BURKE MOUNTAIN NATURALISTS

How to Build Nest Boxes for Common Birds in the Tri-Cities Area

March 2012

This report is available for viewing and downloading at burkemountainnaturalists.ca

TABLE OF CONTENTS

Nest Box Cleaning and Replacement at Colony Farm – February 2012

Much of the research, documentation, and images in this document was provided by our long-term member, Kiyoshi Takahashi. We acknowledge and appreciate Kiyoshi's tireless commitment and efforts to the local environment and its bird populations.

A. WHY BUILD NEST BOXES FOR BIRDS?

Many of our local wildlife species have lost their natural habitat due to human development in the past decades, resulting in declines or loss of their populations. Among threatened bird species, the most severely affected group is the so-called secondary cavity nesters which nest only in cavities made by woodpeckers or squirrels, or are formed naturally in old decaying trees. Some secondary cavity nesters in our area are Nuthatches, House Wrens, Black-Capped Chickadees, Tree Swallows, Screech Owls, Saw-whet Owls and Wood Ducks. Since the 1950s, manmade nest boxes have provided artificial nesting cavities, and West Coast populations of Tree Swallows and Wood Ducks have recovered to some degree. There are many varieties of nest box designs available in publications and web sites, but some designs have problems in their size (to attract specific bird species), design (for ease of annual cleaning of the box), or recommendations in how and where to install the box.

Burke Mountain Naturalists (BMN) members have experimented with a variety of bird nest box designs over the years. We continue to look for ways to enhance and improve the boxes so that they might better attract specific bird species. See Figure A: Bird Nest Boxes Then and Now below for a look at bird nest boxes then and now.

Figure A: Bird Nest Boxes Then and Now

Chickadee box with a gable type roof was popular in early 2000. This Chickadee box was used by Bewick's Wrens occasionally for a few years.

A Swallow box in early 2000. Often the entrance hole was chewed up by squirrels or mice. A new entrance block was attached.

Widgeon Marsh Park Reserve has been the most popular Tree Swallow nesting site in our region. The first swallow box was installed in early 1990. There are now about 150 boxes in the park including some duck, owl, and bat boxes.

The latest bird box model for both Chickadees and Swallows with an improved water-proof front door and shingle lined roof.

B. KEY POINTS IN MAKING NEST BOXES

There are a number of key points to consider when building bird nest boxes that will be attractive to specific birds and will last for a number of seasons. These key points are covered below.

1. BOX SIZE

The size of the nest box is determined by the size of bird, their behaviour, and possible number of nestlings per box. Most importantly, the box must be sized so that the parents and fledglings are protected from cats and natural enemies. Basic recommended box dimensions, entrance hole size and shape, position of entrance holes (height from floor, etc.), and installation density of boxes are well summarized in some publications as well as on web sites. A good summary of recommended box dimensions for a variety of birds based on scientific studies is listed Figure B below. The Tree Swallow is not listed, however, the same dimensions as for Bluebirds is generally recommended.

Figure B: General Nest Box Dimensions for Common Bird Species[1]

Species	Floor of Cavity (inches)	Depth of Cavity (inches)	Entrance above Floor (inches)	Diameter of Entrance (inches)	Height above Ground (feet)
Bluebird	5x5	8	6	1 ½	5-10
Chickadee	4x4	8-10	6-8	1 1/8	6-15
Titmouse	4x4	8-10	6-8	1 ¼	6-15
Nuthatch	4x4	8-10	6-8	1 ¼	12-20
Bewick's Wren	4x4	6-8	4-6	1 – 1 ¼	6-10
Carolina Wren	4x4	6-8	4-6	1 ½	6-10
Purple Martin	6x6	6	2	2 ½	10-15
Crested Flycatcher	6x6	8-10	6-8	2	8-20
Flicker	7x7	16-18	14-16	2 ½	6-20
Red-Headed Woodpecker	6x6	12-15	9-12	2	12-20
Downy Woodpecker	4x4	9-12	6-8	1 ¼	6-20
Robin	6x8	8	one or more sides open		6-15
Barn Swallow	6x6	6	one or more sides open		8-12
Phoebe	6x6	6	one or more sides open		8-12
Screech Owl	8x8	12-15	9-12	3	10-30
Wood Duck	10-18	10-24	12-16	4	10-20

[1] Extracted from *North American Bird Feeder Handbook* published by the National Audubon Society

Nest box plans for typical birds such as the Black-capped Chickadee, Tree Swallow, Wood Duck/Common Merganser, Barn Owl, and Purple Martin that are used regularly by the BMN in local sites are provided in this document and can be found starting on page 8.

2. Preferred Wood for Box Construction

Western red cedar is the best choice for its weather resistance, but Douglas fir, western hemlock and pine are economical alternatives. It is important to avoid lumber with knots. High quality, exterior grade plywood works well but due to its thin veneer construction, it tends to crack or rot over the seasons when screwed or nailed on the cross section. Adequate 3/4" lumber support to each joint is recommended for plywood construction. A crossover grain structure of plywood with dimensional stability and weather resistance is an excellent choice for the roofing board of any nest box.

3. General Design Considerations

Most nest boxes are vertical in structure to resemble the natural tree cavities that they are replacing. It is important to select the proper nest box size and depth to meet the needs of the subject bird species and to prevent other competing breeding birds from taking over the box. Highly invasive species are European Starlings and the House Sparrow, which are not native to North America.

The roof is the section of a bird box that is most vulnerable to damage and decay due to repeated wet and dry cycles with rain and sunlight. In particular, a single piece of lumber is prone to crack along the wood grain, even if it has a tight grain. Asphalt shingles can be attached to the roof by means of roofing nails or heat-seal. Plywood of high quality with 3/4" or 5/8" thickness will also withstand weathering reasonably well. If paint is used, select only a non-toxic exterior grade, water base paint. (Never paint the interior of the box).

Rainwater tends to leak inside through panel joints and the hole used for hanging the box, which is usually at the back of the box. Caulking material or exterior grade glue may be used to seal and protect the joints but only use it if absolutely necessary. Silicone caulking is the recommended material for its low toxicity, but its bonding strength is not as good as PVA glue. There are several other brands of glue and caulk that claim to be "non-toxic". If caulking or gluing is the choice, it is always advisable to wipe off excess material in the interior of the box before hardening for the safety of the birds. Small leakages of rainwater may not pose a serious problem as long as the box is built with tight-fitting joints and with exterior grade wood screws for all joints.

