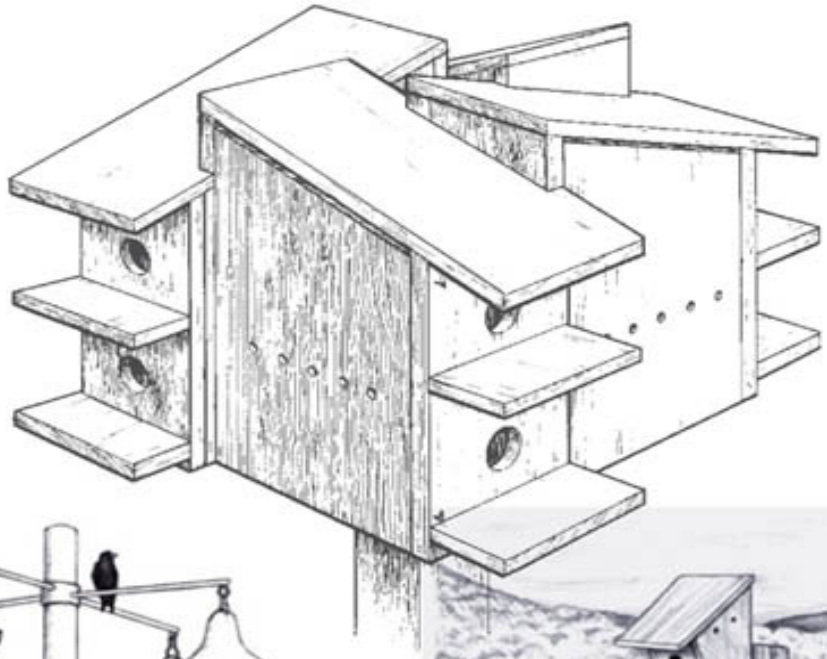
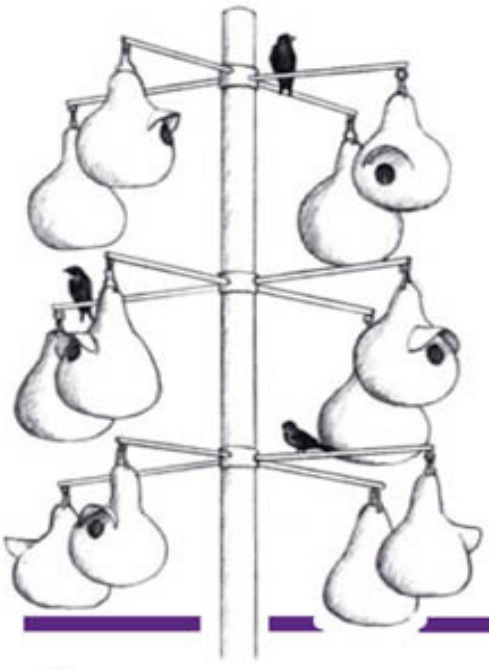
BUILDING PURPLE MARTIN HOUSES

JANICE THERESE MANCUSO





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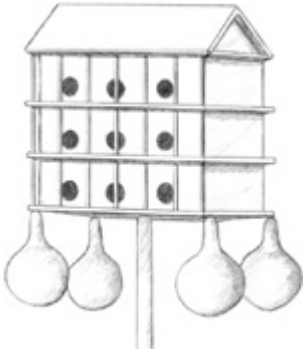
A Storey Country Wisdom Bulletin

Building Purple Martin Houses

Janice Therese Mancuso



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A Unique Relationship

In the eastern part of North America, Purple Martins rely almost entirely on human-supplied housing for nesting sites. Many believe that the unique relationship between Purple Martins and humans was established in the southeastern United States with early Native Americans. Many tribes in that region used hollow gourds to dip water from ponds and then hung the gourds to dry in the sun — and the drying gourds became perfect homes for the cavity-nesting birds. The Native Americans welcomed the Purple Martins to their community, finding that the friendly birds not only helped to control insects but also mobbed and harassed other birds and small animals that were attracted to drying meats and hides. They hung out additional gourds to entice more martins to live with them. Martins soon preferred these easily obtainable nesting sites and the safety from predators that nesting near humans — rather than in abandoned woodpecker cavities or rock crevices — provided. Also, the gourds' roomy nesting chambers permitted more eggs to be laid, and the community housing gave each male martin the opportunity to mate with more than one female, adding genetic diversity to their off-spring.

Hollow gourds are among the favorite nesting sites

As time passed, other tribes began to hang gourds to attract the birds, and more and more Purple Martins chose gourds over natural cavities. Early American settlers and plantation slaves followed the Native Americans' custom, experimenting with ceramic gourds and wooden houses. Each year the martins would return to these nesting sites, and the keepers of the sites became known as landlords. By the early 20th

century, eastern Purple Martins were almost entirely dependent on human-supplied housing.

Purple Martins have a large, devoted following — a following willing to spend almost $30 million annually on housing and related merchandise. In some areas the Purple Martin population is declining, and since the birds rely on human-supplied housing, if this housing isn't provided, the species will perish. But a Purple Martin colony requires a lot of time, attention, and — most important — commitment, so before you decide to start one, you must learn all you can about the birds and their needs.

Identifying Purple Martins

Purple Martins, the largest members of the swallow family in North America, are divided into three subspecies. *Progne subis subis* breed in the eastern part of North America and are the most abundant. These people-friendly birds nest in multicompartment housing and have been managed by humans longer than any other species in North America. *Progne subis arboricola* breed at high elevations along the Pacific Coast as far north as British Columbia, extending east to the Rocky Mountains and some parts of Canada. They live singly in natural cavities but can be attracted to single houses and gourds. *Progne subis hesparia,* the smallest subspecies, live in the Sonoran Desert of the southwestern United States and northern Mexico as well as the arid Baja peninsula. They make their home in cool interior cavities of saguaro cacti and are not imprinted on using man-made houses.

Purple Martins range in size from 7 to 8 inches (17.7–20.2 cm), with a wingspan of 12 inches (30.4 cm). Their long, narrow wings allow them to spend much of their time flying, including soaring and performing aerial acrobatics. When not in flight, they like to perch on whatever is available — especially utility lines or on the poles of their housing colonies.

Adults acquire their full color by the third summer. Adult males have a blue-black plumage that reflects purplish in sunlight (hence the species' popular name). Adult females have a gray throat and breast, purple crown and back, black wings and tail, and white/gray undertail coverts. Both the male and female subadults are similar in color to adult females, though the male has darker patches on his throat and around the eyes and patches of purple feathers on his breast and belly, and the female is slightly lighter than the adult female and has white undertail coverts.

The female Purple Martin (left) has a light-colored underbelly while the male (right) is completely blue-black.

A Year in the Life of a Martin

Each year, Purple Martins migrate from their wintering grounds in South America to the United States and Canada to breed. The first birds begin arriving in southern Florida in mid-January; migrating martins gradually make their way north, eventually reaching Canada by early May.

Each spring, thousands of landlords look forward to the arrival of the Purple Martins. Martins are one of the first species of neo-tropical migrating birds (birds that overwinter in the tropics) to reappear, and many people consider their arrival to be a sign to begin planting crops. As the birds return, landlords know that the next few months will bring the pleasure of observing the birds during courtship and nest building, then of monitoring the nestlings until they fledge. Mating, breeding, and raising offspring are accomplished only when housing and territory have been secured, so early arrivals (the so-called scouts) have first choice at nesting sites and can get a head start on the mating process.

