

# Latham Letter

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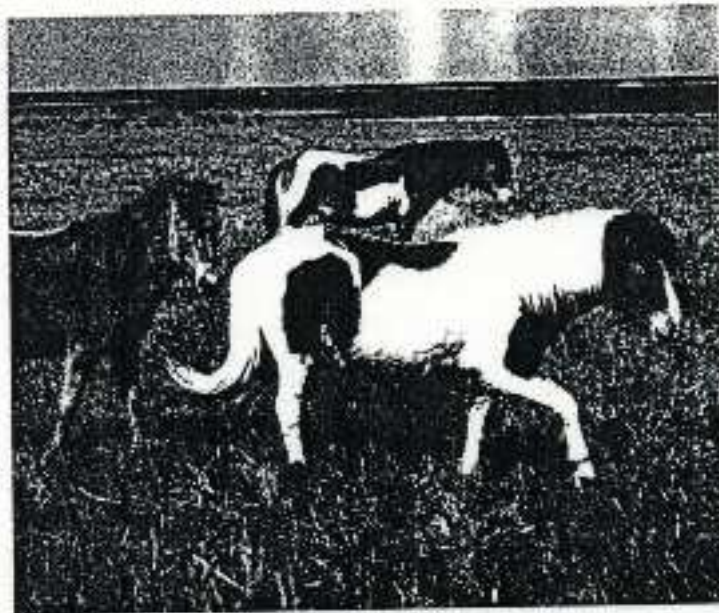
PROMOTING RESPECT FOR ALL LIVING THINGS THROUGH EDUCATION

## Humane Population Control

Jay F. Kirkpatrick, Ph.D.

Feral horses usually evoke mental pictures of western plains, foothills of the Rockies, or the vast deserts of the Great Basin. But, ironically, America's most visible and popular feral horses live two thousand miles away on a coastal barrier island off the coast of Maryland and Virginia. Assateague Island is home to about 350 feral horses. These horses, almost exclusively pintos, bays, and sorrels, have been living there for 360 years, having been put there by early English settlers in 1630. Legend has it that in 1820, the Spanish ship San Lorenzo foundered on the island's shoals and an undetermined number of an undetermined breed of horse swam ashore and added to the gene pool. No one knows for sure whether that legend is true, but if it isn't, it should be!

Today the horses exist as two separate herds. The Virginia portion of the island is Chincoteague National Wildlife Refuge (CNWR) and the horses there are owned by the town of Chincoteague and are grazed on the refuge by permit. Each July, the horses are rounded up, forced to swim the bay's channel



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to the town of Chincoteague, and the foals—many less than two months old—are taken away from their mothers and sold at auction. These foals are taken far and wide across the U.S. and are probably humanely cared for, although no one really knows for sure. The auction raises between twenty and thirty thousand dollars for the town's fire company and draws forty thousand visitors to watch the animals swim across the bay. Once the auction is over, the mares are herded back across the bay where, in the absence of their foals, they reproduce with alarming efficiency and start a new crop of foals for the next year's swim and auction. It is roughly analogous to an equine puppy mill.

To the north, on the Maryland section of the is-

land, 150 of these animals roam about 20 miles of Assateague Island National Seashore (AINS). Their owners, the National Park Service, have classified the horses as a cultural resource and as such, recognize their right to inhabit the island despite being an introduced exotic species. A large proportion of the 700,000 annual visitors to the island come to see these free-roaming equids. However, too much of a good thing can be damaging to the island's fragile environment and the park's management plan calls for maintaining the herd at 150 animals. To the credit of the park's administration, the plan calls for a humane solution which eliminates capture and preserves the wild nature of the horses. Roundups, adoptions, or sale were not viewed as

humane and removal would only stimulate foaling rates among the remaining horses.