Rainwater leakage is most severe at the back of the box, either at the joint of the roof and backboards or the hanging hole. Leakage from the tree trunk or pole through the hanging hole can be prevented by using a longer piece of lumber for the back of the box, extending 2 inches above and 1 inch below the box body. Drill a hole above the roofline of the box for hanging, and below to prevent the box from swinging. This design also makes sealing the roof to the backboard easier. Refer to Section 7: *Mounting Nest Boxes* on page 6 for more details.

Unstable, sideways tilting of the nest box may cause a serious problem if it happens during incubation or at the early stage of nestlings, as eggs or nestlings may be pushed away from the nest and move to the sidewalls, causing a drop in their body temperature. Boxes built using a longer back piece of lumber can be stabilized by means of a nail or screw at the bottom. See Figure E: Mounting Holes on a Bird Box on page 7 for an example.

Nest boxes should be constructed with good ventilation. There are several ways to provide ventilation, e.g., small holes or a cut-out under the roofline with an extended roof. Openings should be angled

outwards to prevent rainwater from running inside. However, for small songbird boxes such as Swallow or Chickadee, about a 3/4" opening at the top of the front entrance board, combined with about an inch protruded roofline, will provide sufficient ventilation for most locations in the BC Lower Mainland without excessive rainwater leakage.

As nestlings grow and gain strength, they climb up to the entrance hole to be fed by the parent birds. Use of plastic or metal nets on the inside below the nest hole is not recommended, as nestlings' claws may become entangled. The recommended way is to make kerfs or cleat lines across the inside of the front panel, approximately 1/4" apart up to just below entrance hole, to serve as a ladder. Rough-cut lumber may be sufficient alone for most songbird nestlings to hang onto and climb up to the hole, but it will be helpful to make these notches. The saw-cut notches will especially help ducks, as the distance from their nest to the entrance hole is more than 15". Refer to Figure C: Example of a Tree Swallow Box General Design below.

Figure C: Example of a Tree Swallow Box General Design

The front panel is layered with a thin exterior grade plywood in order to cover the entire box frame. This helps to avoid rain water leaking inside the box.

The box has a longer back panel to accommodate a hanging hole above and an anti-swing nail below.

A door lock nail is stringed with durable thread so that the nail will not be lost during nest box cleaning.

Scratches are made to the inside of the front panel for nestlings to climb to the hole more easily.

Some birds may reject nests if insects, especially paper wasps, make their nests in the bird boxes. Since 2008, many of our boxes appear to be used by the European paper wasp (*Polistes dominula*), a non-native wasp species that was first reported in BC in 2003. In 2011, BMN started experimental studies to test the usefulness of applying a waxy coating to the box ceiling and upper parts of the sidewalls; the aim is to prevent adherence of the wasps' nest. Results of this trial will be reported in 2012.

4. Entrance Hole Size and Shape

Commonly, the shape of the entrance is circular and sized to match the body size of the subject bird, but either vertical or horizontal oval shapes are also used, depending on the abdominal shape and size of

birds, as well as their need for protection from predators. Large sized raptors such as some owls do not need protection from predation or invasion, and a large rectangular entrance is acceptable.

For small birds, the entrance size should be a tight-fit to their body size to prevent intrusions by predators (larger bird species or small mammals). Some small mammals (rats, mice or squirrels) may enter the box, or larger mammals (raccoon and cats) may insert their paws through excessively large holes and steal eggs or nestlings. Reducing the possibility for predation is the reason that the nest boxes should never be built too shallowly and man-made bedding materials, such as wood shavings, should be no more than an inch in depth.

The entrance hole of boxes for some species, such as ducks, can be horizontally oval shaped and sized to exactly fit to their body shape and size. This will prevent intrusions by smaller raptors, crows or gulls. In some cases, the entrance hole can be rectangular or half-moon shaped, such as for Purple Martins (PUMA). Purple Martin box designs and requirements are quite different from most other boxes, and these are summarized separately on page 12. Figure D below provides examples of entrance holes on a variety of bird boxes.

Figure D: Various Shapes of Bird Box Entrance Holes

Black-capped Chickadee box
(4½" x 4½" x 7")

Wood Duck box
(11" x 11" x 24")

Variety of PUMA boxes
(7" x 7" x 12")

5. Depth of Nest Boxes

Common predators of many songbirds are crows, gulls, raccoons, opossums, weasels, house cats, etc., which may insert their heads, paws or legs into boxes and grab eggs or nestlings. Therefore, there are at least two points to keep in mind to reduce such disturbances: ensure that there is sufficient depth from the bottom edge of the entrance hole to the surface of the nest, and avoid attaching any perch near the exterior of the entrance hole. A perch post or decorations do nothing good for the birds and only give predators an advantage.

Many nesting birds can readily fly right into the box, but it is still a good idea to use rough-cut lumber for box construction. Rough surfaces will help the birds to enter in the box, and rough-cut lumber will improve weather resistance over time.

6. BEDDING MATERIALS

Tree Swallows and Violet-Green Swallows seem to like a layer of wood shavings (about 1 inch) as base materials in their nest box because they tend to nest in groups, which causes a short supply of their natural nest materials (grasses and feathers). Ducks seem to appreciate wood shavings, too. However most songbirds do not need bedding materials as they can easily collect dry grass (Swallows), animal hair (Chickadees), dry moss or lichen (Wrens), and, in some cases, feathers (Chickadees and Bluebirds). Duck feathers are preferred for their bulkiness and waterproof qualities. Purple Martins normally prefer none of these bedding materials and use just few short tree branches or broken stems of grasses to prevent their eggs from rolling around the nest.

Although it may be helpful, it is not usually necessary to add nest materials, and most birds are capable of collecting their own preferred materials. If adding bedding material to a box, it should be no more than an inch in depth, and normally just enough to cover the floor so that there is ample room for the birds to create their nest deep in the box and out of the reach of predators. If predators become a problem, the depth of box should be increased.

Field mice or flying squirrels will often take over a nest box, and BMN members feel that this is an appropriate use for some of our boxes as long as there are still plenty of boxes for birds. These small animals collect green moss and lichen to fill the box all the way up to entrance hole; they then dig a hole through the mossy mass for roosting or breeding space. If a nest box full of moss is detected, it's best to leave the box undisturbed and perhaps clean it out occasionally in an off-season (early autumn).

7. MOUNTING NEST BOXES

The preferred height of the box above the ground varies depending on the bird species as well as the immediate environment, and can be determined by the birds' behaviour. Although most birds will nest in a box close to ground, it is recommended that boxes not be mounted too low in order to avoid predation. Birds may take a box at a higher position than given in Figure B on page 2, if there is no other choice, but it may not be their preference. Based on observation, a box height that is close to the usual flight level of the bird species works best. The most common nest box that BMN mounts are for Tree Swallows. Tree Swallows seem to forage at a height of 1.5 to 3 meters (5 to 10 feet) above the ground, so we think that this is the ideal height for their nest boxes.