When their young have fledged, Purple Martins migrate back to South America. In the most southern parts of the United States, the birds may start their journey as early as June. In the northern states and in Canada, migration may not begin until August.

Before migration begins, however, martins often gather at neighboring colonies, arriving and leaving in small, loose groups but combining into large — even huge — flocks to roost at night. In the south along the Gulf Coast, flocks contain hundreds of thousands of birds from all over the United States, including southern birds that have finished nesting and are heading south as well as late-arriving subadult birds heading north. The birds tend to gather near water (where food, in the form of insects, is abundant) on utility wires, antennas, or trees and will bathe, groom, and feed. Before dusk they'll fly to another location to roost for the night.

The state of São Paulo, in Brazil, is a popular migration destination for many Purple Martins. Many martins also spend the winter in sections of Bolivia, Colombia, Ecuador, French Guiana, Guyana, Paraguay, Suriname, and Venezuela. Come spring, they once again trek thousands of miles back to North America to breed and start the life cycle anew.

Major Martin Roosts

If mid-June to mid-July finds you in the area, two roosts in the southern United States are worth a visit.

Lake Pontchartrain Causeway, Louisiana: This 24-mile causeway has two roosts. The northern end includes local breeders plus migrating birds; the southern end is believed to be just local breeders. As many as 250,000 Purple Martins can be seen from mid-June to mid-July. More information can be obtained from the National Wildbird Refuge Web site at www.gnofn.org/~swallow/.

Lunch Island, Lake Murray, South Carolina: The Columbia Audubon Society and two other groups combined efforts to make this roosting area a sanctuary. They estimate that in mid-July 750,000 Purple Martins roost on 12-acre Lunch Island, which is best observed from a boat. For more information about Lake Murray and the surrounding area, visit the Lake Murray Web site at www.lakemurray.com/lake.htm.

Attracting and Maintaining a Purple Martin Colony

Purple Martins may appear as soon as houses are put up, or it may take years — and sometimes they may never appear. In fact, although their breeding range is extensive — see page 6 — Purple Martins are uncommon in many localities. Before you invest both money and time to erect martin housing, you should check with a Purple Martin organization (see page 32 for a few sources) to make sure that martins nest in your area.

The proper type and the location of housing are the most important factors in attracting these elegant birds. The information provided in this bulletin is for their predominant range east of the Rocky Mountains, where Purple Martins can be attracted to colony housing. In the West, attracting Purple Martins to artificial housing will be difficult because they prefer to live in natural cavities or single houses and gourds. (If you live in the West and martins are already nesting in your area, similar housing on your property may attract them.) Plus, due to the high temperatures in the Southwest, Purple Martins nest only in the cool interiors of saguaro cacti.

The Secret of Scouts

The first birds you'll see are probably "scouts"—so named because it was long thought that they arrived first from their wintering grounds to check out a site and then went back to guide other birds to the colony. In fact, they're simply adult males and females. Male scouts return early to established sites to claim the most attractive compartments, thus improving their chances of attracting a mate. If they leave a site after appearing, they're either off reacquainting themselves with the area and looking for food or were on their way to another colony and just resting at your site; what they definitely are *not* doing was going back for the rest of the troops.

Starting a New Colony

In most cases new colonies are started by subadults — birds that were born the previous year. Adult Purple Martins, the first martins to arrive in any particular region, return to the nesting colonies in which they successfully nested and bred the previous year. They will look for a new site only if their old colony is no longer habitable or safe — say, if it was attacked by predators or overrun by trees. Subadult birds follow 4 to 6 weeks later, on the lookout for new nesting sites within 50 to 100 miles of where they hatched. Therefore, as a prospective *new* landlord, the best time to open up your housing (see page 8) is when the subadults are due to arrive in your area. Check the map to determine when adult Purple Martins generally return to your area.

On this map, the shaded areas show the normal range of Purple Martins; the lines mark the dates by which adult Purple Martins usually arrive at a given range as they fly north during spring migration.

Finding the Perfect Site

Although Purple Martins will nest in different environments, they do have specific nesting requirements. Unlike most birds, they actually *prefer* to live close to humans, so their colony should be established within 100 feet (30.4 m) of human housing or outbuildings. Mount the housing on a pole 10 to 20 feet (3–6.1 m) high in an open spot, with nothing taller than that within at least a 40 feet (12.1 m). Purple Martins prefer a direct flight path to and from their nest, and any tall trees or structures will slow them down, making them easy prey for

owls and hawks. The base of the pole should be free of any vegetation, which can conceal predators such as cats, raccoons, and snakes.

In addition, keep in mind that Purple Martins eat only insects on the fly and require large, open spaces to capture their prey. Therefore, colonies should be within a few miles of open fields, meadows, marshes, swamps, creeks, lakes, rivers, and reservoirs — any place with an abundant supply of flying insects. A nearby clean, open water source will greatly improve your chances of attracting martins because they also drink and bathe on the fly. Cars, roads, boats, docks, and pedestrian traffic don't bother these birds, so rural, suburban, and waterfront areas all appeal to Purple Martins. Remarkably, even sprawling cities can be suitable for colonies, so long as they provide open spaces.

Thinking ahead, keep in mind that once you have erected a house and it's been colonized, you must maintain the site, trimming any surrounding trees and keeping the grounds around the colony clear.

Making Your New Colony More Attractive

If after two years you haven't attracted any martins, consider moving the housing to another location on your property. Sometimes just 25 feet will make a difference.

In areas where Purple Martins are less common, such as the fringes of the breeding range, you may need to find ways to make the housing colony more attractive. One way to attract the birds is by playing a recording of the male's dawnsong, sung about two hours before sunrise and believed to attract male subadults to a colony. Play the song several hours before sunrise, just as nature intended. Recordings are available from the Purple Martin Conservation Association (see Resources on page 32).

Also, Purple Martins may feel safer if it appears that their chosen nesting sites have been used before. As a new Purple Martin landlord, you can make the shiny, clean interiors of

your house looked “lived in” by smearing the interior walls with mud. You can also leave ample amounts of appropriate nesting materials, such as wheat, oatstraw (cut into 6-inch [15.2 cm] lengths), pine shavings, and pine needles. *Note:* Do *not* offer cedar shavings as nesting material; cedar’s strong, aromatic vapors may harm the delicate lungs of Purple Martin nestlings.

Beating Out the Competition

Purple Martin housing is valuable real estate for birds, and it should be reserved just for Purple Martins! To prevent those infamous enemies of native cavity-nesting birds, House Sparrows and European Starlings, from nesting in Purple Martin housing, entrance holes should be plugged once Purple Martins have migrated south for the winter, and they should not be unplugged until the martins have returned in the spring. The right time for unplugging the entrance holes depends on whether or not your housing is *active* (was in use the previous breeding season).

For active colonies, unplug the entrance holes when Purple Martins reappear at the site or in your area. Remove the same number of plugs as the number of male martins plus a few extra so that the birds have a choice of compartments.

