

Keeping Africanized Honey Bees Out of Wildlife Nest Boxes¹

William H. Kern, Jr.²

Introduction

In 2005, Africanized Honey bees became established in Florida. Africanized honey bees are the same species as European honey bees and therefore are impossible to identify by simple appearance. There are behavioral differences that make Africanized honey bees more of a problem for cavity-nesting wildlife than European honey bees. European honey bees will occasionally use large nest boxes as hives, while Africanized honey bees will inhabit smaller nest boxes (Table 1). Wood duck, screech owl, barred owl, and barn owl nest boxes have a large enough cavity to entice European honey bees for harborage (Table 1). Africanized honey bee colonies produce 4 to 8 swarms per year compared to the 1 or 2 produced by European colonies. This means that there will be many more swarms to begin feral bee colonies in areas where Africanized honey bees are established. Africanized honey bee swarms are generally smaller than European swarms and will select any protected cavity, even burrows in the ground. The swarming season for African honey bees in South Florida is from February through October. The other hazard associated with Africanized honey bees is that they are much more defensive of their

colonies than the gentler domestic European honey bee. Africanized honey bee colonies in residential areas or parks pose a potential risk of stings and defensive attack to people, pets, and wildlife.

The Africanized honey bee has a habit of setting up colonies in unusual locations compared to European honey bees. Africanized honey bees have been found under decks, inside sheds, inside covered boats, within crawl spaces, in storm drains, in rock piles, inside soffits, in discarded tires and appliances, woodpecker holes, and in the burrows of animals like gopher tortoises and armadillos. By using smaller and lower locations these bees may displace wildlife that uses these locations as dens in urban, agricultural, and natural environments.

Recommendations

Although these recommendations target Africanized honey bees, the benefits extend to other pests as well. Put up bird and mammal nest boxes just prior to that particular animals nesting or birthing season (Table 2). This will reduce the likelihood that honey bees and paper wasps will find and occupy it. Take down houses during non-nesting seasons to

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 2. William H. Kern, Jr., assistant professor, Ft. Lauderdale Research and Education Center, Entomology & Nematology Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL 32611.

discourage starlings, house sparrows, and bees and wasps.

Thoroughly treat the inside of the box and any nesting litter with a repellent pyrethroid insecticide such as permethrin. Only use a product that is registered for use on poultry or caged birds. If using a spray, let the material completely dry before putting up the box or allowing animals access. If using permethrin dust, treat the inside thoroughly prior to adding any sawdust, then treat the bedding before adding it to the box. Permethrin is effective in controlling blood-feeding mites, fleas, parasitic flies (Hippoboscidae, Calliphoridae), and blood-feeding bugs (Cimicidae and Rejuviidae) in addition to discouraging Africanized honey bee scouts and paper wasps. Controlling these arthropod pests may also improve survival of nestlings in treated boxes. Permethrin has very low toxicity to birds (oral LD_{50} >9900 mg/kg in mallard ducks and > 13,500 mg/kg in pheasants) and low toxicity in mammals (oral LD_{50} in rats of 430 - 4000 mg/kg and dermal LD_{50} in rats > 4000 mg/kg and in rabbits >2000 mg/kg) making this insecticide a good choice. Toxicity is determined by the lethal dose to kill 50% of a defined population. The larger the number is, the lower the toxicity of the substance to the test organism. The oral LD_{50} for table salt (NaCl) is 3,000 mg/kg for rats and 4,000 mg/kg for mice. The half life of permethrin in soil is about 30 days. It should protect a nest box longer than 30 days because it is away from soil moisture and microbes. Permethrin tick repellents for clothing are effective for six weeks, so permethrin products may give similar duration of protection inside a nest box.

If Bees have Invaded your Wildlife Nest Box

If bees invade your birdhouse, bat house, or mammal den box, contact a pest management professional with bee experience to remove the colony. These social insects will defend their colonies and a bee suit is usually required to remove them safely. Do not use “wasp spray” on honey bees. It will kill those bees it contacts directly, but it also causes those bees to release their alarm / defense pheromone. This excites the rest of the colony into a defensive frenzy and you will be stung unless you are wearing a bee suit. After the box is down and the

bees are dead, scrap out all the comb and wax. Wash the inside of the box thoroughly with hot water; don't use soap or detergents. After cleaning, allow the box to air dry completely, then store indoors until next nesting season.



Figure 1. A screech owl nest box occupied by a colony of honey bees in Broward County, Florida. Credits: W. H. Kern, Jr, University of Florida



Figure 2. A wood duck nest box containing a European honey bee colony in Mississippi that is at least two years old. Credits: <http://www.beesource.com/eob/feral/feralhive8.htm>

Summary

Africanized honey bees became established in South Florida and the Tampa area in 2005. They are expected to spread over the state of Florida within the next few years. Africanized honey bees are more likely to invade bird boxes, bat houses, and den boxes than European honey bees. The use of appropriate insecticides (especially permethrin) may discourage Africanized honey bees, paper wasps, and parasites that feed on the blood of baby birds and mammals from moving into these valuable wildlife structures.

Other Sources of Information

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Table 1. Artificial nest or den boxes likely to be occupied by European and Africanized honey bees.

European Honey Bees	Africanized Honey Bees
Wood Duck Barn Owl Barred Owl Raccoon den box Screech Owl / Kestrel	Wood Duck Barn Owl Barred Owl Raccoon den box Screech Owl / Kestrel Squirrel den box Woodpecker (all species) Eastern Bluebird Great Crested Flycatcher Purple Martin Burrowing Owl artificial burrows

Table 2. Nesting seasons for Florida's cavity nesters.

Cavity Nesting Species	Nesting or Birthing Season
Wood Duck Barn Owl Barred Owl Screech Owl Burrowing Owl Kestrel Red-bellied Woodpecker Red-cockaded Woodpecker Red-headed Woodpecker Hairy Woodpecker Downy Woodpecker Northern Flicker Eastern Bluebird Great Crested Flycatcher Purple Martin Raccoon Gray Squirrel Fox Squirrel Southern Flying Squirrel Bats that use bat houses	February-July Year-round September-June March-June March-June March-June March-July April-July April-September March-July April-August March-July March-June April-August March-August Birth February-April, kits in den until July January-March & May-July January-March & May-July March-June & October-December May-June, pup season April 15-August 15
Species whose nest boxes aren't likely to attracted honey bees	
Prothonotary Warbler Carolina Wren Tufted Titmouse Carolina Chickadee Brown-headed Nuthatch	April-June March-August March-July March-July February-July