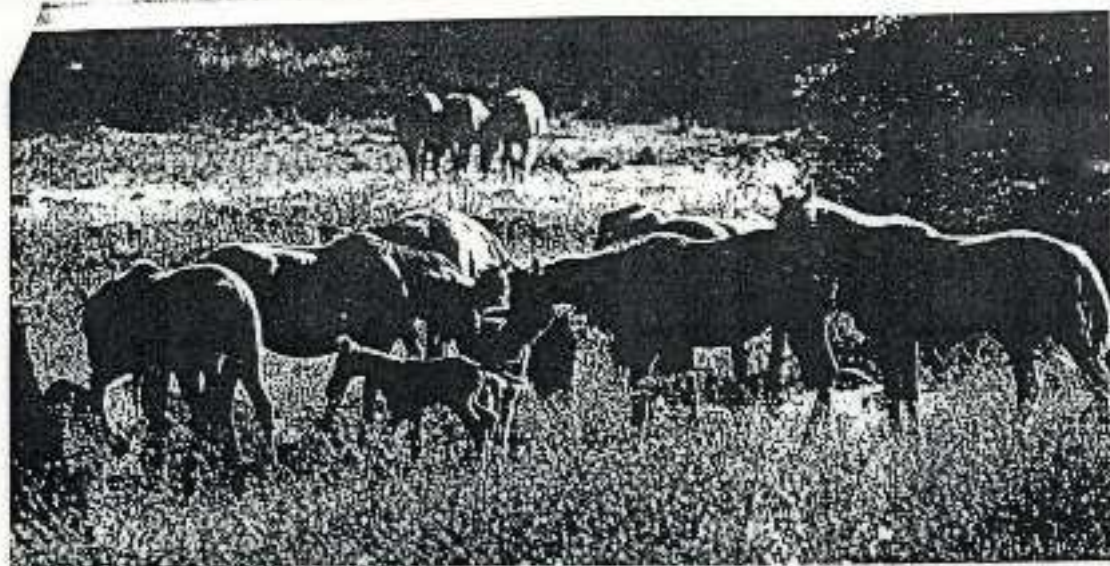
In 1986, AINS embarked upon a research program of feral horse contraception to achieve their goals. After two years and only moderately successful attempts at contracepting stallions with steroid hormones, my colleagues, Drs. John Turner, of the Medical College of Ohio, and Erwin Liu, at the University of California-Davis, and I turned to the cutting edge of modern contraceptive technology—immunocontraception.

*Continued page 8*

## L L's Fresh Look!

We hope that you'll find **The Latham Letter's** new format attractive and inviting. With our readers in mind, much thought has been given to its modified appearance and readability. While a great variety of topics and opinions have been presented during the past eleven years, this edition is the first to be published with an entirely new look. The timing was thought to be particularly propitious and in keeping with the humane industry's achievements in gaining society's new attitude concerning the rights and treatment of children, the aged and animals.





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#### Population Control *continued*

Erwin's laboratory prepared an experimental vaccine made from the protein membrane, known as the *zona pellucida*, which surrounds pig ova. The vaccine, now known as *porcine zona pellucida* or PZP, was first tested in 14 captive mares in California and caused infertility in 13 of them. The PZP injections cause the mare to produce antibodies against the pig protein. However, these antibodies also attached to the *zonae pellucidae* of the mares' own eggs, thereby preventing recognition and attachment by sperm and, therefore, fertilization.

In 1988, we set out to demonstrate that this PZP vaccine could be administered remotely—to the free-ranging feral horses of Assateague, thereby inhibiting fertility in a wild population. Beginning in late February, 1988, 26 Assateague mares were inoculated by means of small barbless darts fired from a capture gun. Some of the animals were accustomed to campers and were easily treated, but many were extremely wild and had to be stalked for many hours or, in a few cases, for several days. The darts fell out



Kirkpatrick and orphaned horse.

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within minutes, after the contents had been injected; the horses seemed bothered more by the noise of the capture gun than they did the darts.

Little more than half of the inoculated mares were pregnant at the time of treatment and all produced healthy foals later that spring. This was important information because the vaccine had not been tested in pregnant animals before. Now all that remained was to wait until August, 1989, and count foals. That proved unacceptable, how-

ever, because we planned to test the effectiveness of an annual booster shot in February, 1989, and we had to know whether the mares were truly contracepted before February, 1989, or long before they actually began their foaling season. Yet, these were wild creatures and we were not permitted to capture them! How does one pregnancy-test an uncaptured mare?

To accomplish this seemingly forbidding task, we turned to some established zoo technology. During the past decade, Dr. B.L. Lasley,

then at the San Diego Zoo, developed a number of urinary tests for pregnancy and to monitor ovarian function in captive exotic species. We devised several methods of extracting urine from the island's sand and marshes. After witnessing a mare urinating, we applied Dr. Lasley's tests to these samples. The results indicated 100% success in inhibiting fertility and total counts in August, 1989 confirmed these results. Thus, the PZP vaccine was effective, could be delivered remotely, had no adverse e



fects upon pregnancies in progress, and did not appear to alter the horses' highly developed social organization.

