Low-Maintenance Barred Owl Nest Boxes

Alfred Maley

This article describes how to build Barred Owl (*Strix varia*) nest boxes that are durable, lighter than previous designs, and easy to maintain. The boxes are made from one-half inch pressure-treated (PT) plywood and are given strength by the innovative use of PT balusters attached to the interior of the box with stainless steel deck screws. The author has deployed such boxes in Hampstead, New Hampshire, over the last decade or so, with nearly twenty successful nestings and no known failures.

Previous Designs

A useful design for such boxes was first published many years ago in Carrol L. Henderson’s classic *Woodworking for Wildlife* (Minnesota Department of Natural Resources), but that design employed three-quarter inch exterior plywood and was about one-third heavier than the current design. Attempting to place just one of these...
boxes in a tree made it clear to me that there had to be a better way. Other designs using wide pine boards were similarly heavy as well as prone to rapid decay.

A New Approach

Because of its laminate structure, nailing or screwing the edges of plywood together just wouldn’t work. However, placing square, PT balusters in the four interior corners of the box and screwing the sides to the balusters made it possible to use lighter one-half inch plywood, dramatically reducing the weight of the finished boxes and making for a box that was also very strong.

Needed Materials

Pressure-treated (PT) plywood is normally wet and green when purchased at the local lumber yard. Thus it is prudent to buy a 4 x 8 sheet of one-half inch PT plywood several months before constructing the boxes. Summertime is the ideal time to do this. The plywood can be stood up in the garage or other protected area and will be dry enough to accept boiled linseed oil or other protective finishes when the boxes are completed. Square PT balusters come in lengths up to 48 inches; two of those are sufficient for each box. It’s best to buy these at the same time as the plywood and sticker them so they dry out as well. Buy an extra one or two in case they warp excessively or you make a mistake in cutting.

Because current PT products contain lots of copper, which corrodes base metals, it is essential to use stainless steel screws for assembly. Square-drive 1 5/8” screws work well. Stainless steel trim washers (available through <http://www.mcfeeleys.com>) are great for spreading the pressure of the screw head over a wider area of plywood, and they dress up the box as well.

Cutting and Assembly

Once the plywood is dry, the depicted cutting pattern can be used to make two boxes, with enough plywood left over for a meat feeder, another topic. Note that there is a gentle slope to the roof so that water runs off. All sides of the roof have an overhang to avoid water penetration, although some snow and rain will inevitably come in through the entrance hole, which should be cut before assembly begins.

The Duck Ladder

Chances are your owl box will be occupied by Wood Ducks at some point if it is anywhere near water. Because ducklings cannot climb up the smooth plywood interior of the box, I always include a duck ladder in my owl boxes. This consists of a piece of quarter-inch hardware cloth, a wire mesh, screwed to the inside of the front of the box. Even if ducks use the box for a year or two, owls may eventually take over.

Assembly, Continued

I recommend you start by attaching pieces of baluster to both the front and back corners of both sides of the box. Place a baluster one inch from the bottom of the side and mark the top for cutting, following the slope. This will allow the bottom to be
recessed one-half inch, to avoid water penetration. Pre-drilling the screw holes makes for much easier assembly. Next, assemble the front and back to the side assemblies and then attach the top. The bottom always seems to require small adjustments to fit its recess, but don’t worry about small gaps at the edges. No drainage holes are required since such gaps always seem to occur and serve the purpose.

**Finishing**

Boiled linseed oil is a suitable finish, and two coats will last a long time. UV damage is the real enemy of these boxes, so I add a coat of Cabot’s Timber Oil, which contains a UV inhibitor. Any similar product would work. Since these boxes are typically in the shade of the forest for most of the summer, cracking and weathering are less of a problem than, say, for Tree Swallow boxes. I finish both sides of the plywood, easier if done prior to assembly.

**The Mirror**

Another innovation that makes monitoring the boxes a snap is the addition of a convex mirror to the ceiling of the nest box, centered about an inch back from the front. Before the leaves come out, if sunlight can reach the floor of the box, it is possible to stand on the ground with binoculars and determine...
roughly what is going on. I say roughly because the convexity, which lets you see the entire floor of the box from a considerable area on the ground, makes the owl and especially the owlets appear very small.

