The Outside Story

Birds' Nests and Lichen Camouflage

By Rachel Sargent Mirus

Birds use a wonderful variety of materials and techniques to create their nests. Some nests are small and tidy, like grass baskets lined with cozy feathers. Others are large and messily blobbed with mud. Some species build their nests in trees, some on the ground, and others woven into wetland plants or adhered to cliff faces – or your back porch wall. I've spotted and admired many birds' nests, but never one made by a ruby-throated hummingbird or a blue-gray gnatcatcher. This is likely because both species shingle their nests with lichens, making them exceptionally well camouflaged.

Both ruby-throated hummingbirds and blue-gray gnatcatchers breed in the Northeast, arriving and beginning their nest-building in early spring, according to Robyn Bailey, NestWatch project leader with the Cornell Lab of Ornithology.

While many birds incorporate lichens into their nests, researchers believe that hummingbirds and gnatcatchers use lichens every time. Bailey cited a 2010 study from Ohio in which "every published nest description mentions the presence of lichens as exterior shingling on gnatcatcher and hummingbird nests."

Hummingbird nests are very small, about 2 inches wide and 1 inch high, and shaped from thistle and dandelion down stuck together with spider silk or pine resin. Gnatcatcher nests are slightly bigger, up to 3 inches wide, and are built in layers. The first structural layer is woven from fibrous materials such as stems, bark, and grass, with each layer incorporating finer materials until the inner cup layer, which is lined with soft materials including plant down, cocoons, hair, or feathers. Both species attach their nests firmly to the tops of slender, horizontal branches. The birds use spider silk to plaster the outside of the nest and the supporting branch with lichens, merging the nest silhouette with the contours of the branch. Unless you're looking directly down at the eggs inside, one of these nests looks just like a lichen-encrusted knot.

Hummingbirds and gnatcatchers are pragmatic about their lichen choices. They collect nesting materials with their beaks while hovering in the air, Bailey said. Consequently, they favor common foliose (leafy) lichens growing on trees, with fat lobes that attach loosely to the bark and are easy for a beak to pick up.

In a survey of nests, the Ohio researchers found hummingbirds and gnatcatchers preferred lichen species including hammered shield lichen (*Parmelia sulcata*), two speckled shield lichens (*Punctelia spp.*), and greenshield lichen (*Flavoparmelia caperata*). All of these lichens tend to form round doily-like blotches on trees, ranging in color from powdery gray to faded cyan to pale green.

Sourcing materials is a challenge for all nest-building birds. If they prefer or require a material that is hard to find, that could lower their ability to build a successful nest. Bailey thinks hummingbirds and gnatcatchers rarely, if ever, have trouble finding lichens in northern forests. Both nest in lichen-encrusted habitats. However, the Ohio researchers speculate that air pollution could impact these birds through the lichens they harvest. Some of the lichen species hummingbirds commonly use in their nests, including a speckled shield lichen and the greenshield lichen, are sensitive to air quality, leading researchers to raise the possibility that "increases in air pollution may have deleterious consequences on the nesting success of blue-gray gnatcatchers and ruby-throated hummingbirds."

Hummingbird and gnatcatcher nests are rarely re-used, even if the birds can nest twice in a single breeding season. "The nests get dirty, and predators find them," said Bailey, and most nests fall apart during the winter, before the birds return. The birds do sometimes re-use materials from the first nest to make a second nest within the same breeding season.

While the nests themselves are ephemeral, their impact on lichens may not be. A preliminary study from Virginia found that hummingbirds tend to place nest lichens where they might survive or even thrive. The researchers found that the lichens can persist at least up to three years after being incorporated into a nest, giving the lichens the opportunity to grow onto the branch where the nest was built and suggesting that the birds could help their favorite lichens spread to new homes.

Given their effective camouflage, I don't expect to stumble upon a ruby-throated hummingbird or blue-gray gnatcatcher nest, but I can look for familiar lichens on the trees I pass and imagine how they might appear as shingling on a tiny nest.

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