

## SCIENCE

# Putting Nature on the Pill

By JAMES GORMAN    AUG. 31, 2004

Three days before Hurricane Charley hit Florida, the 150 or so parakeets nesting in a power substation in Deerfield Beach seemed blissfully unconcerned. So did the ones in seven huge communal nests on the communications tower of the Broward County Sheriff's office a mile or two away.

Jon-Mark Davey, a devoted observer, owner and defender of monk parakeets, was showing the nests to a reporter and said the birds knew when a storm was coming. So it may have been their forecasting that made them appear so devil-may-care in their stick condominiums on light poles and power lines. Or it may have been a confidence in their ability to go forth and multiply, no matter what happened.

Monk parakeets, which seem to have first escaped or been released in the 1960's, now number from 150,000 to half a million in Florida, depending on who is counting, said Winifred Perkins, environmental relations manager for Florida Power and Light. She keeps track because the birds love the infrastructure of the power grid. Some of those poles will support nests of 1,000 pounds or more, and cause power failures and fires, Ms. Perkins said, as well as present a hazard for workers.

In wildlife management there is no tougher public relations problem than a cute pest, which is partly why scientists and wildlife managers are showing increasing interest in a new, nonlethal means of animal control: contraception. The monks have joined a variety of other species, some cuter than others, but all with passionate defenders, as a target for enforced infertility.

The parakeets, actually small parrots, are about a foot long, with delicate green backs and gray faces. They are beautiful fliers and give a touch of jungle to an urban landscape. It's no surprise that they have a passionate human following. They are also noisy and indefatigable nest builders.

In the past there were government campaigns to eradicate the birds because of concerns for crops. Now the worry is disruption of power transmission. Ms. Perkins made it quite clear that Florida Power and Light loves the monks, just not on power lines.

Contraceptive drugs and vaccines have been used for a few species. But researchers are now working on both drugs and vaccines to slow down or stop population growth in a variety of species. There is always a need for new tools in wildlife management, but a big reason for the interest in such research is that the public is increasingly intolerant of killing animals.

Deer, geese and the parakeets all have their vigorous defenders. As suburbs spread and offer more habitats for deer (and less for hunters), the old methods of culling deer herds are more difficult to pursue.

In Princeton, N.J., for instance, a plan to trap and kill deer to reduce their swelling numbers caused a furor, and lawsuits. Plans to collect and gas resident Canada geese that foul parks in Rockland County, N.Y., prompted demonstrations, anger and the formation of the Coalition to Prevent the Destruction of Canada Geese. Similar situations occur in many areas where attempts are made to control animals. Presumably, contraceptives, a part of human experience for many suburbanites, would be less controversial.

The monk parakeets are native to Argentina. Tens of thousands have been imported for the pet trade. Starting in the 1960's, it seems, escapees and released

birds started breeding populations in Florida, Connecticut, New York, Chicago and elsewhere.

The population is now growing by leaps and bounds. The birds have defeated every device used to discourage them from nesting on power lines. They loved one device, a round metal ball with spikes. "They wove their nest around this thing," Ms. Perkins said.

Birth control would have obvious benefits. As part of a wide spectrum of bird-related research, Florida Power and Light has sponsored research by Dr. Michael Avery, at the National Wildlife Research Center in Gainesville. He has been working out the right dose of diazacon, a drug originally developed to lower cholesterol in people, to prevent the birds from reproducing.

It works because cholesterol is necessary to produce certain reproductive hormones, Dr. Avery said.

Diazacon has been tested in a variety of birds and was used in pigeons with some success, but also some disadvantages. Pigeons breed year round, and long-term use of the drug was expensive and caused some muscle tremors. The monk parakeets breed only once a year and would not require continuous treatment. It has also been tried in rats and prairie dogs.

Dr. Avery, who has been giving the drug to birds in an aviary at the Gainesville center, says it is clear the drug works. The real-world issues are how to get it to wild birds in the right doses, and at a cost that a power company can afford. Dr. Avery noted, "There's nothing out there currently that's registered that people can use."

Another substance, nicarbazin, is being tested on Canada geese. The drug is already used in the broiler industry to combat a common protozoan parasite. It is not fed to laying hens, however, because it interferes with hatching by affecting the yolk membrane. It has been studied in a variety of other birds to test its ability to reduce egg hatching.

Dr. Kathleen A. Fagerstone of the National Wildlife Research Center in Fort Collins, Colo., oversees several lines of contraceptive research, including field tests done this spring in Canada geese in Oregon. The results have not been published yet, but the drug is clearly effective, she said.

Dr. Fagerstone said there were challenges in delivering the drug to the geese. In the form it is given to chicken, she said, the geese found it so distasteful that it was "a very good repellent."

How good? "They'll starve to death before they eat it." A kind of bread ball proved more effective, and she said a private company is working on a mass-produced pellet.

The other problem was dosage. The gut of a goose is so short that whatever it eats goes through very, very quickly, evidence of which on park lawns is the very reason for getting the dosage right. The researchers had to determine how much of the drug would be necessary to be absorbed by the goose.

The other route to contraception in animals, one that has proved itself in horses, is a vaccine. The one in use now, PZP, blocks sperm from fertilizing an egg and so far seems to work in most mammals -- although two shots are needed, meaning that the animals must be captured or shot with darts twice.

PZP stands for porcine zona pellucida. The zona pellucida is the area surrounding the egg that sperm must penetrate. If this material from pigs is introduced into other mammals, it makes the host animal produce antibodies that attack the host's own egg, coating its surface and forming a barrier that defeats sperm.

The PZP vaccine has been used to keep the wild horse herd under control on Assateague Island since 1994. It is also used for wild horse herds in the West, and has been successful in elephants in Africa and in a variety of animals in zoos.

Dr. Lowell Miller at the wildlife research center in Fort Collins has been working on a new immunocontraceptive vaccine for about 10 years. This one induces the body to produce antibodies against gonadotropin reducing hormone,

which is part of the biochemical pathway for producing testosterone, estrogen and progesterone. It produces infertility in both males and females.

This vaccine is undergoing or has undergone tests in deer, coyotes, cats, dogs and ground squirrels in California. Dr. Miller is also working on a refinement of the vaccine that would require only one shot and would last for years.

For third-world countries, an easy way to stop dogs from breeding would be a boon. And in this country with its millions of stray cats and the controversies that erupt when any effort to get rid of them is made, a vaccine would make efforts to trap, neuter and release cats much easier. Even better would be an oral vaccine, also being developed.

In Florida, Hurricane Charley spared Deerfield Beach. And the monk parakeets are thriving. Many of the young have just fledged.

Throughout the Northeast, fawns are visible, with their spots.

Geese are everywhere, with the young of the year getting bigger.

Everywhere animals that people would rather not have in such large numbers are doing or have just done what Cole Porter's birds, bees and educated fleas are famous for. That's fine; it's the inevitable results that scientists are working on.