

# How & Why to Do Nest Replacements for Purple Martins

Ken Kostka  
James R. Hill, III  
Purple Martin Conservation Association

Controlling nest parasites by doing nest replacements can dramatically improve your nestlings' health and chances of survival, both before and after they fledge. Tests conducted by the PMCA in the late 1980's showed that only 44% of martin nestlings in parasite-infested nests survived to fledging age, compared to 84% in parasite-free nests. The man who conducted those tests, James R. Hill, III, stated, "The difference might actually have been greater than what was measured, be-

cause the young raised in the absence of parasites seemed fat and healthy, and probably had a higher-than-average first-year survival rate, whereas the young subjected to parasites seemed thin and often sickly, making them less likely to survive after fledging." In the past, some landlords routinely added sulfur or other pesticides to their martin nests in order to control parasites, but today, nest replacement is the preferred method of control. Besides being illegal, the use of pesticides in nests can have harmful effects on nestlings, lowering their chances of long-term survival and their future reproductive success. With the advent of a totally-safe method of controlling parasites, it doesn't make sense to use illegal and potentially-harmful pesticides. (Ideally, nests should also be changed after long, heavy, wind-driven rains since rain-soaked nests can cause nestlings to die of hypothermia or chilling.)

Unfortunately, most people balk at the thought of replacing a martin nest. They're afraid of "messing something up," or disturbing the martins. Some landlords believe that touching baby birds will cause their parents to abandon them. This



James R. Hill, III

**Fig. 1. An extreme example of blowfly parasitism on a 6-day-old nestling Purple Martin. This nestling's siblings had died, apparently of blowfly parasitism, forcing every maggot in the nest to be dependent on just a single host individual for their continued nourishment. Many maggots had fallen off before this photo was taken in Pennsylvania. This photo strongly emphasizes the need for landlord vigilance and the occasional need for nest changes before nestlings reach 10 days of age.**

'old wives tale' is untrue. Most birds have little or no sense of smell, and by the time martins have built nests, laid eggs, and hatched young, they've invested an enormous amount of time and energy in their reproductive effort and will not be discouraged when they witness humans handling their young. Thousands of nest changes are conducted every year by conscientious Purple Martin landlords and bluebird trail operators without a single reported case of nest abandonment.

What is a nest replacement? It's when a landlord removes a parasite-infested nest from a martin compartment or gourd while the young are still living in it and replaces it with a bed of clean, dry material. By the time nestlings are about 10 days old, the typical martin nest is crawling with a variety of insects and arachnids that weaken and sometimes kill the martin nestlings. These nest-dwelling parasites include martin fleas, nest mites, blowflies, and bedbugs, all of which are harmless to humans, but can be deadly to the nestlings.

Blowflies (*Protocalliphora hirundo*) are especially common in the northern part of the martins' range, and are perhaps the most harmful of these parasites. The adult blowfly, which resembles a common housefly, lays her eggs in the nest material when the martin nestlings hatch. Once the blowfly eggs hatch, the larvae (or maggots) hide in the bottom of the nest during the day, then attach themselves to the nestlings at night and take blood meals (i.e., suck their blood). It's not uncommon to find 200-500 of these maggots in a single martin nest (see Fig. 1). If we were to view blowfly parasitism from a human



James R. Hill, III

Fig. 2. The first step in conducting a total nest replacement is to remove the nestlings from their cavity one at a time, search for and remove any blowfly maggots attached to their bodies, then place the nestlings in a deep, 5-gallon bucket, lined with wood shavings. This photo shows a nest replacement being conducted on a cavity in a wooden T-14 martin house with a pullout nest tray.



James R. Hill, III

Fig. 3. A deep, 5-gallon bucket is recommended so that older (i.e., 20-day-old) nestlings won't be able to flutter up and out to escape while the landlord is cleaning and refurbishing their nest cavity. To keep the bucket clean, wait until each nestling "poops" before placing it in the bucket (they do this instinctively when handled). Change the material in the bucket often to avoid spreading disease.