Many bird species prefer a box situated away from other occupied boxes, but some nest in colonies, such as Purple Martins and Tree Swallows. Tree Swallows using natural nesting cavities seem to prefer to nest about 10 meters (30 feet) away from other swallow nests, but this may reflect more the availability of nest sites as they seem content to use nest boxes situated side-by-side. Chickadees, on the other hand, prefer isolated single nest boxes; they seem to require as much as one to three acres per nest.

Figure E on page 7 demonstrates how to include mounting holes in the bird box to make it easier to mount and remove from a hanger.

Figure E: Mounting Holes on a Bird Box

To attach a box to a wooden pole, follow these instructions:

1) Drill an exterior grade 3" (minimum length) wood screw to a pole leaving about 1" of the head exposed
2) Hang the box through the hole and slide down lightly so that the screw comes to rest at the top of the slot
3) Lightly hammer a 2" (minimum length) nail through the middle of the lower stabilizer cut, or use a small screw

To remove the box from the hanger:

Push up the box to the upper bolt hole so that the bottom nail comes out of the bottom slot and pull out the box

8. NEST BOX SITE LOCATION

The best location of the nest box varies depending on behaviour of each bird species. Some birds, such as the Black-capped Chickadee and Woodpecker, prefer an isolated nest away from other nests and bird traffic. Others, such as the Tree Swallow and Purple Martin, like to keep their nests together in open space. Bluebirds nest in a box of the same size as Tree Swallows, but prefer the box to be 30 to 100 meters (100 to 300 feet) away from other boxes.

Most birds need enough open space in front of entrance hole to readily fly-in and out. As a general rule, there should be at least 4 meters (12') at about 30 degrees of conical open space in front of the box. In nature, many birds choose to nest at the edge of the forest facing an open space such as a water body or grassland. This may be for protection from predators and easy access to food supplies.

If a box is erected on a pole and predators such as raccoons and rats are around, the lower portion of the pole can be wrapped with a sheet of either plastic or metal that acts as a baffle. This should be at least 50 cm (20") above ground and at least 50 cm (20") wide. Use of a metal pole is a good solution for species that prefer open space.

When installing a nest box in a sunny location, most birds prefer a box facing east to receive the first sunlight for morning warmth. The second choice is a south facing direction. There are conflicting opinions regarding the third choice, depending on the location. The direction of the nest box is not important if it is located in a shady area. If the site receives full light at sunset, a west-facing location may cause over-heating when nestlings are still very young.

C. NEST BOX DESIGNS FOR COMMON BIRDS IN THE TRI-CITIES AREA

Nest box plans are provided below for some common birds such as the Barn Owl, Wood Duck/Common Merganser, Purple Martin, Black-capped Chickadee, and Tree Swallow. These plans are used by BMN for building nest boxes to place in sites throughout the Tri-Cities area.

1. BARN OWL NEST BOX

To date, the Barn Owl is the most common owl species to use manmade boxes in Lower Mainland, or at least this is the easiest owl nest to monitor. They will use either an outdoor or indoor box, but a box mounted indoors is often more productive.

Barn Owls nest inside barns and other open structures, such as storage sheds, more frequently than in natural tree cavities. If any evidence of owls is found, e.g., pellets on the ground or a sighting of an owl, installation of an appropriate box in or on a building nearby will become highly successful. Figure F provides examples of common indoor and outdoor owl nest boxes.

Figure F: Common Owl Boxes in the Tri-Cities Area

The outside wall entrance of an indoor Barn Owl box that is attached inside of a building.

An inside view of a Barn Owl box by looking through an inspection hole.

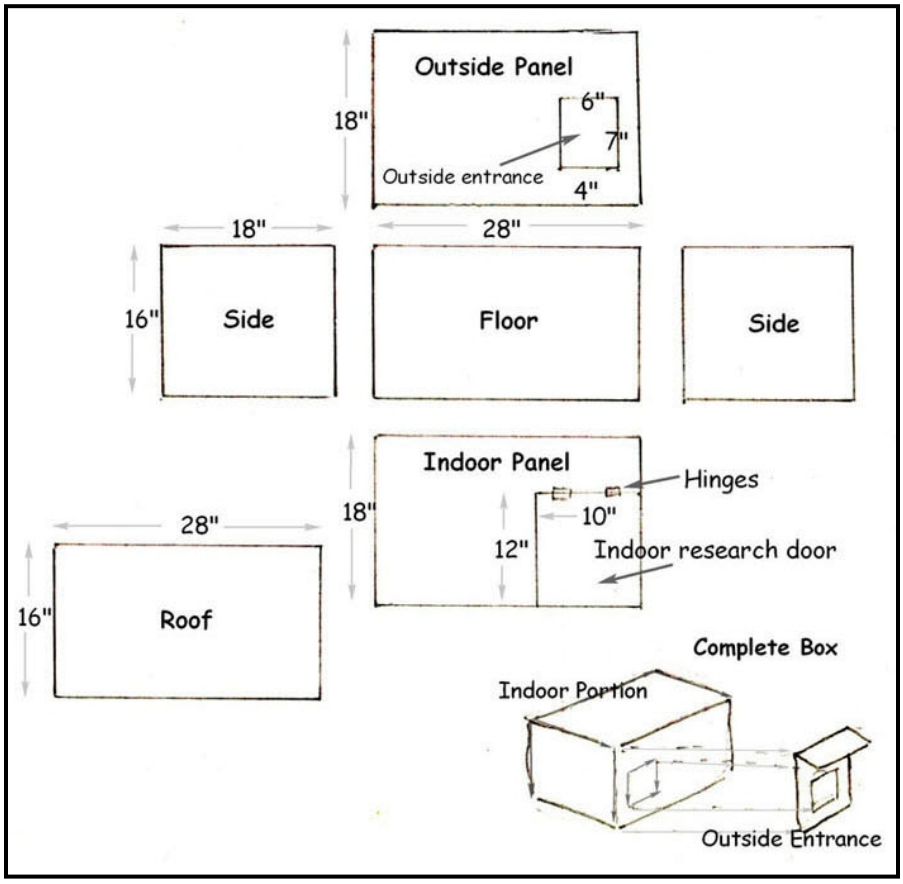
An indoor Barn Owl box attached to an interior wall with the entrance hole facing indoors.