In February, 1989, 14 of the 26 mares were given a single booster inoculation and the remaining 12 were left untreated. This booster experiment later revealed that 13 of the 14 booster-treated mares were successfully contracepted. The 12 that did not receive the booster became pregnant at normal pretreatment rates, confirming the reversibility of the vaccine's contraceptive action. This was extremely important because it is highly unlikely that the public will accept irreversible sterilization of America's feral horses, on Assateague or elsewhere. Ten of the boosted mares were given annual booster inoculations in 1990 and 1991. Current studies, utilizing the non-capture urinary



measurements, are directed at learning if there are any effects of long-term treatment upon the ovary.

This work on Assateague has resulted in only a single foal in 60 mare-years, among treated animals, instead of the predicted 30 foals. This contraceptive effectiveness, coupled with the vaccine's safety, has prompted the park officials to begin developing a comprehensive management plan which utilizes contraception but which has a minimal effect on the composition of the herd. If one accepts the use of darts, it appears that a humane solution to controlling Assateague's horses is close at hand.

Since the encouraging results from Assateague, the PZP vaccine has been tested on captive Przewalski's horses and a banteng at the Cologne Zoo

problem of surplus animals. The vaccine has also proved to be 100% effective in inhibiting fertility in white-tailed deer. With funds provided by The Humane Society of the United States, research efforts are underway to engineer a one-inoculation, long-acting form of the PZP vaccine for use in suburban deer populations, where hunting is illegal or unsafe and deer populations are getting out of hand.

Research directed at the humane control of small wildlife species which have adapted almost too well to urbanized areas is also promising. In a study being conducted here in Billings, Montana, and in Iowa, skunks are being contracepted successfully. These often maligned but highly adaptable animals have colonized urban areas extremely well, but as

skunks in from surrounding areas, thus programs of killing are forced to go on forever.

Our strategy was to permit a core population to exist but to contracept it. In this way, the animals would defend their territories, prevent immigration of new skunks into the area, and not produce six

control personnel to control skunk populations in this way. Just consider that every ten skunks thus treated translate into seventy new skunks that never appear, and, best of all, no skunks have been killed. We are currently planning Norplant<sup>®</sup> contraceptive trials in raccoons and foxes.

We are entering a new age, where the destruction of wild animals or, at best, inhumane treatment in order to control populations, will no longer be tolerated by the public. Overpopulation, after all, is only a symptom of the problem, and killing or removing animals only treats the symptom. Reproduction is the cause and it is time that we focused our efforts on preventing increases rather than destroying our valuable and interesting wild



Carrie Bickle anesthetizing a skunk with a pole syringe.

in Germany, on 26 sika, axis, and sambar deer at the Bronx Zoo, patas monkeys at the Calgary Zoo, an orangutan at the Toledo Zoo, and in bison at the San Francisco Zoo. The use of PZP vaccine in captive exotic species may be helpful in preventing unwanted pregnancies among zoo animals and thereby provide a solution to the

populations grow, the threat of rabies or Lyme disease often accompanies the population growth. Historically the skunks have been destroyed, by shooting, trapping, or poisoning. The irony is that virtually all the skunks that are killed are healthy skunks. Furthermore, removal of the skunks only creates habitat vacuums, which draw



Radio collared treated skunk.

or seven new animals annually. To accomplish this, we live-trapped females, lightly anesthetized them (tricky business, but we never got squirted), and placed a small contraceptive rod under their skin. These contraceptive rods, recently approved for use in humans by the FDA and known commercially as Norplant<sup>®</sup>, are only 30mm long and about the thickness of a drink stir-rod. They were placed just under the skin without surgery, by pushing them through a large hypodermic needle, and the small puncture wound was dusted with a topical antibiotic. The entire procedure takes only minutes and virtually anyone can be trained to carry out the procedure. Thus far, after two years with their subdermal rods, not a single treated skunk has produced a litter. It is our ultimate goal to train animal



Norplant<sup>®</sup> implant being inserted under the skunk's skin.

relatives. Wildlife contraception still sounds a bit bizarre, but it is an idea whose time has arrived.

Dr. Jay F. Kirkpatrick is the Associate Professor of Physiology at Eastern Montana College in Billings, Montana. He was a major speaker at the second International Conference on Fertility Control in Wildlife, held at the University of Melbourne, Victoria, Australia, in November, 1990.



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