For new colonies (or houses that haven’t yet attracted a Purple Martin population), unplug a couple of entrance holes on each side of the house when the subadults are due to appear — *not* when you first see Purple Martins in your area. Because subadults are the martins most likely to start a new colony and don’t arrive until 4 to 6 weeks after the adults (see page 6), if you unplug the holes when you first see Purple Martins, you’ll simply be inviting competitive and predatory species (such as House Sparrows and European Starlings) to take up residence in your empty house. Leave these entrance holes open all through the season until Purple Martins migrate south for the winter — if martins don’t take up residence the first year, local subadults may explore the house before they head south and

return to it the following year. Check regularly for and evict unwanted tenants.

The European Starling (left) and the House Sparrow (right) are two of the most aggressive competitors of Purple

Caps are usually available from the manufacturers of commercial homes and can be made to fit most housing units. You can also simply wedge small Styrofoam cups in the openings.

Ten Tips for the Best Martin Housing

Whether you're building your own Purple Martin house or purchasing a commercially made house, there are several important factors you must take into consideration.

1. Multiple compartments. Purple Martins like to nest in groups, so trying to attract Purple Martins, consider starting with a small unit of 10 to 12 compartments or 10 to 12 gourds. However, if a house is not outfitted with porch dividers (see page 11), males will claim several nesting cavities, and a housing unit this size would attract only three to five pairs of birds. The martins will use the extra rooms for roosting and for young, preflight birds as they begin to move around.

2. Easy access to each compartment. All housing units must be mounted on poles to keep Purple Martins safe from predators. But every compartment in the colony must also be accessible to the landlord with the least amount of disturbance to the birds. A fixed pole requires a ladder to reach the housing, which can be awkward and dangerous. Most landlords prefer poles that are easily lowered and raised, allowing easier access. Larger houses and heavy wooden houses require winches and pulleys to raise and lower them. Also make sure that there is a built-in pivoting door that provides easy access to each nesting cavity, which will enable you to monitor the nestlings' progress and clean the cavity throughout the breeding season.

3. White exterior. The exterior of Purple Martin houses and gourds must be white (the trim can be another color). Through "generational imprinting," the birds have become accustomed to white housing, plus the white exterior helps keep the interior of the cavities cool.

4. Adequate ventilation. Housing units should be ventilated, especially in regions where temperatures can become extremely hot. Housing units with a ceiling and roof

work the same way as an attic, trapping hot air and providing better air circulation below. Vent holes at the top of the interior and exterior walls will also provide better air circulation.

5. The right-size compartments. Although many commercial houses and most make-your-own plans provide compartments 6 inches wide, 6 inches long, and 6 inches high (15.2 × 15.2 × 15.2 cm), recent studies have shown that the birds prefer larger compartments at least 9 inches (22.8 cm) deep — and at best 12 inches (30.4 cm) deep — with a height between 6 and 7 inches (15.2–17.7 cm). A deeper cavity not only gives parent birds plenty of room to raise their young, but more importantly it provides better protection, allowing the birds to back away from predators reaching into the cavity. If you have a commercial house with the 6" × 6" × 6" (15.2 × 15.2 × 15.2 cm) compartments, you can often remove some of the interior walls to create more depth — see page 21.

6. The right-size entrance hole. Entrance holes should be no larger than 2 inches (5 cm) in diameter. Purple Martins can fit into 1¾-inch-diameter (4.4 cm) holes, and this smaller is better because it helps prevent European Starlings from usurping the cavities. If attempts to attract Purple Martins have been unsuccessful, check the dimensions of the entrance hole and make modifications if necessary. (If you're having difficulties keeping European Starlings out of your house, you can also use a starling-resistant hole — see page 25.)

7. The right-height entrance hole. Whether working with condominium-style houses or gourds, entrance holes should be located about 1 inch (2.5 cm) above the porch or interior floor.

Porch or No Porch?

They may look quaint, but no documented evidence proves that porches are necessary on a Purple Martin house. In fact, they may be a liability. No porches means nestlings and fledglings are contained in their compartments, preventing wandering and harassment from other martins. In addition, lack of porches may prevent adult males from claiming adjoining compartments, so other adult birds can

nest in those compartments (of course, you can also put up porch dividers to achieve the same result).

8. Extra perches. Purple Martins love to spend time perching, and additional perches can be added easily to martin housing. The very structure of gourd racks provides numerous perching sites. If you're working with a wooden or aluminum condominium-style house, try using an old TV antenna or long wooden dowels attached to the roof or base of the unit.

9. Porch dividers. If cavities in your housing unit have adjacent porches, you should install porch dividers. Commerdical porch dividers are typically made from sheets of aluminum, and dividers can be cut at home from aluminum flashing. They should fit from the porch railing to the wall of the house and from the porch floor to the ceiling. Research has shown that porch dividers allow a higher residency rate in multicompartment housing because male adults won't defend what they don't see. Dividers also protect the young from wandering away from their natal cavity and entering another. In most colonies the young hatch at different times, depending on when the eggs were laid. Sometimes older, larger nestlings will wander into a nest with younger, smaller nestlings and commandeer the food being brought by the parent birds — and the younger nestlings become weak and die of starvation. Additionally, older nestlings are prevented from wandering, which can cause them to become disoriented and may lead to them getting knocked off the porch by older nestlings, bachelor males, or fledged juveniles.

10. Predator guards. Because your house or gourd colony is mounted on a pole, you need to protect the resident birds from both flying and climbing predators. You then should install two types of predator guards to keep your birds safe. First, wrap the pole below the house with a metal or plastic sleeve or install some type of baffle — this will help keep the colony safe from climbing predators. Second, equip the house with a guard against flying predators such as owls and crows. This is especially important if the compartments are less than 12 inches (30.4 cm) deep. You can make your own predator

guards (see page 27) or buy them from housing manufacturers (see Resources, page 32).

Choosing the Right Housing Materials

The varieties of Purple Martin houses offered can be confusing, especially for a prospective first-time landlord. When purchasing commercially made houses, you can choose from wood or aluminum multicompartment houses and natural or plastic gourds. Each has advantages and disadvantages, and you'll get as many different opinions as people you talk to. This section will help sort out what's what.

Working with Wood

Wood is the material of choice for traditional multicompartment martin housing, and for good reason: Wood is sturdy and has good insulating properties, keeping compartments cooler when the temperature increases and warmer when it decreases.

However, depending on the type of wood used, these houses may require a lot of maintenance. Choose wood that is lightweight and weather resistant, like western cedar. Because western cedar is porous, it insulates well against both heat and cold, and its natural resins (sap) allow it to weather the elements. The Purple Martin Conservation Association recommends cedar, pine, or cypress, which should be cut ¾ inch thick for the best insulating properties. If you choose another type of wood, make sure it has been treated for outdoor use (but don't use pressure-treated lumber — the chemicals can be toxic to birds). The exterior (*not* the interior) of wooden houses should be protected with an oil-based white stain or paint. And be aware that even when using a lightweight wood like cedar, wooden houses are going to be heavy and will require a winch-system mounting pole (see page 15).

Aluminum: Benefits and Drawbacks

Aluminum offers several advantages for housing: It's lightweight, easy to maintain, durable, and available in a wide variety of styles and sizes. Aluminum housing can be lowered and raised with little effort by a telescoping pole or a rope and pulley system, allowing easy maintenance and monitoring of the colony.

One disadvantage is poor insulation. Aluminum won't protect the birds against prolonged periods of heat or cold. For areas of temperature extremes, this should be an important consideration. Additionally, many manufacturers of aluminum houses haven't updated their plans to include larger compartments and smaller entrance holes, thereby leaving Purple Martins and their young at greater exposure to predators. If you're interested in purchasing an aluminum house, then, be sure to double-check the dimensions before closing the deal.