James R. Hill, III

Fig. 4. Doing a complete nest replacement on a natural gourd is easy if you've added access doors, or if you use SuperGourds that already have them. Just reach in and remove the entire nest. Sweep up any nest debris left behind using your fingers and throw it out. You don't need to remove every last parasite.



James R. Hill, III

Fig. 5. When doing a complete nest replacement in one of the commercial aluminum houses, such as this Trio Castle modified to have 12, double-sized compartments, you need to remove the nest and the dri-nest subfloor, then, using a putty knife, scrape out the blowfly maggots hiding there and in the corners.

perspective (which it is improper to do), it would be like trying to sleep in your bed at night with dozens of banana-sized, bloodsucking maggots intermittently feeding on you.

Another common parasite is the nest mite (*Dermanyssus prognephilus*), a 1-mm-long bloodsucking arachnid that sometimes occurs in large numbers and can be observed crawling all over the nests, cavity walls, entrance holes, and porches of martin houses and gourds. Nest mites eat the skin and drink the blood of their hosts. Heavy infestations can cause death or premature fledging of nestlings because parent martins simply refuse to enter the nest cavity to feed their young. One nest the PMCA sampled had in excess of 50,000 nest mites!

A third nest parasite is the martin flea (*Ceratophyllus idius* in the eastern U.S. and *Ceratophyllus niger* in the western U.S.). It's not unusual to find hundreds of fleas and a few thousand of their larvae in a martin nest. Only adult fleas take blood meals.

A fourth nest parasite is the swallow bug (*Ornith-ocoris pallidus* and *Cimexopsis nyctalus*), which are related to bed bugs. Found mainly in the southeastern United States, they also take blood meals from their hosts and can occur in large numbers.

In Pennsylvania, it's not uncommon for us to find hundreds of blowfly larvae, mites, and fleas in every Purple Martin nest we see. Many martin nests contain so many parasites, in fact, that the entire nest bowl is a seething and writhing mass of parasites and pulverized nest material. When food is plentiful and parents are attentive, parasites usually won't cause the death of a substantial number of martin nestlings. After all, martins have coevolved with these parasites. However, if food becomes scarce because of foul weather, or inexperienced (SY) parents do not bring in enough food, the energy drain inflicted by these parasites can weaken or kill even healthy nestlings. Under normal conditions, replacing the nest material when the young are about 10 days old, and then again when they're 20 days old, eliminates the majority of nest parasites, allowing runts and other marginally-healthy nestlings to survive.

To do nest replacements, you'll need a bag of replacement nesting material (such as wood shavings or soft, dry pine needles), a deep, 5-gallon bucket to temporarily hold the nestlings, a putty knife or similar instrument to scrape out nest debris, and a container for the old material you remove. A bottle of

rubbing alcohol and a rag should also be on hand for wiping down the interiors of mite-infested cavities, as well as cleaning your hands between replacements. Although martin parasites are not harmful to humans, nest mites and feather lice can crawl onto you and be annoying, plus there is a considerable amount of dust and debris that is kicked up when doing nest replacements. Therefore, if you have a large number of nests to replace, you might consider wearing long sleeves and pants, a dust mask, and goggles.

What follows are the basic steps involved in replacing a nest because of parasites or wetness. First, remove and inspect the young. Pull off and discard any blowfly larvae that are attached (see Fig. 1). Place the nestlings into a bucket already lined with a few inches of fresh nesting material (Figs. 2, 3). Take a good look at the nest. Observe where the nest bowl is located and how deep it is. Next, remove all of the nest material from the compartment or gourd (Fig. 4) and scrape out the



