

CONTROLLING MITES IN TREE SWALLOW NEST BOXES

Heavy infestations of parasitic mites can cause death of Tree Swallow nestlings.

Parents may refuse to enter boxes swarming with mites, abandoning their young to starve, and older nestlings may become so tormented by mites that they jump out of boxes before they can fly strongly, and die unattended by their parents.

Mites are normally rare early in nesting, but once young birds hatch mite populations can explode to exploit this food supply, until boxes containing older nestlings may contain thousands of mites. As you make box checks watch for tiny pepper-like specks crawling in and on boxes. To view a photo of mites covering a person's hand go to <http://purplemartin.org/update/Parasites.html> and scroll down.

If you do find parasitic mites infesting a box you face a choice between “letting nature take its course “ or intervening, using one of the following three mite-control options:

1. **Nest Replacement**
2. **Diatomaceous Earth**
3. **Sevin**

Each of these mite-control techniques has been recommended by hobbyists managing for other cavity-nesting species, especially Purple Martins. We have adapted them for Tree Swallows. Each technique has its proponents and opponents, its advantages and disadvantages, so please consider your own situation carefully before deciding which, if any, to use. (For what it's worth our preference is to check Tree Swallow boxes containing nestlings frequently in order to discover mites *before* their numbers get high, then making nest replacements).

WARNING! Disturbing Tree Swallow nestlings older than 12 days post-hatch carries a risk that the nestlings will jump out of the box before they can fly strongly, and the older nestlings are the higher the risk this will happen. Tree Swallow nestlings that fledge prematurely after disturbance may fall to the ground where they will not usually be cared for by their parents and will die. For this reason the Nest Replacement and Diatomaceous Earth methods each have TWO SECTIONS:

- The **first** is for use when swallow **nestlings are 12 days old or younger** and can be handled without danger of premature fledging.
- The **second** is for use with swallow **nestlings older than 12 days** when precautions must be taken to reduce the chance they will fledge prematurely.
- **So please determine the relative age of your swallow nestlings before attempting mite control.** It isn't hard – one quick look should suffice.
- If you are unsure how to age Tree Swallow nestlings please refer to these pages: <http://www.treeswallowprojects.com/cgrowth.html>
<http://www.treeswallowprojects.com/coldyng.html>

NEST REPLACEMENT

Nest Replacement involves removing infested nest material and replacing it with an artificial nest of similar material. This will not eliminate all mites. The hope is nestlings will fledge successfully before mite numbers increase again to the danger point.

Nest replacement is simple and safe if swallow nestlings are 12 days old or younger. **But if nestlings are older than 12 days you must take extra precautions to reduce the risk of premature fledging and death.**

Try to replace nests *quickly*, in five minutes or less per box. Having two people helps.

Warning! All steps should be done at the box, so parents never enter and find the box empty. If they find all their young gone, even temporarily, they may desert.

Nest Replacement: If Nestlings are 12 DAYS OLD OR YOUNGER

You will need:

- **Clean, Dry Vegetation** of the type used for the old nest. There should be some on the ground not far from the nest. Gather this *before* starting replacement.
- **Tall-Sided Bucket or Container** to put the nestlings in while the nest is replaced.
- **Cloth** to cover nestlings while they are in the bucket or container.
- **Putty Knife** to scrape debris out of box interior.
- **Rubbing Alcohol and a Rag** to wipe the emptied box inside and out.
- **Plastic Ziplock Bag** for disposing of old nest.
- **Disposable gloves** (optional).

Nest Replacement Steps:

1. Gather enough clean, dry vegetation to form a new nest.
2. Remove nestlings and place them gently in the bucket or container.
3. Cover nestlings loosely with cloth to keep them quiet and out of direct sun.
4. Before removing the old nest note the position of the cup.
5. Remove old nest material by hand and seal it in the ziplock bag.
6. Scrape debris out quickly with putty knife. Don't worry if you miss a bit.
7. Wipe box inside and out with alcohol soaked rag.
8. Put in new nest vegetation and press it down to form a 1"- 2" thick mat.
9. Form a simple cup by pressing and twisting your fist.
10. Place nestlings in new nest. Cover them with your hand until they settle down.
11. Don't go near any *uninfested* boxes. Mites could spread from you to them.
12. Dispose of old nest in the trash.