A Screech Owl box installed on an old hemlock tree. This box is being used by a Flying Squirrel.

As their name implies, Barn Owls seem to prefer to build their nests near the farmland or open fields close to their main food sources (voles, mice and rats). Our Barn Owl nests used most frequently are inside of barn buildings. Although a rain resistant nest box can be installed outside of a barn, their preferred location is inside of barn buildings. The entrance is made through a building wall, or just on the ceiling joist if an open window is available for their pathway. A box for interior mounting is easy to

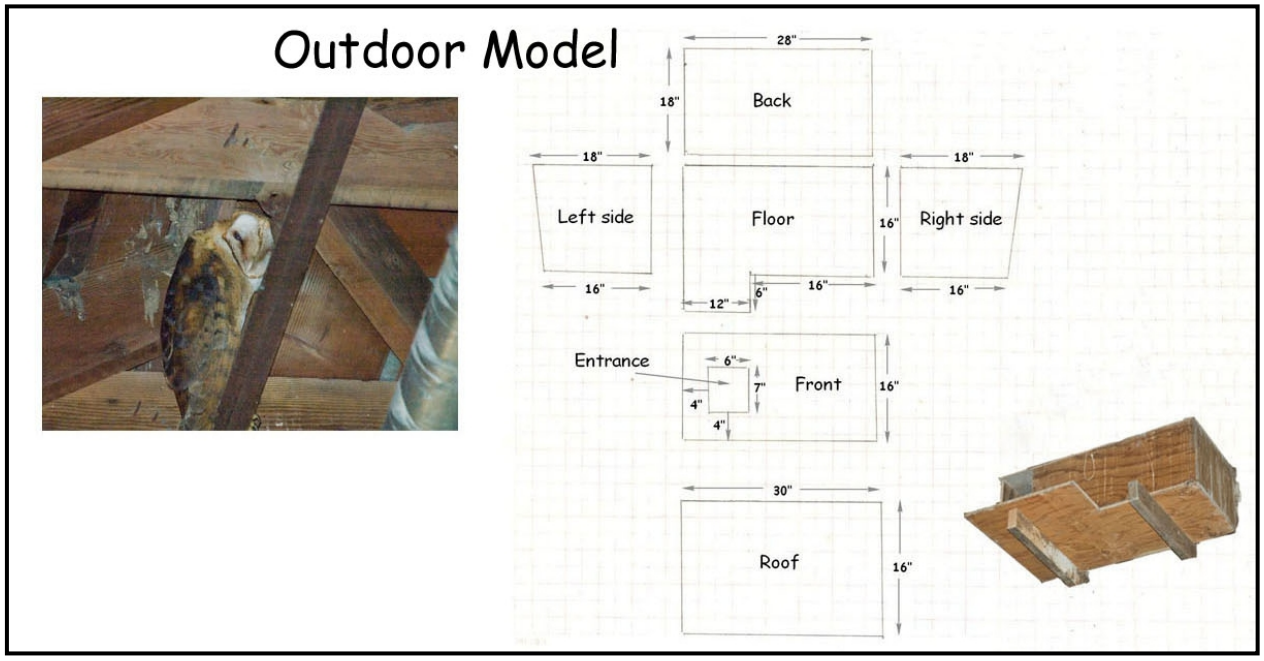
build, as it does not need waterproof sealing. Although the nest box size is not critical, the entrance size should be made to 6”x6” to avoid other larger owls from invading the box. The shape of the hole is not important. If the box is installed on an inside wall of a building where the entrance opening is directly to the outside, a platform may be made to avoid the rainwater running into the nest box, although it’s not absolutely necessary. No bedding material is needed as Barn Owls use their own pellets and feathers to cover the nest floor of their nest. Probably the most important point is to mount the box securely on a stable joist or wall structure. Refer to Figure G for Barn Owl indoor nest box dimensions.

Figure G: Barn Owl Indoor Nest Box Plan



Owl boxes can also be installed on the inside of an exterior wall of a building, but it may be necessary to cut the entrance hole through the building’s exterior wall. In this case, consider making a “viewing hole” (or inspection hole) on the interior side of the box so that observation and cleaning may be done from the interior of the building without excessively disturbing the nesters. Refer to Figure H on page 10 for Barn Owl outdoor nest box dimensions.

Figure H: Barn Owl Outdoor Nest Box Plan



Other owls such as Screech and Saw-whet Owls are known to use boxes, but those boxes are highly attractive in size and location to Northern Flying Squirrels. These native squirrels will often take over a manmade owl box for nesting and for roosting over the winter, preventing the intended species (owls) from using the box. The population of Northern Flying Squirrels has recovered from the negative effects of deforestation decades ago. They are generally sighted in certain deep secondary growth forest locations.

2. Duck (Wood Duck/Hooded Merganser/Goldeneye) Nest Box

The recommended entrance hole for Wood Ducks is an oval shape, 4" horizontally and 3 1/8" vertically, to match this duck's body size. If a larger duck is the intended species, the entrance hole must be adjusted according to this species. A nest tray, which has been inserted through the side door, effectively reduces the wetness of the nest, and makes it more convenient to clean the box annually.

As 3/4" or 5/8" plywood is commonly used to construct a Wood Duck nest box, the joints tend to crack with age. Therefore, it is recommended to use 3/4" x 3/4" wood sticks to support all joints. Figure I: A Typical Duck Box on page 11 provides an example of a typical duck box.

Refer to Figure J on page 11 for duck nest box dimensions.