The Gourd Tradition

Hundreds of years ago, Purple Martins changed their nesting habits, seeking out gourds in place of natural cavities. Gourds were eventually replaced by wooden houses, then aluminum ones. Today the housing cycle has come full circle, with gourds once again becoming a popular housing choice — by both birds and people.

The biggest advantage of using gourds for housing is the cost. Compared to wood and aluminum houses, they are extremely inexpensive; if you have a garden, you can even grow your own bottle gourds (although hollowing out and preparing a gourd can be time-consuming). Big, 8- to 12-inch (20.2–30.4 cm) gourds offer ample room for the birds to move around and be protected from predators. As a bonus: While the swinging motion of hanging gourds doesn't bother Purple Martins, it repels their competitors, House Sparrows and European Starlings, and wards off predators.

Although gourds aren't as durable as wood or aluminum housing, with proper care and treatment they can last at least 10 years. Treat the exterior of gourds with copper sulfate and paint them white to reflect the heat. You should also outfit gourds with canopies to keep out the rain, drainage holes to keep the nest dry, and access doors to allow proper monitoring. (For instructions on preparing a gourd for Purple Martin housing, see page 22.)

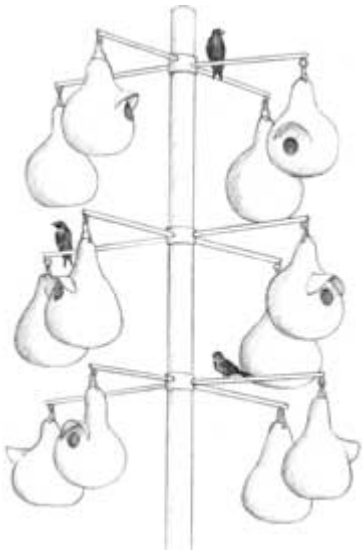
Plastic Gourds

One of the latest additions to the arena of Purple Martin housing are plastic gourds. These innovative, roomy, lightweight pieces are molded from white plastic and usually are equipped with canopies, drainage holes, and access ports. Gourd colonies using plastic gourds are easy to raise and lower, and purchasing plastic gourds relieves you of the time and energy that must be devoted to preparing home-grown gourds for housing. Best of all, as far as Purple Martins are concerned, they look and feel like real gourds.

Two of the most popular brands are the SuperGourd, available from the Purple Martin Conservation Association, and those of Natureline (see Resources, page 32).

Gourds can supplement multicompartment housing or be used exclusively. They can be hung several ways: from the bottom of wooden housing units, on crossarms fixed to poles, or on any rack system that you can devise — inventive landlords have come up with many creative and successful systems.

Picking the Right Mounting Pole



The most simple gourd rack is a series of crossarms set on a pole that can be raised and lowered by a winch system.

The type of pole you choose for mounting your house is just as important as the house itself. The pole should allow safe and easy access to the martin house while keeping the unit stable. If the house tilts, eggs or young can fall out of the nests, and the adult birds may abandon the colony. Because frequent nest checks by the landlord are an important part of monitoring and maintaining a Purple Martin colony, the proper pole will make the job easier.

Based on the kind of housing and the landlord's preference, the height of the pole can range from 10 to 20 feet (3–6.1 m). Keep in mind that Purple Martins prefer to nest in houses that are the tallest element in the landscape within at least a 40 feet (12.1 m). If no tall trees are in the area, you can start with a pole roughly 14 feet (4.3 m) high. The birds will be close enough to the ground to enjoy, and they can be inspected easily. If because of site location you must start with a taller pole, keep in mind that high winds can bend or snap a pole, especially with a full house — be sure to choose a sturdy, one-piece pole and reinforce it as much as possible.

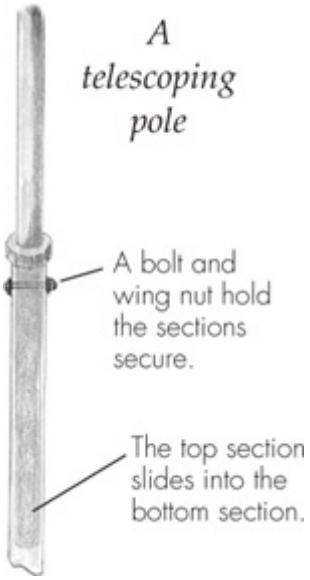
You'll need to use a ladder to reach a colony mounted on a fixed pole — a cumbersome and potentially dangerous prospect. Instead, consider using a telescoping pole or designing your house so that it can slide up and down the pole aided by a winch or pulley.

The telescoping pole is a series of sections that fit into each other and are secured with pins. As the pins are removed, the pole drops and the house is lowered. Because it may be difficult to push back up, a telescoping pole can support only small, lightweight housing — especially when it's filled with nesting materials and birds. If you use this type of pole, make sure the house is always reoriented in the original direction after lowering and raising it; otherwise, the birds may become confused about which compartment is theirs and end up leaving the colony. It's a good idea to mark the compass directions on the pole and the house.

A strong, heavy-gauge, one-piece metal pole outfitted with a winch or pulley is the sturdiest, and thus safest, choice. Winch- and pulley-system poles work in basically the same manner. Both have a cable or rope attached to the top of the house. The pole runs through a channel in the center of the house, and the house is lowered and raised by pulling on the cable or rope. A winch system can easily lower and hoist multicompartment wooden houses and colonies of gourds, and it's fairly easy to operate. Even so, remember that the house will be heavier once it's occupied. Many landlords have devised their own systems of winches and pulleys to raise and lower houses; you too can invent your own, or you can purchase one of the many kits available from suppliers of Purple Martin houses and accessories.

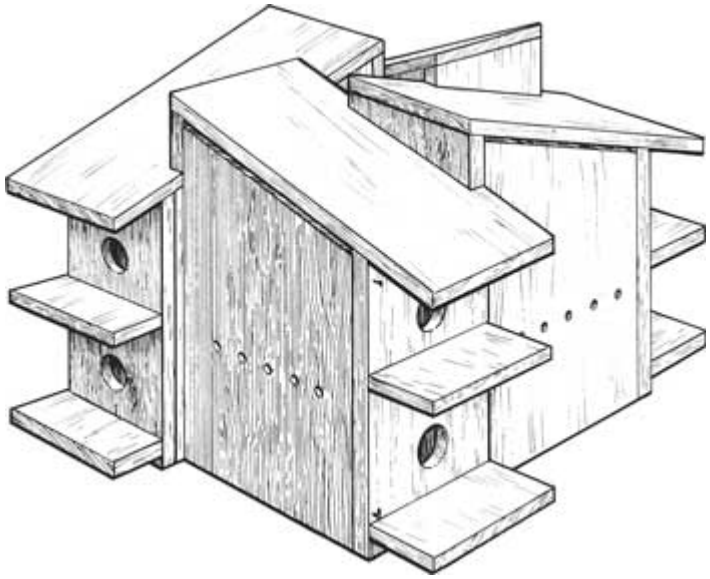
Build Your Own Purple Martin House

If you are handy, you can construct your own wooden martin house. The plan offered here joins four separate double-decker units into one structure, creating an eight-compartment house that boasts deep (6” × 11½” × 6”, or 15.2 × 29.1 × 15.2 cm) compartments, separate porches for each compartment, and 2-inch-diameter (5.1 cm) entrance holes located 1 inch (2.5 cm) above the porch. It is designed to be mounted on a telescoping pole or on a fixed pole with a winch or pulley system used to raise it up and down for monitoring purposes.



