

All too often, research projects carried out on public lands are viewed only in terms of success or failure, and those outcomes are in turn viewed only in the context of successful or unsuccessful science. In reality, the success of important research on public lands—national parks in particular—results from a combination of good science; cooperation between the agency and the research team; clear understandings by both agency and team about the tasks and roles for which each are responsible; and the complex sociology of research team, agency, and visitor perception.

In 1986, research began on Assateague Island National Seashore (ASIS), off the coast of Maryland, with the goal of managing the wild horses inhabiting the island through fertility control. The decision to test fertility control as a means of controlling the ASIS wild horse population was based on a lack of publicly acceptable management options. At that time, wildlife fertility control was largely an untested concept, and little data suggested practical application to actual wildlife populations (Kirkpatrick and Turner 1985, 1991). The ASIS wild horse fertility control experiments were carried out by an independent research team and used a novel form of contraception—immunocontraception—which carried with it even greater potential for controversy because of its uniqueness. Finally, the immediate NPS goal of this research was the application of a humane and publicly acceptable method for reducing the horse herd to approximately 150 animals and maintaining that size.

The procedure involved the remote administration of a contraceptive vaccine to the horses each March by means of small darts fired from a capture gun. A minimum of two treatments were required the first year, and a single booster inoculation was given annually thereafter. The vaccine caused the mares to produce antibodies which in turn interfered with fertilization (Liu et al. 1989). In the first year of the study, twenty-six mares were inoculated, and none produced a foal a year later. Additionally, the vaccine did not interfere with pregnancies in progress, the health of foals exposed to the vaccine, or the social behaviors of the horses (Kirkpatrick et al. 1990). Annual

booster inoculations maintained contraception during subsequent years (Kirkpatrick et al. 1991). Additional studies between 1990 and 1996 demonstrated that (a) the vaccine's contraceptive effects were better than 95 percent effective, (b) the contraceptive effects were reversible after three to four years of treatment, (c) after seven years of treatment some mares ceased ovulating, suggesting a long-term effect upon the ovary, and (4) a population effect could be

The Education Program

A retrospective view of the ASIS wild horse contraception study provides a picture of a research effort that is wholly unique and almost without precedent. This research project was successful in achieving all of its original goals, and the reasons for this success go well beyond the science and technology of the research itself. Perhaps the single most important reason for success was the effort put forth by ASIS in developing an education pro-



To control herd size, a vaccine is administered by means of small darts shot from a capture

gun (Kirkpatrick et al. 1992, 1995). In order to carry out the physiological studies, the research team developed noncapture methods with which to detect ovulation, monitor ovarian endocrine function, diagnose pregnancy, and detect fetal loss, all by means of urinary and fecal hormone analysis.

Thus, the public was faced with the vision of scientists firing darts containing some sort of untested contraceptive drug and collecting urine and fecal samples on the beaches, alongside the park road, and even within campgrounds. The public perception also included the possible elimination of the popular wild horse herd, or at least the reduction of its size to some smaller number. Herein was found the potential for adverse and vocal public reaction.

gram that fully informed the public of the reasons for and the nature of the research. This educational effort incorporated many different elements.

Role of the Research Team

At the initiation of the project, it was made clear by ASIS staff that as much research as possible, and in particular the actual darting of horses, was to be conducted out of the public's view. It was also recognized that this was not always possible. Thus, when work had to be conducted in public view, the visitors received an explanation of the exact nature of the research, reasons for the research, and the ultimate goal—a target population of 150 horses. The research team also met with the park's interpretive staff, providing annual updates on the project, providing

props for educational purposes, such as expended darts, and taking interpretive staff into the field during actual darting and urine collection operations.

It is often the case in national parks that researchers in the field will have more interaction with the public than the interpretive staff. As such, the research team becomes an important educational resource. The darting of a horse or the collection of a urine sample always evoked curiosity and questions by the visitors, and the research team took the time to explain everything in a clear and comprehensive fashion, even to the point of slowing down their own work. Finally, the research team published all work in respected peer-reviewed scientific journals on a regular and timely basis in order to provide the requisite scientific validity of the research.



It was determined that the "wild ponies," as they are affectionately known, would be healthier if their number stayed around 150 animals.