These mirrors, available from Wal-Mart or from auto supply stores, have a sticky back, but that won’t last, so I use three small stainless steel screws to hold the mirror to the roof.

Placement

The best place to locate a nest box is where Barred Owls are already present, usually in wet woods with large trees, especially hemlock trees, which the owls like for roosting. I always place the box in a hardwood tree near some hemlocks. The hardwoods have fewer branches and are easier to access with a ladder or climbing steps such as archers use. About 25 feet up is sufficient, and there should be a clear flight path to the box entrance.

Climbing Gear

It’s dangerous to wrestle with a twenty-pound nest box high in a tree without safety equipment, the least of which would be a safety belt to attach you to the tree. It should leave your arms free for wrestling. I use a body harness and lanyard (see <http://www.forestry-suppliers.com>) for peace of mind, even though it’s only 25 feet to the ground.

The Role of an Assistant

While I’ve placed these boxes by myself, it’s easier with an assistant, who can hoist the box and hold it in position while it is attached to the tree. In any event, a rope and a higher branch to throw the rope over are required.

Attachment

The bugaboo of placing boxes in live trees is that live trees tend to grow. One elaborate attachment device is shown in one of the photos. Here a piece of PT decking is attached to the tree with long lag screws so that the board is several inches away from the trunk. This will allow for ten years or so of tree growth, even though the screws must ultimately be backed out or the attachment will fail. The box itself is bolted to the board after the board is attached to the tree. After dry fitting this all together on the ground, the pieces are re-assembled on the tree. Make sure to put a nut between the board and the box beforehand, so that the box can be slid onto the bolts.
and nuts applied from inside the box. I once tried to push a box onto loose bolts, and it doesn’t work!

Another, simpler attachment method is to put stainless steel eye bolts in the back of the box and then use a length of chain to hang the box in the tree. The chain should be partially encased with a piece of plastic pipe (to protect the tree) and should go over a branch or lag bolt on the side of the tree opposite the box. The chain is attached to the box with two stainless steel Quik Lock connectors, available at hardware stores. Where high winds can occur, having the box face south seems to help prevent sideways movement. The chain should not be too long.

**Nesting Material**

I add four inches of leaves and moss to the bottom of the box. No more than that is necessary unless you think your tenants may be ducks, in which case some wood shavings would be welcome.

**Predator Guard**

To prevent these boxes from becoming raccoon condos, a predator guard on the tree trunk is essential. The simplest method I know of is to buy a ten foot roll of 20” wide aluminum flashing (available at Home Depot), lay it out on the ground, and apply a can of flat-black spray paint to hide the shine. Cut the piece in half, wrap the pieces loosely around the tree and attach with a couple of two-to-three-inch deck screws. The top piece should overlap the bottom piece by an inch or two. These pieces must be loosened every two or three years as the tree grows. If vandals could be a problem, place the flashing seven or eight feet up the trunk; otherwise chest height is fine.

**Results**

The first box I placed in a conservation area in Hampstead, New Hampshire, in September a decade ago was ignored during the first nesting season but has been used continuously ever since. It produces two young each year with monotonous regularity and requires zero maintenance. The boxes stay up all year and do not need seasonal cleaning. The box in the photo has been used continuously for the last seven years. In all, four such boxes have produced nearly 20 successful nestings during this time period, with no known nest failures.

**Alfred Maley** is a retired software engineer whose interest in nest boxes began at age 10, when he cobbled together a successful bluebird house with wood from an orange crate. Later came Barn Owl nest boxes and Long-eared Owl nest baskets. When they are not watching raptor migration in Spain or traveling with Danger Tours to Latin America, he and his wife Linda reside in Hampstead, New Hampshire.
Barred Owl Adventures in Hampstead

Alfred Maley

Field of Dreams

Twenty-five years ago I put up a Barred Owl nest box on our one-acre lot in Hampstead, New Hampshire, because I had heard owls in the forest behind the house and I am an optimist. Alas, Hampstead proved to be a desirable location for people. The forest was subdivided, followed by high-grade lumber harvest, lot clearing, road building, and 22 new houses on 2–10 acre lots. Towhees began to nest.