A telescoping pole or rope and pulley system will be sturdy enough to support most aluminum houses, which are relatively light. For the much heavier wooden houses, however, a sturdy wooden or heavy-

Step-by-Step



The design of this Purple Martin house creates a separate porch for each compartment, which prevents aggressive male martins from harassing neighboring birds. The open channel in the middle of the unit creates space for a sturdy

1. Cut pieces as illustrated above, using a 17-degree bevel cut to cut the top edge of the *front,* the back and front edges of the *roof,* and the higher, straight part of the top edge of the *back*. Cut ⅝" off the corner of each floor to create drainage holes.

Materials	***Tools***
¾" × 11¼" × 16' (1.9 cm × 28.5 cm × 4.86 m) length of cedar; in other words, 16' of a standard 1 × 12 board	Table saw, saber saw, jigsaw (17-degree bevel cuts are required), or carpenter's saw and miter box
¾" × 7½" × 12' (1.9 cm × 19.0 cm × 3.64 m) length of cedar; in other words, 12' of a standard 1 × 8 board	2" (5.1 cm) diameter keyhole saw or expansion bit
112 (½ lb., or 227 g) 6d (2", or 5.1 cm) galvanized ring-shank wood siding nails, or 1⅝" (4.1 cm) drywall screws	⅜" (.949 cm) drill bit
	⅛" (.316 cm) drill bit
	Power or hand drill (brace)
	Claw hammer
	Standard screwdriver

Eight 4d (1½", or 3.8 cm) galvanized finishing nails

4 right-angle screws

White oil-based primer

White exterior latex house paint

Phillips-head screwdriver (if using drywall screws)

Tape measure or yard (meter) stick

Carpenter's square

Pencil

Resorcinol wood glue

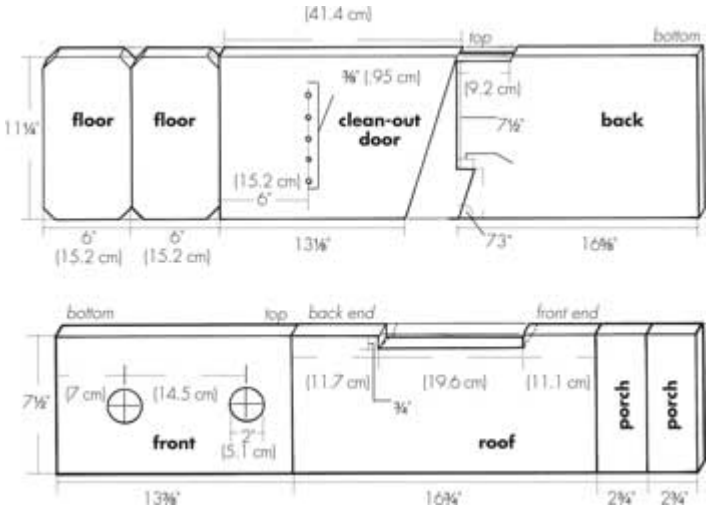
Paintbrush

Sandpaper (optional)

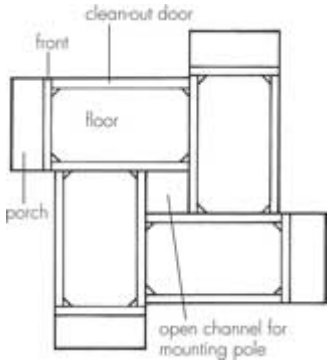
Building Notes

- Be sure to allow for the width of the saw blade when measuring.
- The grain of your board should run lengthwise to prevent warping and cracking.
- The cutting diagram shown is for one double-decker unit. Cut four of each piece to construct the four-unit, eight-compartment house.
- Cedar may split, so you should predrill nail holes.
- A weather-tight box is very important for Purple Martins; therefore, you should run a bead of resorcinol glue along the edges of lumber to be joined in addition to nailing or screwing the pieces together. Do not use yellow wood glues, which are not waterproof.

Cutting diagram



2. Drill two 2" (5.1 cm) diameter entrance holes in each of the four *front* boards. Drill five ⅜" (.95 cm) ventilation holes in each of the four *sides* in a horizontal row 6" (15.2 cm) from the bottom of the board (see the cutting diagram); use a carpenter's square to locate the midline on each side.



Top view of the house plan

3. Nail or screw together the four *back* pieces at right angles, as shown in the top-view diagram to the right.

4. Nail or screw the eight *floor* pieces at their appropriate positions to the four *back* pieces already joined. Measuring up from the bottom of the back, place the tops of the *floors* at ¾" (1.9 cm) and 7½" (19.0 cm). (Because some of the floors will butt up against floors in adjacent units, you will need to "toe-nail," or nail at a 45-degree angle, in order to attach the floor.)

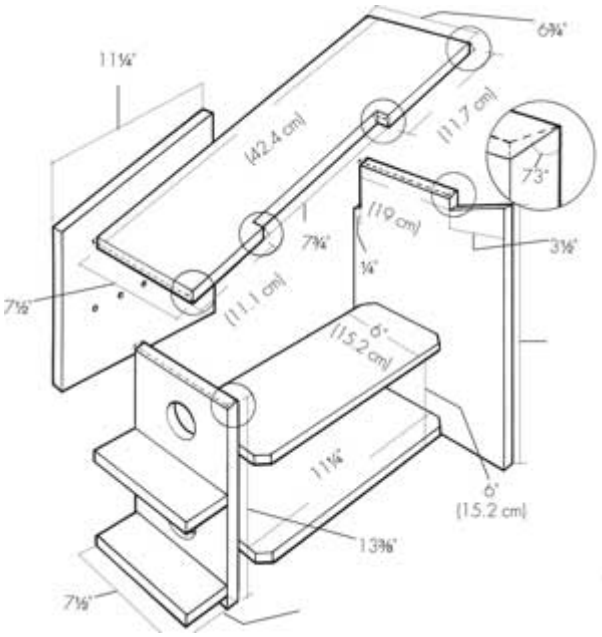
5. Set the clean-out door in place, flush with the bottom edge of the back. Now place the front piece flush with the bottom edge of the clean-out door. With a pencil, mark the location where the two *floors* will attach to the *front.* Do this for each of the four units. Do not attach any of these yet.

6. From the inside of the front, nail or screw two *porch* pieces to each *front,* so the top of each is ¾" (1.9 cm) above the top of the *floor* pieces.

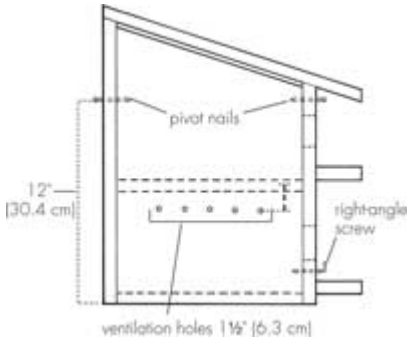
7. Now attach the four *fronts* to their respective *floors.*

8. Return the clean-out *door* to its correct position, flush with the bottom edges of the *back* and *front.* Make sure that the *door* is ¼" (.6 cm) shorter at the top; this will enable it to pivot out easily and also will create a ventilation space.