Figure I: A Typical Duck Box

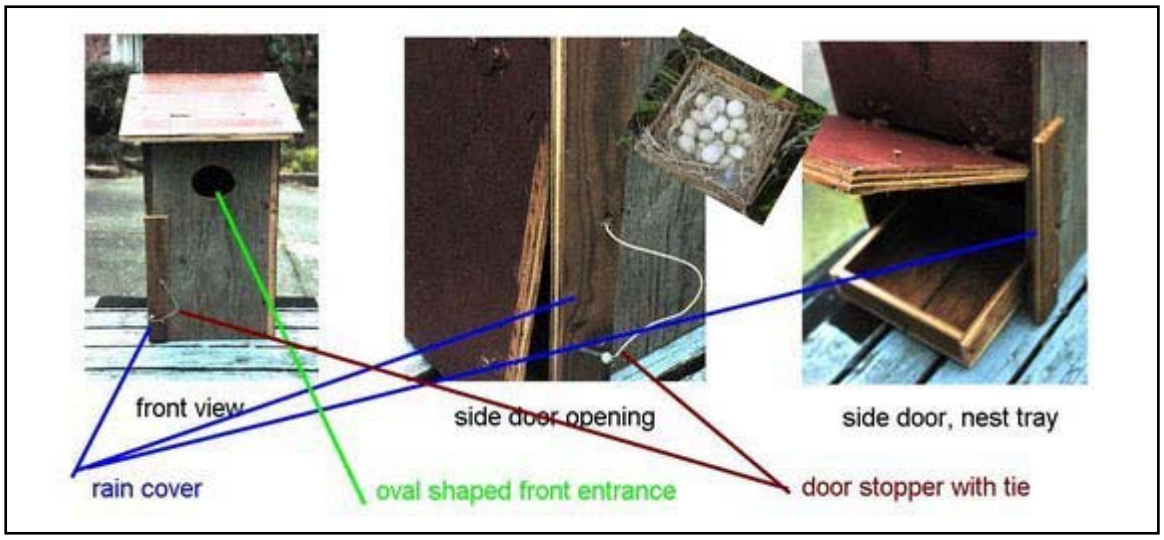
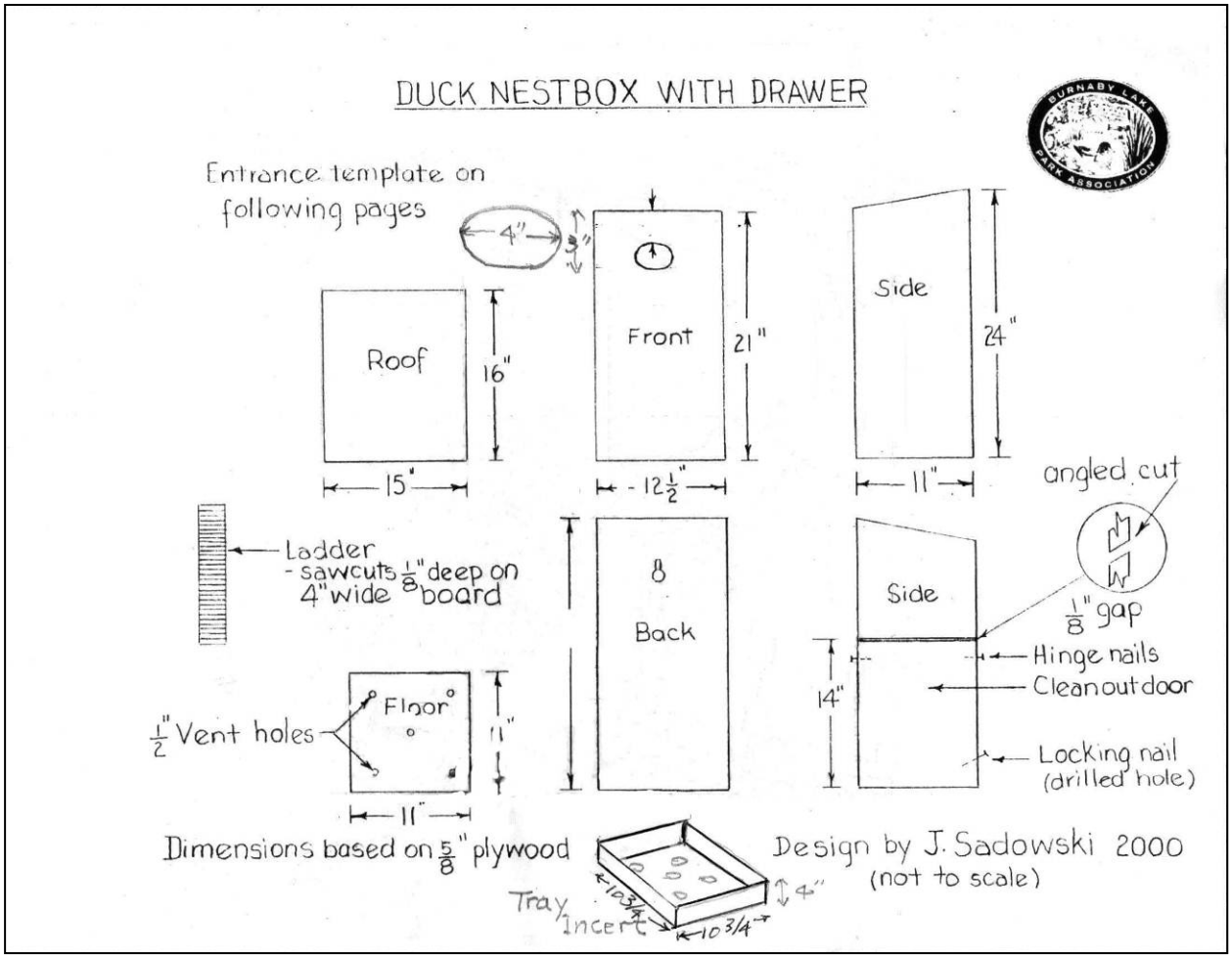