Plan B

Undeterred, I looked to the conservation lands—which I was steadily accumulating when I was chairman of the conservation commission—especially along nearby Darby Brook. The original nest box design was structurally weak and very heavy, but I improved it and added a ceiling mirror so the contents would be visible from the ground. Soon I had three boxes erected and occupied, closer together than I thought was possible, and I placed additional boxes, also close together, on the Main Street conservation lands. By the spring of 2013, there were five occupied nest boxes, each kicking out two owlets year after year. No box, once occupied, ever became unoccupied. That was probably due to proper design and construction and a raccoon guard.
Back home my original owl nest box had long been a favorite of Wood Ducks, so I had concentrated on duck nest boxes instead. By the spring of 2014, there were 11 nests in the yard (eight Wood Duck, three Hooded Merganser). For good measure I had also put up another owl nest box of the new design with a mirror so that I could monitor the contents from the ground, even if it was only ducks.

**Return of the Forest and the Owls**

Fast forward to 2014 and the forest behind me had grown. The canopy had closed over again, the towhees were gone, and the trees were getting big again. The road and the houses were still there, but they began to blend in with the trees more and more.

In the fall, I placed my usual frozen Thanksgiving turkey out near the nest boxes and noticed one or more Barred Owls visiting the turkey early in the morning, 4:00–5:00 am. I took that as a good sign as we headed off for the winter in Spain.

**Not So Many Ducks**

When we returned in late April 2015, there were fewer duck nests in the yard—six—which I ascribed to the gray squirrels which had taken advantage of the absence of any skilled marksmen. But NO, there were owls in the 'hood! The mirror revealed an amorphous gray blob in the bottom of the new owl box, which over the course of May resolved itself into three gray blobs. The adults were around, but reticent to show themselves.

**Crafty Ducks**

When the ducklings started to fledge in May, the females were keenly aware of the owls. Normally only the female owl would be present, close to and guarding her nest box. The ducks went to great lengths to circumnavigate the nest box and remain out of sight of the owl. Just one duck nest, which was 15 yards from the owl nest box and facing right at the female owl, suffered losses, but only two ducklings.

**Bad Weather Strikes**

May 2015 was dry, good for hunting owls that listen for mice, voles, and shrews scurrying through the leaves on the forest floor. But early June turned rainy and stress soon became evident. Only the adult male hunts, and he had to feed four mouths plus himself. After three days of rain, it became very difficult.

**The Sora-like Call of the Female Barred Owl**

About this time we began to hear the female owl give a nearly constant contact call, sounding like a listless Sora with the same upward inflection. She would give the call every 20 seconds or so for hours on end during daylight. I interpreted the call as “We’re here, bring food soon!” It was then that I began to notice that the male would announce his arrival with a food item and a downward whoaah. The female would go to him, receive the food, and take it to the young who were still in the box.
The Irresistible Urge to Intervene

It was at this time, with the female complaining incessantly, the male having trouble hunting, and the third owlet about to become lunch for its siblings that I started a rodent trapline in the yard. I put the catch on a platform in the woods below the nest box and the female quickly figured it out. On the best day my handouts included six chipmunks, two mice, and a shrew. The complaining nearly stopped.

The Young Fledge, But Don’t Go Far

At the nest boxes on the conservation lands, once the young fledged they were impossible to find as they secreted themselves high in the canopy. So I thought that perhaps they moved away in a matter of days. But at the box in the yard the young stayed around for over two weeks after fledging, perhaps because it took a while for the third owlet to get fully-grown and flying. As it was, he or she fledged nearly a week after the others. By the end of June, they were all ready to go.

The Sora Call Revisited

Once the young had fledged, the female, after receiving a food item, would turn around and issue the same Sora-like call but with some subtle difference to the ending that provoked the young to hiss, much like young Barn Owls do while still in their nest. I interpreted this call as “I’ve got food. Who wants it?” How the female interprets the responses of the young is unclear to me, but it may guide her as to which one to feed.

The Sora Call Yet Again

In late July, after the young had been wandering around the neighborhood for a month, they returned to the yard one night and I heard them giving a new call. Instead of just a hiss, they were giving a scratchy version of the Sora-like call with a hiss on the end, as if they were practicing for later in life. They wanted food and they wanted it now.

The Danger Call Around the Nest

The owls in the yard were habituated to us and never seemed to give an alarm call of any sort, at least when we were around the yard or at the nest tree. However, when I’d visit the owls in the conservation lands, they would frequently give a series of two to four loud rising hoop calls and fly about if there were young nearby that were fledged or nearly fledged.