9. Measure up 12" (30.4 cm) from the *bottom* and mark the locations of the two galvanized finishing nails that, by being exactly opposite each other, will act as pivots. Drill guide holes and install two 4d nails. Repeat for the other three units.



10. Drill a third guide hole near the edge of each *front* at the bottom, on the clean-out door side; insert right-angle screws. These will hold the clean-out doors in place.



For the side panel to swivel properly, the pivot nails must be exactly opposite

11. Finally, nail or screw the *roof* to the *back* and *front* boards. Repeat with the other three units to complete the house.

12. Paint the exterior of the house with a coat of white primer, followed by as many coats of white latex paint as you think are necessary. Allow each coat to dry before applying the next.

Mounting

Mount the eight-compartment unit on a sturdy wooden or metal pole. Because it is so large and heavy, you will probably need to devise a winch system to lower and raise the house for monitoring (and you may need an extra set of hands to help you get it onto the mounting pole in the first place). See page 15 for a discussion of winch systems — most suppliers of Purple Martin houses and accessories sell winch kits. You may need to build a platform for the house to sit on, with a hole just a bit bigger in diameter — usually ⅛ inch (.32 cm) — than the mounting pole. You can then attach the winch cables to the platform rather than the house itself, which may make raising and lowering the house easier and will cause less stress to the house joints.

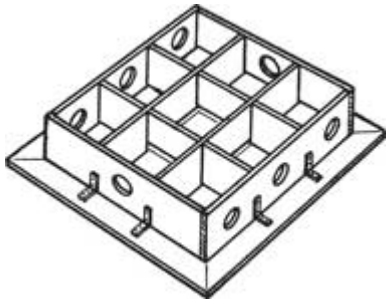
Make a Martin Gourd House

This plan shows you how to transform a traditional calabash gourd into a Purple Martin nest cavity. Keeping in mind that in eastern North America martins like to nest in groups, plan to prepare at least eight gourds at a time. You can purchase the gourds or even grow them your self if the growing season in your area is sufficiently long. In the latter case, pick the gourds only when the vine is dead. Store them in a well-ventilated space and turn them every couple of days. They will take 3 to 4 weeks to dry completely. (Please note that preparing raw gourds for use by martins is a laborious and time-consuming process that is not necessarily easier than constructing your own martin house.)

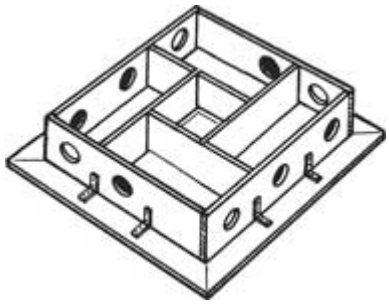
Renovating Older Houses

Many older houses — and many houses currently available commercially — don't live up to their full potential as colony sites simply because they don't take advantage of the latest research on Purple Martins. To better safeguard the Purple Martins in your colony and reduce the danger from predators, consider renovating any houses with compartments measuring 6" × 6" (15.2 × 15.2 cm) to have the larger, 6" × 12" (15.2 × 30.4 cm) compartments that studies have shown Purple Martins prefer.

In many of the traditional condominium- or apartment-style houses, such renovations can be accomplished quite easily by simply removing some of the interior walls and blocking off the corresponding entrance holes (see below). While this decreases the number of compartments in your house, it offers better protection for the birds in your care. Besides, you can always erect another, neighboring house to make up the difference.



The interior of a traditional apartment-style house offers 6” × 6” (15.2 × 15.2 cm) compartments.



By removing some of the interior walls, blocking extra entrance holes, and drilling other entrance holes as appropriate, you can upgrade these houses to the new standard of 6” × 12” (15.2 × 30.4 cm) compartments.

This plan was excerpted in part from *The Backyard Birdhouse Book: Building Nestboxes and Creating Natural Habitats,* by René and Christyna M. Laubach (Storey Books, 1999). The idea of creating access ports using screw-on lids from plastic jars was conceived by Andrew Troyer, a builder and inventor well known among Purple Martin enthusiasts as the creator of the Troyer-14 wooden martin house. (For more information about the Troyer-14, visit the Web site of the Purple Martin Society — see page 32.)

Step-by-Step

1. Clean the outside of each gourd with a wire brush and sandpaper.

2. Using the compass, draw a 2”-diameter (5.1 cm) entrance hole on each gourd; cut out with the keyhole saw, expansion, or holesaw bit. Be sure to locate the hole in the approximate center of the gourd — if it faces upward, the hole will allow

rain to penetrate the cavity and soak both the nest and the fragile nestlings. (Wear a face mask when drilling and cleaning out gourds, as the dust created by drilling can be harmful to breathe.)

The finished gourd offers a canopy to protect the nesting birds from both rain and predators. The gourds can be hung from any type of rack or in conjunction with existing housing.

Materials	***Tools***
8 or more dried gourds 8”–12” (20.3–25.4 cm) in diameter, with walls at least ¼” (.63 cm) thick	Wire brush
1½ pounds (680 g) copper sulfate	Sandpaper
7½ gallons (28.4 liters) water	Compass, to draw 2” (5.1 cm) diameter circle
1 large plastic jar per gourd, with screw-on threaded lid, about 4” (10.1 cm) in diameter with ample collar and sloping shoulders	Marker
Fast-drying black enamel paint	2” (5.1 cm) diameter keyhole saw, expansion, or drill-mounted holesaw bit
Three 3/8-inch (.949 cm) #8 sheet metal screws	Serrated knife
White silicone caulking	Power or hand drill
White oil-based primer	
White enamel paint	

- 1’ (30.5 cm) rigid wire (or coat hanger wire) per gourd
- 1 sheet 6” × 2½” (15.2 × 6.4 cm) textured aluminum or flexible plastic per gourd
- ¼” (.625 cm) and ⅜” (.938 cm) drill bits
- Rubber gloves
- Container(s) for soaking gourds
- Utility knife
- Scissors
- Paintbrush
- Wire cutters
- Tin snips
- Paint thinner

3. Through the new entrance holes, use a serrated knife to break up the hard mass of pith and seeds inside; thoroughly remove this material.

Drill the entrance hole in the approximate center of the gourd.

4. With the entrance hole facing you, drill 5/16“-diameter (.3 cm) holes through the front and back of the stem end of each gourd to permit insertion of wire for hanging. Drill five 5/16” (.3 cm) holes in each gourd’s bottom for drainage and four ½” (1.3 cm) holes just below the hanging holes for ventilation.

5. Wearing rubber gloves, dissolve the copper sulfate in 7½ gallons (28.4 liters) of water. Soak the gourds in the copper solution for 15 minutes. This will protect them from mold and rot by fungus. Allow them to dry.

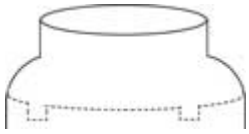
6. Cut the neck and sloping shoulders plus three tabs (see diagram) off each plastic jar, using a utility knife to start the

cut and scissors to finish it. Keeping the lid screwed on, paint the inside and outside of each top with black enamel paint.

7. Trace the outline of the jar's rim on the upper-middle part of each gourd on a side one-quarter turn from or opposite the entrance hole. Using the keyhole saw or expansion bit, drill the hole for the access port in each gourd, using the traced outline as your guide. It should be about 4" (10.1 cm) in diameter.

