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Fact sheet

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Products and Promotions That Have Limited Value for Mosquito Control

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Virtually every year, a new product appears on the market that claims to be the answer for the elimination of mosquito nuisance. In nearly every case, the promotion is accompanied by a great deal of advertising, but the merits of the product are rarely backed with scientific testing. The American public has invested billions of dollars in zappers, repellers, and plants that claim they will keep mosquitoes from biting. Products and promotions for mosquito control are big business; unfortunately most have limited value in reducing mosquito annoyance.

Electronic Repellers

Hand-held electronic devices that rely on high-frequency sound to repel mosquitoes have become surprisingly popular in recent years. Prices range from $9.95 to $29.95 for units advertised in magazines. Heavy-duty repellers that claim to keep away spiders, hornets, and rats, in addition to mosquitoes may sell for more than $100.00. The manufacturer's rationale for using sound as a repelling factor varies from one device to the next. Some claim to mimic the wing beat frequency of a male mosquito. This, supposedly, repels females who have already mated and do not wish to be mated a second time. Others claim to mimic the sound of a hungry dragonfly, causing mosquitoes to flee the area to avoid becoming the predator's next meal. Most of the electronic repellers on the market hum on a single frequency. Top of the line devices allow for adjustment by the user to achieve the most effective frequency for the mosquito causing the problem. Scientific studies have repeatedly shown that electronic mosquito repellers do not prevent host seeking mosquitoes from biting. In most cases, the claims made by distributors border on fraud. Mated female mosquitoes do not flee from amorous males, and mosquitoes do not vacate an area hunted by dragonflies. Electronic mosquito repellers do little in the way of reducing mosquito annoyance.

Bug Zappers

Electrocuting devices, popularly known as *Bug Zappers*, are the most popular device on the market for reducing mosquitoes around the home. Most rely on ultraviolet light to draw insects through an electrified wire grid. A resounding pop followed by a series of sizzling sounds signals the homeowner that an insect has passed through the electrocuting device. Most homeowners keep the machine on a timer that turns the units off during the daylight hours, but some run the traps day and night during the summer season. Bug zappers kill a lot of insects, but very few of the insects killed function as pests. Most of the popping sounds are night-flying moths tricked into the trap while attempting to navigate by the moon. The long drawn-out sizzles are usually beetles, because they are heavier than most night flying insects and have considerably more bulk to fry. Scientific studies indicate that mosquitoes make up a very small percentage of bug zapper collections. Comparison trapping has also shown no significant difference in mosquito populations in yards with and without the traps. Biting insects, in general, make up less than 1 percent of the insects killed in zappers. Unfortunately, beneficial insects are usually well represented in an average night's catch. The continued popularity of these traps is probably due to the never-ending sound effects, which remind owners that their investment is working. Most trap operators are unaware that their zappers are killing harmless insects that would otherwise serve as food for wildlife.

Citrosa Plants

The Citrosa plant is a genetically engineered houseplant created by incorporating tissue cultures of the grass that produces citronella oil into hybrid varieties of geranium to produce a cultivar that emits a citronella aroma. Citronella oil is known to have mosquito-repel-

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ling properties, and the concept of allowing a plant to emit a barrier of repellent vapor appears sound. Unfortunately, the claims made by the distributors have not stood up to scientific testing. Tests conducted in Florida indicated that Citrosa plants did not reduce the number of bites received by test subjects. Moreover, mosquitoes landed freely on the leaves indicating that the plant does not emit enough citronella oil to repel the insects. Crushing the leaf and rubbing it into the skin did not keep mosquitoes from biting and mixing the leaves into a slurry did not help. The idea of engineering a plant with mosquito repelling properties should be encouraged. Advertising and selling that plant before its effectiveness is documented takes advantage of the American consumer.

Insectivorous Bats

Every so often, a well-meaning conservation group promotes bats to eliminate mosquitoes from areas where nuisance has become intolerable. This undoubtedly leads to rediscovery of research conducted in the 1950s indicating that bats released in a room filled with mosquitoes could catch up to 10 mosquitoes per minute. The research was conducted to measure the effectiveness of echolocation in insectivorous bat species. The results have been extrapolated to suggest that wild bats can consume 600 mosquitoes per hour. Using that figure, a colony of 500 bats will remove 250,000 mosquitoes each hour and theoretically afford mosquito control for an entire neighborhood. Research since that time has shown that insectivorous bats are opportunistic feeders and that mosquitoes make up a very small percentage of their natural diet. Bats' behavior when locked in a room with nothing to feed upon but mosquitoes has no bearing on their behavior in the wild. Bats feed on the same insects that turn up in bug zappers and are no more effective for controlling mosquitoes than their electronic equivalent. Providing habitat to enhance bat populations is an admirable activity for conservation purposes. Using mosquito control as the reason to initiate public interest is misleading at best.

Purple Martins

The average person truly believes that Purple Martins control mosquitoes. No other form of biological control has been so broadly publicized, and the concept of using a colonial bird is easy to accept. Purple Martins are lovely birds and having a colony nearby is educational and aesthetic. Purple Martins, however, do not control mosquitoes and should not be propagated if eliminating mosquitoes is the central issue. Proponents of the Purple Martin cite the oft-quoted statement that a Purple Martin will eat 2,000 mosquitoes a day and up to 14,000 when the insects are extremely plentiful. The quote is based on an anecdotal account in the literature that was based on body weight of the bird and the number of mosquitoes that would be required to sustain its metabolism. Most ornithologists realize that mosquitoes form an insignificant portion of the Purple Martin's diet and would agree that the birds play a limited role controlling mosquito populations. If mosquitoes are plentiful, the birds will feed on them, but an adult Purple Martin that is foraging in mosquito territory will accept a dragonfly in place of a mosquito without hesitation. Purple Martins, as well as other insectivorous birds, should be encouraged to nest and be provided with housing whenever possible. Do not, however, believe that the birds will significantly diminish mosquito populations in your community. The manufacturers of Purple Martin houses cite mosquito control potential for their own economic gains. The birds do not need this hoax to retain public acceptance.

There are products on the market that will provide relief from mosquito attack. Commercial repellents that contain DEET can be highly effective for short periods. Many people, however, dislike the oily consistency or object because of health concerns connected with the product. Products that rely on fragrance to repel mosquitoes show considerable promise and have been under intense investigation since the Avon product, *Skin-So-Soft* showed proven repellent properties. Predacious fish feed on the immature stages of mosquitoes and are extremely efficient in terms of control. In salt marsh areas, native killifish can be managed to eliminate mosquitoes from some types of marshland. In upland areas, pond-raised mosquito fish can be stocked to eliminate mosquitoes. Electronic repellers, bug zappers, and mosquito-fighting plants represent hoaxes that are marketed solely for economic gain. The American consumer, should be aware that these products have little value for mosquito control.

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