Figure J: Duck Nest Box Plan



Plan designed and provided by Joe Sadowski

3. PURPLE MARTIN - WESTERN SUBSPECIES NEST BOX

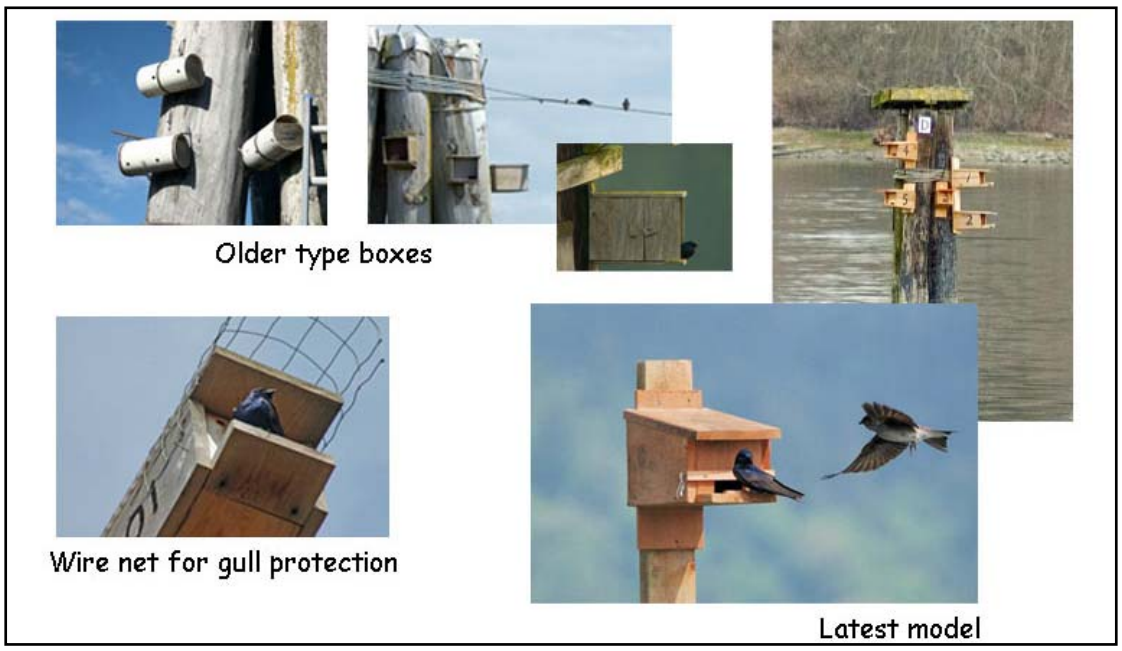
There are clear differences in nesting behaviours between the eastern and western subspecies of Purple Martin. This difference was likely created when available natural nesting sites changed over time in the two regions. Birds of the eastern subspecies now nest in multiple cavities in one large structure (like a "martin condo"). These were originally intended to create a large community of martins to keep insect numbers down around the drying hides and game of First Nations people in what is now the eastern United States. However, the natural nest sites of the western Martin subspecies used to be in cavities of dead trees along the seashore until human populations increased about 200 years ago. With human development, the martins lost their natural cavity nest sites, but they found suitable spaces under eaves and soffits of old buildings that served as alternative nest sites. This nesting condition may have contributed to the martin's preference to use an extended horizontal platform for their nest.

A Purple Martin recovery program has been in place in the Lower Mainland since 1994. The main reason for their return to our area is because of the provision of manmade nest boxes. A wide variety of nest boxes have been tried over the years, including multiple nest sites in a large structure similar to the 'condos' that attract the eastern subspecies. However, the western subspecies prefer a single box, clustered on a pole or pylon out over water.

The western Purple Martins don't arrive in our area until June, which is much later than other local nesting birds. As a result, Purple Martin nest boxes tend to be taken over by earlier-nesting species such as European Starlings and Tree Swallows. Over the years, we have discovered that the best way to prevent Starlings from using our Purple Martin boxes is to size the entrance hole exactly, as shown in Figure L on page 14.

After many trials, the present flat box structure with a rectangular front entrance at floor level was created. However, with the earlier nest box models, we found that European Starlings were taking over the nest boxes in the weeks prior to the arrival of the Martins, and this was causing a serious threat to the Martin population. Starlings are generally a similar size to Purple Martins. Starlings are also very territorial, and once they take over a Martin box, the pair will chase away all other potential nesters in the other nearby boxes on a pylon. To prevent Starling access, the 'Starling Plug' was introduced to plug the entrance hole until the arrival of the Martins. Later, it was found that while the body size of Starlings and Purple Martins is similar, Starlings have slightly thicker chests. The result of this finding was a new design with a specific height for the entrance hole which creates a tight fit for the Martins but prevents the slightly larger Starlings from entering. After several trials of different configurations, including a "half-moon" shaped entrance hole, a rectangular entrance exactly 1 3/16" high and 2 3/4" wide successfully stopped Starlings from entering the nest boxes, and these boxes were introduced in 2008 at a location off Rocky Point Park in Port Moody. Figure K on page 13 shows how the nest boxes have evolved.

Figure K: PUMA Nest Box, Then (1990s) and Now (2010)



In order to ensure the accurate height of the entrance hole, it is useful to have a block of wood cut to the exact size the hole should be. This template block is used by inserting it into a pre-cut front piece, then screwing hinge bolts on both sides to the side boards of the nest box to obtain an accurate entrance height. The process is shown in Figure L: Western Purple Martin Box with Entrance Model on page 14. There have been a variety of box designs over the years, and some of them are still seen at Rocky Point Park in Port Moody as of 2012, but these boxes will gradually be replaced by the newest version described this report.

There is another potential problem in Purple Martin nest box management. The Stave River Estuary site near Mission became the first freshwater site for Martins along the BC Coast in 2007, and several more Purple Martin nest boxes were installed on the site. Most songbird species are single nesters and do not pose a problem for Martins, with the exception of European Starlings and Tree Swallows. Tree Swallows normally nest in groups of 6 to 12 pairs earlier in the season before the arrival of the Martins. Tree Swallows immediately took over the Martin boxes at the Stave River Estuary site in 2008. A dozen swallow boxes were immediately installed near the Martin boxes in an attempt to coax the swallows away, but the new boxes simply increased the number of Tree Swallows, which was a welcome surprise. Now, entrance plugs have been used to prevent swallows from taking over the Martin boxes at this location. This kind of competition may occur at another Martin site -- Colony Farm Park in Coquitlam -- as a good number of swallows already exist in the park.

Figure L: Western Purple Martin Box with Entrance Model

An entrance template block is inserted along the front board. Screw hinges are placed through the side board to the exact height of the entrance.

The position of the rectangular entrance hole can be either in the centre or side of the front panel.