Caution

Copper sulfate is a toxic substance and should be handled with care. Always wear gloves when working with it! To dispose of copper sulfate, allow it to evaporate outdoors until all that remains are saltlike granules, which can be thrown out with your household garbage.



Cut the neck, sloping shoulders, and three tabs as one piece from

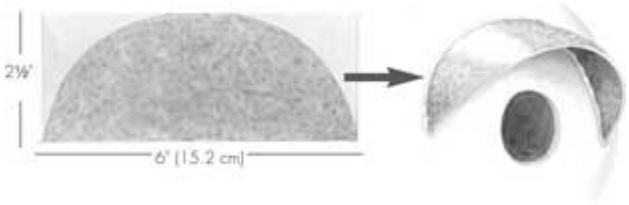
Use the rim of the jar as a guide to trace the dimensions of the access hole on each gourd.

8. For each gourd, center the jar neck-and-lid assembly over the access hole, with the tabs flat against the surface of the gourd. Drill three pilot holes through the tabs and into the gourd. Then attach the jar neck-and-lid assembly to the gourd using the sheet metal screws, being careful not to over-tighten and warp the plastic piece.

9. Fill in any gaps between the plastic jar top and the gourd with silicone caulking.

10. Cut each strip of aluminum or plastic to size (see diagram below). Shape into an arc and attach with silicone caulking just above the entrance hole of each gourd. Let dry.

11. Paint the outside surface of your gourds with one coat of white oil-based primer and three coats of white enamel paint, allowing each coat to dry before beginning the next.



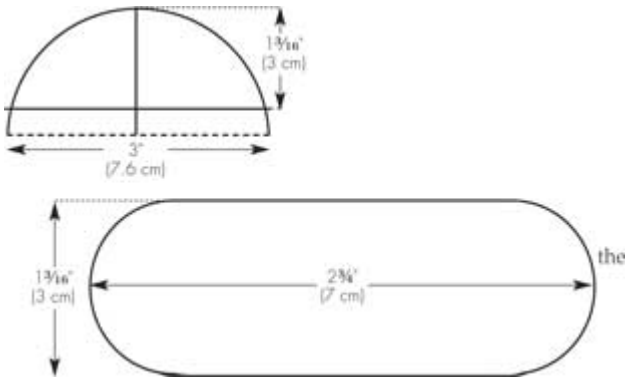
After cutting the arc of metal or plastic (above), flex the piece

12. Insert a length of wire through the holes in the top of each gourd. Hang the gourds from the bottom of a housing unit, on crossarms, or on a rack system.

Starling-Resistant Entrance Holes

European Starlings not only build their own nests in the cavities of Purple Martin housing but also destroy Purple Martin eggs and kill nestlings and adults. If starlings are common in your area and seem to be taking an interest in your housing, fit each open compartment with a starling-resistant entrance hole. This innovation was originally conceived several years ago by Charles McEwen, from Moncton, New Brunswick, Canada. Many landlords have had success using one of the many variations of his design. However, experts recommend that you use them only after Purple Martins have established themselves in the colony for at least one full season. Once they've started building a nest or have bonded to the colony, they won't be reluctant to squeeze through the new entrance holes.

Two of the simplest designs for the starling-resistant entrances are half-moon and oblong shapes. They allow Purple Martins to enter but exclude most European Starlings, who are relatively long-legged and are unable to bend down to gain access through the hole.



The half-moon entrance hole (at left) is 1 3/16"(3 cm) high, cut from half of a 3-inch-diameter (7.6 cm) circle. The oblong entrance hole can be cut by drilling two 1 3/16"-diameter (3 cm) circles and cutting out the material between them. Both will discourage starlings from entering.

To fit your house with the new entrance holes, use an expansion bit, keyhole saw, or jigsaw to cut the shape out of a

rectangular piece of wood. Center the wood over the old entrance hole; the bottom of the new hole should be flush with the floor or raised just slightly — no more than ½ inch (1.3 cm) — above it. Screw or nail together.

You can also install adjustable starling-resistant entrance holes. Some landlords feel that the standard design is a tight fit for Purple Martins, who often must bond to the colony site before they will accept the oddly shaped entrance holes. Adjustable starling-resistant entrances employ a partition that raises or lowers, easily changing the height of the entrance hole. Because starlings breed and nest before subadult Purple Martins — the newcomers looking to establish a new colony, who may be wary of the tight fit of the starling-resistant holes — the doors can be lowered to 1 3/16 inches (3 cm) during that time to keep out the starlings. By the time the subadults are scheduled to arrive, most starlings have finished breeding and are no longer a competitor to Purple Martins (although they are certainly still a predatory menace), so the door can be raised a bit, permitting easier martin entry. Once martins have established themselves at the colony, the door can be lowered again as protection against starling predation.

Making and Installing Predator Guards

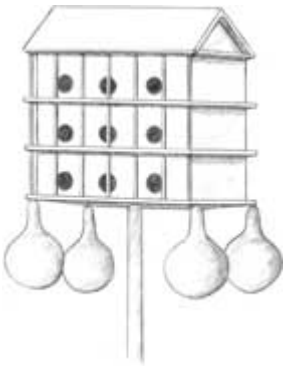
Just about every landlord has experienced the loss of one or more Purple Martins. Some loss is normal in the course of a season, but large losses due to predators may cause the birds to abandon their colony. Some of the most common flying predators are owls, hawks, falcons, crows, gulls, and, in the Southwest, roadrunners. Birds that destroy both eggs and young are jays, grackles, crows, European Starlings, House Wrens, and House Sparrows. Raccoons, opossums, and snakes can easily climb up poles. Although the bigger, 12-inch-deep (30.4 cm) compartments offer better protection against predators than the traditional 6-inch-deep (15.2 cm) compartments, you should also consider installing an owl guard on the house, which will protect nesting birds from flying predators, and a baffle or sleeve on the mounting pole, which will protect the birds from climbing predators.

Protection from Flying Predators

Owl guards offer the best protection against flying predators for condominium-style houses. Traditional owl guards comprise a series of vertical dowels or rods placed in front of entrance holes. They are attached to the porch, spaced about 3 inches (7.6 cm) apart, and run the length of the house. They allow Purple Martins to pass through but prevent larger predators, such as owls, from reaching the nest. Owl guards are highly recommended for all houses but should be considered mandatory for those with shallow compartments. You can fashion your own owl guard from wooden dowels or purchase a ready-made one from a house manufacturer — see Resources on page 32.

Gourds, too, are not invulnerable to raids by hawks and owls. While not completely owl-proof, canopies (see page 25)

will lessen the chances of owl predation.



You can make simple yet effective owl guards from wooden dowels.

Protection from Climbing Predators

Be sure to install predator guards on all mounting poles to deter predators such as raccoons, opossums, house cats, and snakes. PVC or stovepipe “sleeves” and wobbly baffles mounted on the pole beneath the house are strongly recommended. You can buy premade, finished predator guards from many manufacturers, or you can devise one of your own making from spare parts in your garage — what’s important is not what it’s made of, but that you use one and it works!

metal cone baffle

stovepipe sleeve

PVC sleeve

Replacing or Expanding Housing

Over the years, housing units eventually wear out and modifications need to be made. As Purple Martins have extreme nest-site fidelity and return to the exact spot where they have nested successfully before, certain steps must be taken to ensure that the birds will nest in the new housing. Unless absolutely necessary, it's best to make changes gradually and not during the breeding season, because the birds are sensitive to change and if the colony is disrupted too quickly, they may abandon the site.

