

"Five different times over the last 15 years, I've seen three adult western bluebirds attending one nest," says Dick Purvis. "In all five cases, there were two males and one female, and all three adults were seen to feed the young. I knew these were not young-of-the-year birds hanging around to help their parents with a second nesting," Dick adds, "because in each case the nest was the first one of the year."

Keep an eye on the adult birds during incubation. Are both of them entering and leaving the box — or are they nowhere to be seen? A cold snap can cause so much stress that a female will abandon her eggs. But she and her mate won't necessarily leave the area. Jill Miller of Natick, Massachusetts, tells of bluebirds abandoning four eggs because of two weeks of nasty weather. "They built a new nest in the next box to the east and began laying eggs in it," Jill reports. The late Harry Krueger had many records of color-banded bluebirds that built second nests right on top of abandoned eggs. Krueger determined that it took the female at least 10 days before she was able to lay new eggs.

Sometimes eggs are abandoned because they are infertile or because the embryos don't develop for some reason. Kelley Coppens of Bridgman, Michigan, noted that the five beautiful blue eggs in one of her nestboxes didn't hatch when they were supposed to. "The female continued to sit, and the male continued to feed her and 'run off' anything that got close to his territory," Kelly says. Eventually the pair became aware that something was wrong. Kelly watched them act confused for a couple of days and then abandon the eggs.

If the female dies during egg laying or incubation, the male will not be able to incubate the eggs on his own; he will have to abandon the nest. What to do with the abandoned eggs? If you conclude that a box is abandoned, you can remove the nest and its contents so other birds may claim the space.

"I once found a bluebird female dead on the ground," relates Dorene Scriven, "and inside the box, the eggs were still warm. Dorene says she took the eggs, marked them very softly with pencil, and distributed them in other nests (she has the



Six bluebird eggs in one of Malinda Mastako's backyard nestboxes. Only 3.5 percent of eastern bluebird clutches contain as many as six eggs, according to data from Cornell's Birdhouse Network.

permits to do this legally) where the eggs were about the same age. Because she had marked the eggs with pencil, she could confirm that they did eventually hatch. "That was very successful," Dorene says with pleasure.

"The important thing in this situation is to place the eggs in a nest where the eggs are the same age so they will hatch at the same time," Dorene emphasizes. However, if you are a backyard bluebird monitor with only a few boxes, you will be very fortunate to have nests at the right stage of development to accept abandoned eggs. Your chances of salvaging abandoned eggs are improved if you network with other bluebird monitors in your vicinity.

Once eggs are laid, climbing predators become interested in a nestbox. The box develops a scent that grows stronger as the eggs hatch and the young birds develop. The scent is what attracts some predators, especially snakes. Raccoons and opossums can also learn to recognize nestboxes by sight.

If your backyard box is properly mounted and baffled, you have nothing to fear from climbing predators. If you have any doubts about how well protected the box is, remember to check for scratch marks that would indicate a predator is trying to climb your mount. "You won't usually see a predator at your box," says Elsie Eltzroth, "but you may find evidence after the fact." A thin layer of grease on a pole will reveal any raiding attempts by snakes or other climbing predators.

If a clutch of eggs seems to have vanished, look in and under the nest materials for broken eggs or

Meet Malinda...and Fred and Ethel

In her backyard near Detroit, Michigan, Malinda Mastako had been monitoring bluebirds for five years when she shot the photos of developing nestlings shown on the following pages in spring 2001. Malinda knows the parent bluebirds well. "Fred" was hatched here in the backyard in 1998," Malinda says. "He was the kid who would not leave home no matter how much they chased him. In 1999, he nested in the front yard while his parents used the backyard. After his father was killed by a hawk during the third nesting that year, Fred took over the backyard as well."

"Ethel" is Fred's second mate, Malinda says. "This is their second year together. Last year they nested four times and fledged 17 young. They were here all winter in a group of 20 or so that lived in the nearby woods. They visited my yard daily to drink and bathe, and to dine on peanut butter mix and mealworms. In spring, they chased off the other bluebirds, and on March 25, Ethel began laying eggs."

Before the first clutch of four had fledged, Malinda says that Ethel had chosen another box in the backyard (Malinda provides a choice of four) for her second nesting. She built her second nest and started laying eggs just five days after the first clutch had fledged. On the morning of May 24, 2001, the first chick in Ethel's second clutch of the season began pecking its way out of its shell...and Malinda began to document a most unusual nesting.



DAY 1, 7:45 A.M.

The first chick emerges on a gloomy, rainy day. The weather will make it difficult for the parents, Fred and Ethel, to find small soft insects for the newly hatched chicks.