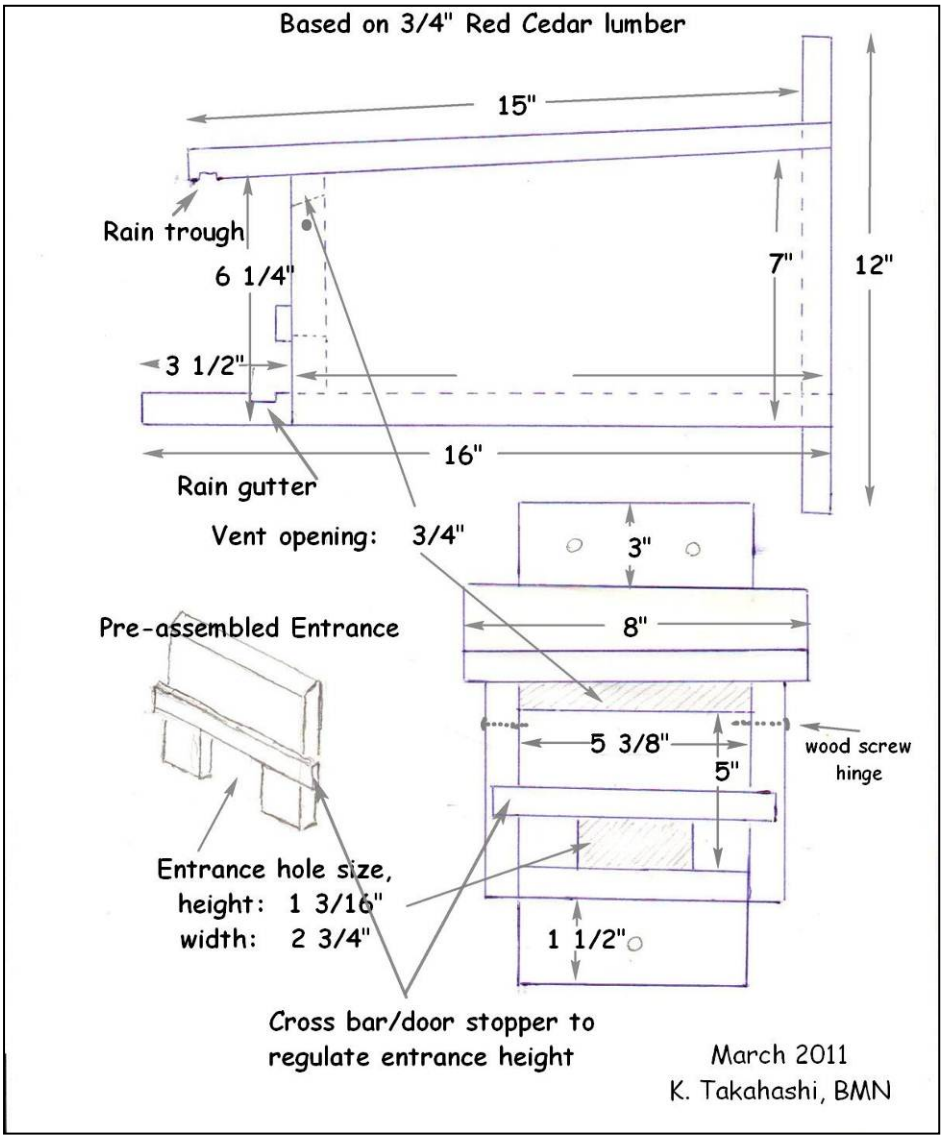
A few Tree Swallows and Violet-Green Swallows are regularly seen at Rocky Point Park, but they do not cause problems at this site likely because all the Martin nest boxes are mounted on pylons (known as dolphins) out over the water.

The Purple Martin box design is now well established for the Lower Mainland. Some more points have to be examined, such as the effectiveness of a rain trough and gutter added in 2010. Also, the effect of having the entrance hole to the side or in the centre of the box has to be determined. If the birds do not show any preference, a side opening will be the main design as this is easier to cut.

These boxes are relatively large (approx. 8” high x 8” deep x 16” long) and their structure must be strong enough to attach to a pole or pylon using wood screws or bolts. Also, in some locations, perching gulls may disturb Martins (such as observed at the Blackie Spit location) and a “gull-deterrent” cover may be needed on the box, as shown in Figure K. Although Martins tend to be disturbed by Osprey temporarily, they do not interrupt each other once all nests are established. Osprey pairs regularly nest at the top of dolphins where a few Martin boxes are attached at Rocky Point Park and elsewhere.

Refer to Figure N on page 15 for Purple Martin nest box dimensions.

Figure M: Purple Martin Nest Box Plan

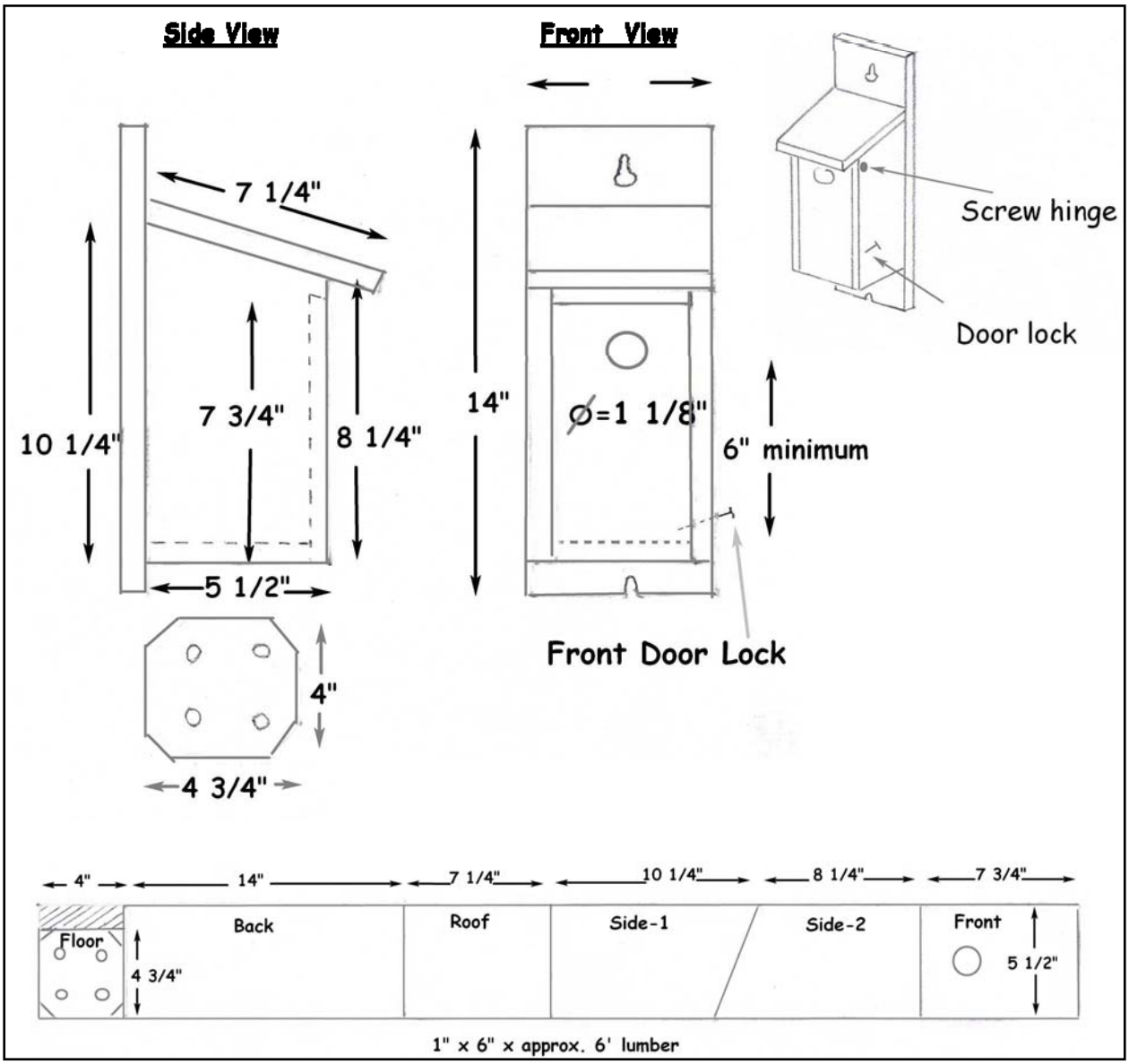


4. BLACK-CAPPED CHICKADEE NEST BOX

Black-capped Chickadee nest boxes should preferably be placed in habitats that receive 40-60% sunlight such as forests, woodlots, and yards with mature hardwood trees, forest edges or meadows. The box should be mounted 5 to 15 feet high and spaced one per one acre with the entrance hole facing away from prevailing wind.