Nest Replacement: If Nestlings are **OLDER THAN 12 DAYS**

You will need:

- **Clean, Dry Vegetation** of the type used for the old nest. There should be some on the ground not far from the nest. Gather this *before* starting replacement.
- **Tall-Sided Bucket or Container** to put the nestlings in while the nest is replaced.
- **Putty Knife** to scrape debris out of box interior.
- **Rubbing Alcohol and a Rag** to wipe the emptied box inside and out.
- **Plastic Ziplock Bag** for disposing of old nest.
- **Disposable gloves** (optional).

Plus:

- **Bander's Bird Bags** or other **Cloth Bags** with a drawstring for containing the older nestlings in a sealed, dark, escape-proof place.
- **Sock or Rag** for plugging the box entrance hole temporarily.

Steps:

1. Gather enough clean, dry vegetation to form a new nest.
2. Plug the box entrance hole with a dry sock or a rag *not* used for alcohol wipe.
3. Remove nestlings, placing them inside bird bander bags or other cloth bags.
Close the bags *securely to prevent nestlings from escaping.*
4. Put the bags in the bucket or container. Make certain bags are not in direct sun.
5. Before removing the old nest note the position of the cup.
6. Remove old nest material by hand and seal it in the ziplock bag.
7. Scrape debris out quickly with putty knife. Don't worry if you miss a bit.
8. Wipe box inside and out with alcohol soaked rag.
9. Put in new nest vegetation and press it down to form a 1"-2" thick mat.
10. Form a simple cup by pressing and twisting your fist.
11. Gently but quickly replace nestlings in nest one at a time, *keeping the door as closed as possible so they won't escape.* It helps to have two people for this step.
12. Close box door *but leave sock or rag plugging the entrance* and move away.
13. Give nestlings 10-15 minutes to calm down in the darkened box, then quietly return and gently remove the sock or rag from the entrance hole.
14. Don't go near any *uninfested* boxes. Mites could spread from you to them.
15. Dispose of old nest in the trash.

DIATOMACEOUS EARTH

Diatomaceous Earth (DE) is a mineral composed of the powdered fossilized remains of hard-shelled algae called diatoms. DE is not a chemical pesticide and is non-toxic. Particles of DE have razor-sharp microscopic edges that can wear through a mite's protective exoskeleton. The mite then dies when its internal body tissues dry out.

WARNING! There are two kinds of diatomaceous earth available commercially: **Filtration Grade DE** and **Food Grade DE**. NEVER use Filtration Grade DE for controlling mites in bird nests – it may have been treated with chemicals toxic to living things. Use Food Grade DE, which is commonly used for non-chemical treatment of pet and farm animal parasites, and even as a food supplement for humans. It can be bought in pet supply stores and natural food stores

Diatomaceous Earth can be applied at any time during nesting. It can be used as a precaution to prevent recurrences at boxes where mite infestations have occurred in past seasons. Once applied to a nest DE doesn't biodegrade. Proponents say it is effective, simple to use, and should work indefinitely unless the nest gets wet. Opponents question DE's effectiveness and worry it could harm nestling respiratory systems.

Warning! All steps should be done at the box, so parents never enter and find the box empty. If they find all their young gone, even temporarily, they may desert.

DE: If Nestlings are 12 DAYS OLD OR YOUNGER

You will need:

- **Food Grade Diatomaceous Earth.**
- **Spoon, Puffer, Duster or Shaker** to apply the DE.
- **Tall-Sided Bucket or Container** to put nestlings in while DE is applied to nest.
- **Cloth** to cover nestlings while they are in the bucket or container.
- **Rubbing Alcohol and a Rag** to wipe the box exterior and entrance.

Steps:

1. Remove nestlings and place them gently in the bucket or container.
2. Cover nestlings loosely with cloth to keep them quiet and out of direct sun.
3. Dust nest with small amount of DE – ½ tsp should be enough.
4. Work the DE down into the nest gently.
5. Wipe box exterior and entrance with alcohol soaked rag.