What Goes Into Who Cooks For You

One afternoon in June, the male brought in a food item while the female was perched in the yard, clearly visible to us on the deck. The male, invisible in the foliage, gave the who cooks for you call. In response the female spread and lowered her wings and while pumping her tail down expelled each of the four syllables of the call. It’s an effort like one of the prairie grouse go through and tells me why they don’t do it for long. It must be exhausting. After one call the female took the prey item up to one
of the fledglings in a nearby tree. I now suspect that when I hear this call on a late afternoon in June or July, it is related to a food drop, rather than territorial conversation.

Suburbia As Barred Owl Habitat

Is it good for Barred Owls to nest in suburbia? No, if there is a high-speed highway close by. No, if the neighbors use leaf blowers all spring long—a deaf owl is a dead owl. No, if your neighbors use rodenticides in their gardens “to control those pesky voles.” Otherwise, sure. The food supply is probably better in the winter because of the rodents at bird feeders, worse in spring and summer when the owls have to hunt all day long and human activity is at its peak. There has to be some good area close by to hunt in, with few human-inspired dangers.

How Many Owls Are Feasible?

This year, 2015, I had seven occupied Barred Owl nest boxes in Hampstead, and I may have another one or two next year. The number of Barred Owls seems to have increased locally, at least I hear them almost every night. Boxes that were initially unoccupied for several years all have become occupied. It seems clear to me that a shortage of suitable natural nest sites in second growth forest is more of a limiting factor than food supply, judging by the number of chipmunks I see.

Design Changes

Since the original article on nest box design (Maley 2010) I have made small changes. The entrance hole is one inch wider so you can get photos of two nestlings in it; the front, back, roof, and floor are all one inch wider so the box is square inside and larger; and the back has slide bars (see photo) so the box can ride up the tree as it grows circumferentially. The slide bars move the roof edge of the box out of contact with the tree and greatly reduce friction with the tree, while tending to stabilize the box against the curvature of the tree.

The box support, made of pressure-treated decking, is strong, easy to put up, and durable. It is especially easy to attach the box to the support, like putting a car wheel on the bolts of a hub. The boards are separated from each other by washers so they won’t rot, and the board ends are cut so as to shed water—they will last for a very long time. All of my original boxes used this system as seen in the photos in the previous nest box article. However, since trees grow outward (circumferentially), you have to be
able to climb the tree every ten years or so and back out the lag bolts to accommodate the tree’s increase in diameter. Though perhaps not clear from the article photo, there are four long lag screws that hold the board off the tree. There are also four galvanized bolts that go through the board in the opposite direction and into the box, which is secured with washers and nuts from inside via the entrance hole. Make sure to put a nut between the board and the box so the bolts don’t move when attaching the box.

The new chain method (see photo) simply loops a chain attached to the box around the tree trunk and over a branch or a long lag bolt on the opposite side. The box hangs against the trunk by gravity and, as the tree widens in diameter, the box rises. This scheme might last for 15-20 years, and is especially useful where access is inconvenient.

The chain is partially encased in one inch black polypropylene water pipe, of the kind commonly used for wells. As it is somewhat rigid, I cut kerfs in the pipe so that it bends easily around the tree trunk. A 7/8-inch birch dowel inside the pipe keeps it straight while the kerfs are made using a table saw.

The two vertical pieces of pipe bolted to the back of the box serve not only to facilitate the box riding up the tree but also to conform the back of the box to the curvature of the trunk. Separate the pieces such that they just contact the trunk of a tree similar in diameter to the tree that will hold the box.

Placement Advice

The owls need to be able to approach the nest box head-on. There should be a clear flight path in front of the box, but not so clear that the young can’t find a branch to fly to when they fledge. I place all my boxes in hardwood trees near hemlocks or thick white pines. Hardwoods have few low branches and admit sunlight into the nest box so that the mirror works during the spring months when the trees are leafless.

To place the box at a reasonable height without great effort, try to find an elevation within the forest such as a small hillock with a suitable tree. Alternatively, put the box in a stream valley, facing the stream but up one valley side. My boxes are 15–25 feet above the ground, but there is no magic number. If you place a box in suburbia, try to get it as far away from leaf blowers and fireworks as possible.

Drop me a line at AlfredMaley@gmail.com with questions or comments on your successes.

References


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