It is recommended to build a Black-capped Chickadee nest box with 3/4" red cedar lumber as it provides the best weather resistance The joints should be screwed with 1 1/2" to 1 3/4" exterior grade wood screws. Use silicone caulking or equivalent (non-toxic material) only when absolutely necessary to maintain durability of the box structure. Drill four to five drain holes on the floor, each approximately 1/2" in diameter to provide drainage. Refer to Figure N for Chickadee nest box dimensions.

Figure N: Black-capped Chickadee Nest Box Plan

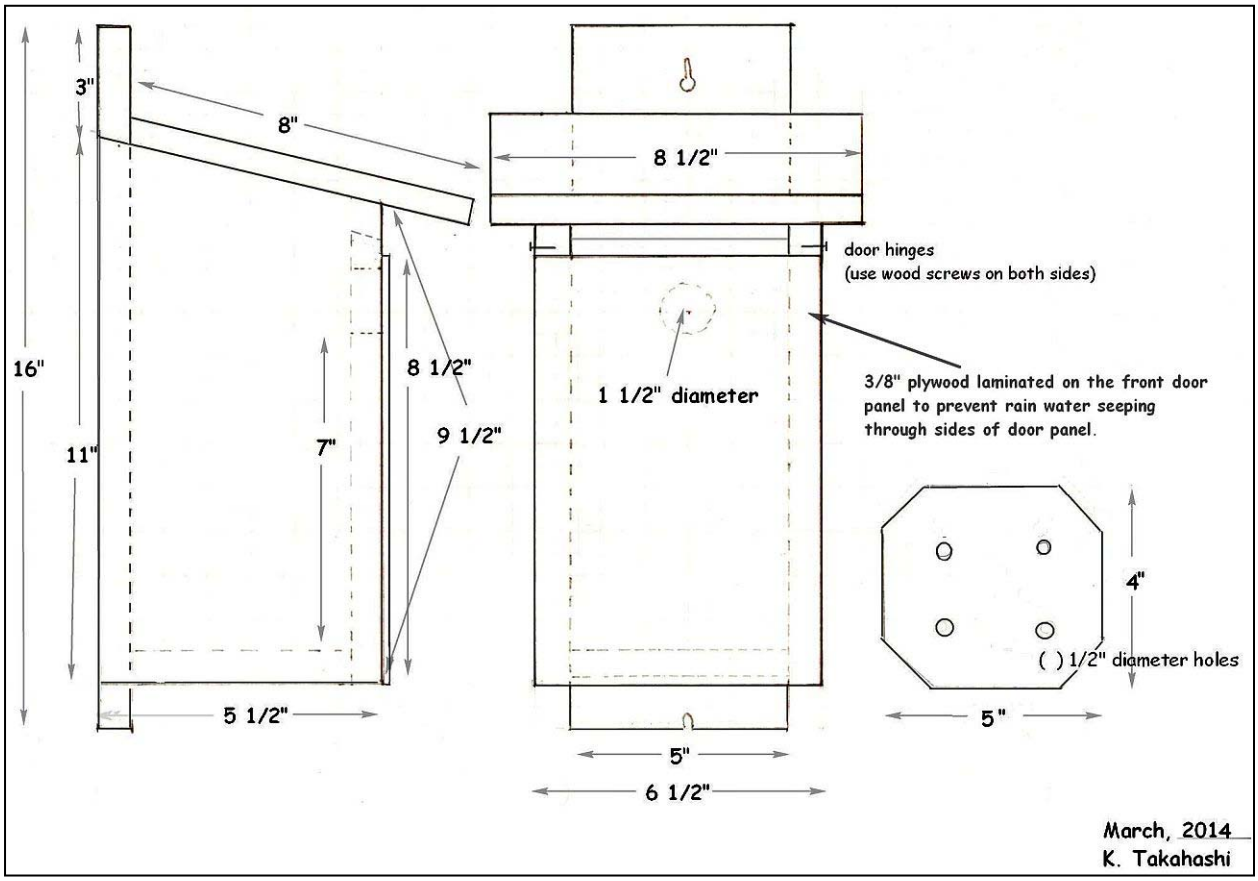


5. TREE SWALLOW NEST BOX

Tree Swallow nest boxes should be placed 5 to 15 feet high on a post or tree in open areas. They should be spaced 30 to 100 feet apart with the entrance hole facing east or south.

As indicated in the previous section, the materials used for building a Tree Swallow nest box are the same as for the Black-capped Chickadee. The only difference between the two boxes is the dimensions, with the Tree Swallow nest box being slightly larger. Use 3/4" red cedar lumber as it is the best choice for weather resistance. The joints should be screwed with 1½" to 1¾" exterior grade wood screws. Use silicone caulking or equivalent (non-toxic material) only when absolutely necessary to maintain durability of the box structure. Drill four to five drain holes on the floor, each approximately 1/2" in diameter to provide drainage. Refer to Figure O for Tree Swallow nest box dimensions.

Figure O: Tree Swallow Nest Box Plan



D. MORE INFORMATION

A two-page brochure on *How to Build a Chickadee Nest Box* is available to download from our web site.

The Burke Mountain Naturalists (BMN) hold meetings on the second Thursday of each month (except June, July and August) at King of Life Church, 1198 Falcon Drive, Coquitlam. Regular walks and hikes are organized throughout the year. New members are always welcome; feel free to attend our meetings to find out more. BMN encourages you to report unusual sightings of wildlife to us. Your observations will contribute to knowledge of the local environment.

Contact Information

Burke Mountain Naturalists
PO Box 52540
RPO Coquitlam Centre
Coquitlam, BC V3B 7J4

Tel: 604-937-5379

http://burkemountainnaturalists.ca

BurkeMtnNats@gmail.com