6. Place nestlings back in nest. Cover them with your hand until they settle down.
7. Don't go near any *uninfested* boxes. Mites could spread from you to them.

DE: If Nestlings are **OLDER THAN 12 DAYS**

You will need:

- **Diatomaceous Earth – Food Grade Only!**
- **Spoon, Puffer, Duster or Shaker** to apply the DE.
- **Tall-Sided Bucket or Container** to put nestlings in while DE is applied to nest.
- **Rubbing Alcohol and a Rag** to wipe the box exterior and entrance.

Plus:

- **Bander's Bird Bags** or other **Cloth Bags** with a drawstring for containing the older nestlings in a sealed, dark, escape-proof place
- **Sock or Rag** for plugging the box entrance hole temporarily.

Steps:

1. Plug box entrance hole with a dry sock or a rag *not* used for alcohol wipe.
2. Remove nestlings, placing them inside bird bander bags or other cloth bags.
Close the bags *securely to prevent nestlings from escaping.*
3. Put the bags in the bucket or container. Make certain bags are not in direct sun.
4. Dust nest with small amount of DE – ½ tsp should be enough.
5. Work the DE down into the nest gently.
6. Wipe box exterior and entrance with alcohol soaked rag.
7. Gently but quickly replace nestlings in nest, *keeping the door as closed as possible so they won't escape.* It helps to have two people for this step.
8. Close box door *but leave sock or rag plugging the entrance* and move away.
9. Give nestlings 10-15 minutes to calm down in the darkened box, then quietly return and gently remove the sock or rag from the entrance hole.
10. Don't go near any *uninfested* boxes. Mites could spread from you to them

SEVIN

Sevin is a chemical pesticide widely used in agriculture and horticulture. Although it is supposed to have low toxicity for birds and mammals we are reluctant to recommend Sevin for mite control in Tree Swallow boxes. However, Sevin is used by many Purple Martin hobbyists, because mite infestations in their congested multi-compartmented houses could destroy most of a year's crop of martin nestlings. Some martin hobbyists even apply Sevin repeatedly during their species' nesting season to prevent mite establishment. If you want to explore both sides of the Sevin debate refer to:

Pro Sevin <http://purplemartin.org/forumarchives/archive/sevinpro.htm>

Anti Sevin <http://purplemartin.org/forumarchives/archive/sevinanti.htm>

Tree Swallow hobbyists, whose boxes are much more isolated, shouldn't face the same pressure to resort to pesticides as Purple Martin hobbyists. However, *if* you have an **emergency situation**, where a box containing large nestlings is heavily infested with mites, and you must kill the mites fast while disturbing nestlings as little as possible, Sevin may be the best option, because a small amount of easily-applied Sevin can kill most mites in a box within 24 hours. Sevin is available in most garden stores. Look for the powder or dust, not the spray.

Warning! Sevin is a chemical pesticide! Please read and follow precautions carefully.

SEVIN: IN AN EMERGENCY WITH OLDER NESTLINGS

You will need:

- **Sevin Powder or Dust**, not spray.
- **¼ Teaspoon Measuring Spoon.**
- **Sock or Rag** for plugging the box entrance hole temporarily.
- **Rubbing Alcohol and a Rag** to wipe the box exterior and entrance.

Steps: Please Note: It would help to have **two people** to execute this procedure.

1. Plug the box entrance hole with a dry sock or a rag *not* used for alcohol wipe.
2. Open the box just enough to admit your hand, blocking potential escape routes.
3. Cover nestlings gently with one hand to prevent them jumping out.
4. Sprinkle ¼ tsp Sevin around the edges of the nest.
5. Tap the nest lightly to let some Sevin sift down into the nest material.
6. Carefully uncover the nestlings as you close the box, blocking escape routes.

7. Wipe box exterior with alcohol soaked rag, especially around the entrance where mites congregate and are highly visible to parents.
8. Move away from the box *but leave dry sock or rag plugging the entrance*.
9. Give nestlings 10-15 minutes to calm down in the darkened box, then quietly return and gently remove the sock or rag from the entrance hole.
10. Don't go near any *uninfested* boxes. Mites could spread from you to them