contrary to the old-wives' tale, birds will return to a disturbed nest, but nest desertion, premature fledging and opportunistic predation are all real threats. Ravens (*Corvus corax*), scrub jays (*Aphelocoma coerulescens*) and brown-headed cowbirds (*Molothrus ater*) won't think twice before investigating an inadvertently advertised nest.

As for the birdwatcher himself? You might be surprised how easily one can be mistaken for a deviant, dirty old man. But for a reported peeping-tom, I must not have come across as overly threatening.

Fifteen minutes later, a patrol car pulled up. Despite my imposing 6'2" build — and my being hooded like the Unabomber — the sophomore must have painted a more harmless picture.

Assessing the situation, the cop in the patrol car crept by. With a friendly wave and a smile, I returned to watching a prickly pair who had chosen to nest in the resident dean's geraniums. Intrigued by the boldness of the purported pervert, the gruff campus cop braked, emerged from the cruiser, and approached me with a calculated stare, one hand hovering near his holster Wyatt-Earp style.

I had some explaining to do.

One look at my map (penned with nesting sites) and a pair of binoculars later, a smile cracked the officer's leathered face. He walked away with a chuckle and a shake of his head; I wasn't sure if he was laughing at my having been watching birds, or that I hadn't been watching the young lady.

Along the way, I managed to become a legend — not throughout campus; the school paper never picked up the story of the Audubon-toting miscreant — but certainly within my family. My uncle David beamed while retelling his version of the story, milking it for every drop. As he saw it, his nefarious nephew had beguiled the cops — "Little did they know," he'd giggle, "he wasn't watching juncos... he was watching bush-tits."

Matthew Bettelheim graduated from UC San Diego with a B.S. in Biology, and is a freelance science writer in the Bay Area.