James R. Hill, III

**Fig. 6. Once the martin house cavity or gourd has had its old, parasite-infested nest removed, place 1-3 handfuls of soft wood shavings or dry White Pine needles into the cavity and spread it around evenly. Fashion a bowl or depression in the rear then place the nestlings into it in a huddle. It is important that the material you use be soft and have lots of air spaces between the pieces. Do not use sawdust as it will absorb water like a sponge.**

bottom of the compartment to insure removal of all blowfly larvae (Fig. 5). In the case of gourds, dump the remaining debris/blowfly larvae out the access door or push them out through the drainage holes (check to make sure these are not clogged). If the housing is heavily infested with nest mites, quickly wipe down interior and exterior surfaces with a rag and rubbing alcohol. You don't need to search out every last mite, blowfly larva, and flea; as long as you remove most of the nest material, you will have removed most of the parasites. Insert a handful or two of fresh, dry nesting material (either wood shavings or soft pine needles) into the cavity (Fig. 6). Pat this material down to form a 1½- to 2-inch-thick "bed." Finally, form a depression or bowl in this bedding and deposit the nestlings into it (Fig. 7). Repeat the procedure for each nest to be replaced. You may find that some active nest cavities contain very little if any nesting material; this is not unusual for inexperienced breeders. Insert the same amount of replacement nesting material as you would for all other nests. Never attempt to replace more than one nest at a time or you risk mixing up nestlings. While you don't need to rush, move as quietly and as quickly as possible, especially when there are a large number of nests to replace, in which case you might consider staggering your replacements (i.e., do some one day, some the next). Aim for taking no longer than two or three

minutes per nest; if your changes take longer, you are being too fussy. Never perform nest checks or nest replacements very early or late in the day, or on days when the weather is poor and the young are stressed by lack of food. Dispose of removed nests promptly; it is against the law to possess nests, eggs, and birds.

Don't be alarmed if, after raising the housing, the parents are at first reluctant to reenter their cavities. A few may recognize a change in their nest and be mildly alarmed, but they will accept the change within a few minutes and resume feeding their young. Nest changes will not cause abandonment.

Although blowflies and other parasites usually don't become a problem until nestlings are about 10 days old, they occasionally cause the death of nestlings that are younger (see Fig. 1). Few things are sadder for a landlord than finding dead nestlings in a parasite-infested nest during their first seven-day nest check, especially if they worked and waited for years to attract martins. Therefore, new landlords who have only one or two pairs of breeding martins, and who want to be extra-vigilant in insuring the survival of their colony site, should do nest checks more frequently, such as every three days instead of every five to seven days. Remember, blowfly larvae often hide in the bottom of the nest during the day and won't always be obvious to the landlord when he or she just looks into a nesting cavity. However, gently digging into the nesting material just beneath the nestlings will expose blowfly larvae if they are numerous.

Although nest replacements are not



James R. Hill, III

**Fig. 7. Once you've added the clean nesting material to a cavity or nest tray that you've just cleaned out, and fashioned a nest bowl in it, replace the nestlings into the nest bowl, huddle them in a group (if they are featherless), so they can help keep each other warm.**



James R. Hill, III

**Fig. 8. On those rare occasions when a nest replacement is necessary (because of rain-soaked nests or a severe outbreak of nest parasites) on a nest with babies younger than the suggested 10-day-old minimum nest change age, extra care must be taken. Not only should you change the nest, but you should also line the nest bowl with fresh green leaves before replacing the naked young in a tight huddle.**

recommended for nests with young that are less than 10 days old, in cases of early infestation (as in Fig. 1), doing one can mean the difference between life and death. However, special care must be taken in replacing the nests of very young nestlings (i.e., nestlings 1-8 days old). It is especially important to form a good artificial nestbowl or depression in the bed of replacement nest material and line it with green leaves of any type (see Fig. 8). This leaf-lined bowl insures that the nestlings will stay in a tight huddle so the female can cover and brood them properly. The majority of the nest parasites are usually concentrated in this nestbowl area, so you may wish to scoop out and replace just the nestbowl material itself rather than replacing the entire nest. In either case, it's a good idea to monitor such nests closely, perhaps checking them every couple of days.

We at the *PMCA* realize that many landlords are reluctant to do nest checks, let alone nest replacements. But every time we show landlords a typical, parasite-infested martin nest, they are shocked and instantly become "nest-change converts." Please consider doing nest replacements next season, especially if you live in an area where martins are scarce and every healthy fledgling might help to rebuild the population in your region. Remember, many new colony sites are established by just one pair of martins. Some landlords try for years, even decades, to attract that first breeding pair. The nestling that you helped survive could become some landlord's future matriarch or patriarch!