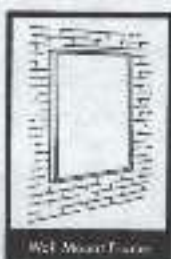
A very important factor in the cooperation by the research team and its execution of educational efforts was a strong NPS background by the research team.

Invasive wildlife research is a difficult task anywhere, but particularly in national parks. Interaction between visitors and

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the research team are inevitable, and these experiences are not always positive. Visitors often resent the special access enjoyed by researchers or the nature of the research itself. Researchers, on the other hand, often resent interference with their work, intended or unintended, by visitors. The team leader's previous experience as a ranger in Rocky Mountain National Park provided a frame of reference for the research team that placed the visitor as the "owner" of a public resource and the research team as "guests." The research team viewed itself first as representatives of ASIS and the NPS, and second as researchers. It was understood that all actions by the research team reflected upon the National Park Service (Kirkpatrick 1995).

Role of the NPS

The ASIS interpretive staff took several steps to ensure that the public was fully informed. First, campfire talks described the research with detail and accuracy that could only be provided after firsthand experience with the research team. Second, ASIS produced and distributed at the Barrier Island Visitor Center a concise brochure that described both the methodologies and management goals of the research project. Third, an attractive poster describing the research goals and results was produced and prominently displayed in the visitor center. Fourth, a videotape of the actual darting procedure was made by the ASIS staff for educational purposes. Fifth, media requests for coverage, which in this case included local newspapers and television stations, national network TV (ABC, CBS and ESPN-2), National Public Radio, and large newspapers and magazines (*Washington Post*, *New York Times*, *Time*, *Newsweek*) were all greeted enthusiastically by the ASIS staff and provided with whatever logistical support was necessary. Sixth, ASIS staff worked closely with a statewide public TV station to produce an excellent documentary of the research project, which was ultimately broadcast to the public on many occasions. A copy of this program is now shown regularly

in the visitor center theater. Finally, the NPS regional office (mid-Atlantic) published an NPS scientific monograph on the history of the project (Kirkpatrick 1995).

Conclusions

The result of this educational effort by both the ASIS and research personnel was a potentially controversial project that never once came under public criticism. Over the ten-year course of the work, the public really had only two major questions when confronted with the research project: Is the NPS trying to eliminate

organizations' newsletters. In two cases, moderate financial support from two large animal protection groups aided the ASIS research. The willingness of the NPS to seek a humane as well as effective solution generated additional educational efforts by these organizations through their publications and further goodwill between the public sector and the NPS.

The value of these educational efforts was never more apparent than when the environmental assessment was carried out by the NPS for the initiation of management-level contraception of the ASIS herd. An assessment that recommended fertility control as the primary management tool for controlling the nation's most loved, adored, protected, and visible wild horses resulted in only six public responses, five of which were wholly positive, and, of course, "findings of no significant impact."

Collectively these educational efforts were significant factors that made the ASIS contraceptive project so successful. The implications of this success go well beyond ASIS. Today, with several other wildlife contraceptive projects already in progress in national parks (white-tailed deer on Fire Island National Seashore; feral donkeys on Virgin Islands National Park; horses on Cumberland Island National Seashore) and numerous similar projects on non-NPS land, the design of the research follows the "Assateague model" with regard to its educational strategies. The history of the ASIS wild horse fertility control project suggests that potentially controversial research can be carried out in national parks if adequate attention and effort are given to educating the public.



A researcher collects a urine sample from a beach area to test the efficacy of the vaccine.

the horses from Assateague? and Are the horses being hurt in the conduct of this research? The educational efforts by ASIS made it clear that this was an effort to responsibly and humanely test a management option to control the horse population in order to protect the island's other resources, as well as the health and well-being of the horses themselves. An ancillary but important benefit of the educational efforts was support by numerous animal welfare organizations and even several animal rights groups, as demonstrated by many positive articles in the

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Larry G. Points is chief of interpretation at Assateague Island National Seashore, 7206 National Seashore Lane, Rt. 611, Berlin, MD 21811, (410)641-1443. He is co-author of a children's book titled Assateague: Island of the Wild Ponies. Jay F. Kirkpatrick is director of Science and Conservation Biology at ZooMontana, P.O. Box 80905, Billings, MT 59108, (406)652-8100.



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