DAY 1, 10:30 A.M.

Only two nestlings hatch on the first day. Already the nestlings can raise their heads and gape in response to Malinda's whistle. Ethel apparently eats the eggshells; she is not seen removing them from the nest.

bits of shell. House sparrows often break eggs and basically trash a nest. Neatly punctured eggs may be the work of a house wren. If the eggs really are completely gone, that may be the work of a house wren or snake. House wrens sometimes remove eggs, and snakes will swallow them whole.

Though broken or missing eggs seem like a tragedy, Erv Davis of Charlo, Montana, notes that birds are resilient and a female will likely lay new eggs if a clutch is lost. "Once, a snake demolished six eggs in a western bluebird box," Erv relates. "I cleaned it out, and Mama and Pop went back in, laid six more eggs, and had a successful fledging."

Nestlings Emerge — Young Birds Develop

When nestlings hatch, it is often during the first two hours after dawn. Sometimes all the young birds hatch out within the space of a half hour; it seldom takes more than a day for an entire clutch to hatch. The chicks manage the escape from their shells on their own; the parents don't normally assist in the process except to remove the eggshells from the nest. Often the female will eat the shells to recycle the calcium.

When you look inside the nest, the little birds will be pressed so close together they might as well be a tangled lump of fishing worms. And it's so dark in the box — how can you tell if they all hatched successfully?

Of course you are eager to get a count, but birds that are just a day or two old are still quite fragile,

and you don't want to disturb them. Keith Kridler suggests a trick that makes getting a head count easier. "You can make the nestlings think their parents are there to feed them," he says. "Just make a series of high-pitched whistle notes. If the little birds are hungry, they will raise their heads and open their mouths to beg for food. It's easier to



Fred guards the yard from his favorite perch — a shepherd's crook near the middle of the yard — while he takes a break from feeding his nestlings.

Each nesting season, The Birdhouse Network provides several nest-box cams for you to monitor the development of bluebirds and other cavity-nesting species in real time. Go to <http://birds.Cornell.edu> and click on Nest Box Cam.



DAY 2, 7:30 A.M.

A third chick hatches 24 hours after the first two. It is still cold and rainy, and Ethel spends much of her time on the nest. Fred busily brings tiny bugs to the box. Sometimes he is so wet his blue feathers look black.

count the open mouths than it is to count a tangle of bodies.”

The parents will start feeding soft insects to the chicks within an hour of hatching. Both the male and the female feed the nestlings. During the first few days, Dad may be especially busy feeding because Mom has to spend much of her time brooding the babies to keep them warm. So if it's a cold,



DAY 3, 8:30 A.M.

And a fourth chick hatches a day later! “Tiny” has flopped over but is gaping, ready to be fed. Having chicks hatched 48 hours apart will make it difficult for the parents to properly feed, brood, and fledge them.

rainy day, refrain from monitoring boxes with young nestlings inside unless you are sure the female is not incubating. If the female leaves the nest when you open the box, the young birds could become chilled.

Keith Kridler also advises that you refrain from monitoring just before dark. “If a female is incubating eggs or brooding young and leaves the nest, she may be too frightened to return before morning, and eggs or young could perish on a cold night.”

Nestlings cannot regulate their body temperature for the first six days or so. They rely on their mother to keep them warm. The father can usually keep young nestlings fed if something happens to the mother, but he can't keep them warm because he has no brood patch. As a result, a spell of cold spring weather can be doubly threatening to young nestlings. Food becomes scarce because of the weather, and if the mother leaves the nest to help feed herself and the nestlings, the babies might die of exposure. If she sits tight, they may still weaken or die from hunger.

The first time you check a box of nestlings you may find that not all of the eggs have hatched. “Among bluebirds, unhatched or infertile eggs occur in approximately 10 to 15 percent of nests,” says Tina Phillips, project leader of The Birdhouse Network for Cornell Lab of Ornithology. TBN participants have reported unhatched eggs in as many as 25 percent of nests in some years.

How can you be sure an egg is not going to hatch? “In my area, bad eggs often have fly specks on the shell,” says Keith, “because flies can smell



Ethel flies from her nestbox with a fecal sac. Young nestlings produce feces in a gelatinous sac that the adults carry away from the nestbox. By the time the nestlings fledge, they stop producing prepackaged poop. The nestbox is Springer's Chalet (p. 101). Because of the cold weather, Malinda has boarded up the vents. Under the entry hole, she has hot-glued a piece of bark mulch. “As I watched Ethel building the nest, I could see that she was having difficulty getting in and out,” Malinda says, “and my scratching up the front of the box wasn't helping.”