

If such deforestation meant fewer neotropical migrants could return north to breed, then their populations should be declining throughout North America. That was not the case, according to two studies in New Hampshire and the southern Appalachian Mountains. Researchers there found no significant decline in breeding populations in two extensive forest tracts.

It seemed the songbirds were disappearing only in areas of fragmented forest, which makes up the great majority of breeding habitat for forest species in the eastern U.S.

### Seeking Causes

Robinson set out in 1985 to find out why. He began by studying three tracts of "small and extremely fragmented" woodlands near Lake Shelbyville. The woodlots, ranging in size from 35 to 170 acres, are islands in a sea of fields. Robinson censused the area extensively in 1985 and 1986; other birders have continued monitoring since then.

The results: drastic decreases in populations. Since the study's first year the populations of seven neotropical species have declined by at least 50 percent. Robinson found that 80 percent of all nests there were destroyed by predators; 76 percent of neotropical migrant nests were parasitized by cowbirds "the highest predation and parasitism rates ever recorded for a forest bird community," Robinson said. Of the birds trapped in mist nets in late summer, only 10 percent were juveniles, indicating very low rates of reproduction, he said.

Some predators of forest bird nests such as raccoons, snakes, and Blue Jays have greatly increased in numbers along with increased agriculture, suburbanization, and forest fragmentation. Cowbird numbers, too, have risen. The birds find abundant waste grain in the large fields characteristic of modern farming.

The Lake Shelbyville woodlots, it seemed, were not large enough to support self-sustaining populations of Wood Thrushes and other songbirds. Robinson thinks such woodlands may be "population sinks" that continue to support only those neotropical migrants that disperse from healthy populations elsewhere. To compare those fragments with a larger forest area, he began working in the Shawnee National Forest.



*This Wood Thrush nest photographed by Todd Fink on 4 June 1991 in Union County contains three host eggs and two cowbird eggs. Cowbird parasitism is adversely affecting Wood Thrush nesting success in southern Illinois.*

### Illinois' Big Woods

The Shawnee is a quilt of diverse topography and land usage at Illinois' southern tip. Though it includes a few good-sized forest tracts, it too is largely fragmented. Clearcuts and agricultural fields create abundant edges within the forest.

Robinson's first finding there was that nest predation was less widespread in the Shawnee than at Lake Shelbyville. Predators found between 50 to 80 percent of nests. That was no surprise: some of the chief nest preda-

tors, such as grackles and crows, are associated more with open areas and forest edges than with forest interiors. Places still exist in the Shawnee where you are unlikely to see a crow or a grackle.

What was a surprise, though, was the abundance of cowbirds, also usually considered a bird of fields and edges. Robinson's nest searchers found as much cowbird brood parasitism in the forest interior as at the edges. Over half the nests found by researchers contained at least one cowbird egg; 90 percent of Wood Thrush nests had been parasitized. It seemed a wonder that there were any thrushes left in the Shawnee at all.

Robinson posits that both his study areas may be "saturated" with cowbirds; that is, they may currently support the maximum number of cowbirds that can use available hosts. That does not bode well for species like the Wood Thrush, which presumably continues to be found in both areas only because dispersing birds from other areas attempt to breed there.

These birds may be coming from other, far less fragmented national forests in Indiana and Missouri, where researchers have documented much lower rates of parasitism. Other species that seem to be facing the most severe threats are Scarlet and Summer Tanagers and Cerulean, Hooded, and Swainson's Warblers.

### Cowbirds and the Future

Several reasons exist explaining why neotropical migrants are particularly susceptible to nest predation and parasitism. They tend to nest more or less in the open, either on the forest floor or among vegetation, but seldom in more protected cavities. And because they did not evolve in conjunction with cowbirds, most species have not learned to contend with brood parasitism by removing cowbird eggs from their nests or abandoning parasitized nests.