Replacing Old Housing

If it is necessary, use new housing that is similar in size and shape to replace the old. Be sure the new housing is as close as possible to the old in height and compass orientation, and put it up at least one year before removing the old housing to give the birds time to get used to it. If some birds do accept and breed in the new housing right away, remove the old housing during the off-season. But if it hasn't been accepted, keep up both the old and new housing for another season.

Expanding the Colony

First and foremost, consider carefully the time you're able to spend monitoring and maintaining the colony. If expansion still seems plausible, simply add another housing unit a few feet away, or install additional gourds. If you have porches, try installing porch dividers (see page 11) to increase occupancy.

Monitoring Your Colony

An important part of being a landlord is monitoring your colony. An active landlord will be rewarded with healthier birds, a higher fledgling count, and an increase in colony size. Purple Martins are friendly and accustomed to human contact, but be prepared to spend a lot of time with the birds that inhabit your colony — if you don't spend time with them, you'll be viewed as an intruder. There's no point in becoming a landlord if you can't commit time to your tenants. A daily walk under the housing will tell you what is happening in the colony. Start by labeling each compartment, and have a notebook handy to record your findings. Look for signs of predators, including broken eggsand any damage to the housing unit, and for fallen young. Once nest building begins and until the nestlings are 20 to 22 days old, check each cavity weekly to record the status of the nest, when and how many eggs are laid, and the progress of the nestlings. Nest checks will allow you to monitor the development of the eggs and the growth and health of the nestlings.

What Should I Look for During Nest Checks?

Frequent checks on the nests and good record keeping will help you determine if there are predators or parasites, how the nestlings are growing, and when they will fledge. It's very important to know how old the nestlings are in each compartment: If one falls from a nest, it can be placed back into the correct nest or with other nestlings of the same size. If a larger nestling is placed with smaller ones, it may eat their food and cause some to die of starvation; conversely, if a smaller bird is placed with larger nestlings, *it* might starve. During nest checks you can also make sure that the nest is clean and dry. If it is not, you'll need to replace the nest — see page 31.

Making Their House a Home

Once the birds have returned to or settled in a colony and paired, they will begin building a nest. Although both the male and female initiate nest building, the female will finish off building the nest by herself while the male protects her. In Purple Martin colonies, nest building is a contagious activity. Once one pair starts, soon every other pair joins in. If the birds have difficulty getting into their compartment, they may start building in neighboring compartments, so it's not uncommon to see half-built nests when doing nest checks. Twigs, straw, grass, and mud are the most common materials used in nest building. Martins sometimes build a shallow wall or dam of mud just inside the entrance hole, which experts believe provides protection to the eggs against predators and rain. If you wish, you can also set out trays of soft, dried, long pine needles, straw, or dried grass clippings on elevated platforms to assist the birds in their nest building. However, don't set the materials too close to shrubs or bushes that may conceal predators. You can also help the birds find mud by mixing exposed earth in your yard with some water.

The Miracle of Birth

After the nest is built, the female lays one egg every day for up to 7 days and then incubates the eggs for 14 to 17 days. Throughout incubation, the female will leave the nest occasionally to look for food. During those times the male will spend a great deal of time in the nest, insulating the eggs.

The eggs hatch over 1 to 3 days. Nestlings grow rapidly until they are about 20 days old, at which point their growth levels off. This is a very busy time for the adults because they have to provide a constant supply of food. While the nestlings are young, up to 7 days, their parents feed them small insects in the form of a *bolus,* or rolled, ball-like mass. Parents hold the bolus with the tongue against the roof of the mouth and feed it to the nestlings when they return to the nest. After 15 days, the parents feed the nestlings larger insects such as damselflies, lacewings, and dragonflies, passing them from

beak to beak. The parents may also feed them small stones and gravel to assist their digestive system in breaking down the insects'hard bodies.

Nest Replacement

Purple Martins aren't bothered by humans touching their nests. To keep the cavities dry and free from parasites, their nests should be replaced when the nestlings are about 10 days old and possibly again when they are 18 to 20 days old. Nest replacement before 8 days is not recommended because experts believe that the original nesting material assists the young with their growth. Nor should nests be replaced after 20 days, because it may frighten the fledglings and cause them to jump prematurely from the nest.

To change nests, carefully relocate the nestlings to a safe, temporary nest made from dried pine needles, straw, or dried grass clippings in a small covered box with some ventilation holes poked in it. Remove and discard the original nest. Arrange a thick layer of replacement nesting material approximately the same size as the old nest, making a shallow cup in the center, and sprinkle 1 or 2 teaspoons (5–10 ml) of diatomaceous earth over it to kill parasites. Then carefully return the nestlings to their new nest. Sometimes the parents will push new nesting material aside, which in aluminum houses will uncover the slippery metal floor and can cause a leg deformity in the nestlings known as "leg splay." To prevent this, place a piece of plastic or canvas mesh on the floors of aluminum houses.

Some landlords use artificial nest inserts made from thick Styrofoam or wood in place of the traditional nests built by Purple Martins. These artificial nests can be drier and warmer than regular nests. They can replace wet or damp nests and nests infested with parasites. You can add dry pine needles or straw to soften the nest.

Getting Ready to Fly

At about 18 to 20 days the nestlings start to appear at the entrance hole, surveying the world they soon will be flying into. A few days before the nestlings are ready to fledge, the parents slow the feeding schedule, helping the fledglings achieve the slimmer flight weight that will enable them to fly — and giving them the incentive to leave the nest and look for food.

The nestlings are ready to leave the nest when they are 28 to 32 days old. Their first flight is one of great tumult. The males of the colony often scare the fledglings into flying, screaming and chasing them. It's a matter of survival: The fledglings must learn to fly well quickly to evade the many predators that lie in wait for them.

For a few nights the fledglings may return to the nest, and they'll spend their days perching, preening, and waiting for their parents to feed them. Initially the parents will humor them in this, but after a few days they start to feed them only smaller insects, hovering above them and dropping the insects into their mouths. After several days of this, the fledglings learn to meet their parents in midair, taking the food from their beaks. Soon after, the fledglings will be off on their own and able to catch their own food.

Resources

The Purple Martin Society, NA
8921 Royal Drive
Burr Ridge, IL 60521-8332
(630) 655-2028
Web site:

www.purplemartins.com
Information, supplies, and housing.

Purple Martin Conservation Association
University of Pennsylvania, Edinboro
Edinboro, PA 16444
814-734-4420
Web site:

www.purplemartin.org
Information, supplies, and housing.

The Nature Society
Purple Martin Junction
Griggsville, IL 62340
217-833-2323
Web site: www.naturesociety.org

Trio Manufacturing, a branch of this company, offers premade housing.

Coates Manufacturing, Inc.
3805 McCoy Drive
Bossier City, LA 71111
800-869-2828
Web sites: www.coatesmfg.com; www.bestbirdhouse.com
Offers housing and supplies.

Lone Star Purple Martin Houses
109 Echo Lane
Seguin, TX 78155
830-401-4442
Web site:

www.lonestarpurplemartin.com
Offers housing and supplies.

Plasticraft
115 Plasticraft Drive
Albertville, AL 35950
(800) 239-4105
Manufacturer of Natureline plastic gourds.

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