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Catalina Bison to Practice Birth Control

Groundbreaking contraceptive plan being launched November 20th 2009, will stabilize Island's nonnative herd



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AVALON, CATALINA ISLAND - At first, Catalina Island Conservancy personnel took away their romantic, candle-lit dinners. Then, they offered them condoms - but the bison refused. Never the less, to ensure bison health and to protect Catalina's ecosystem - which includes more than 50 plants and animals found on Catalina and nowhere else in the world - Catalina's non-native bison population is managed at between 150 and 200 animals down from a herd of up to 600 animals at it's height.

Tongue-in-cheek aside, the solution pursued will be a scientific first for the Island, AND for any other herd of wild bison: *Contraception.*

The product of a forward thinking collaboration between a science-based conservation organization, a local concerned citizen, and an animal welfare group, the contraception plan includes a yearly "inoculation" of all female bison at least two years old.

"The inoculation is non-hormonal, and will not harm the animals or change their social structures or behaviors," says Julie King, senior wildlife biologist for the Conservancy who is one of three biologists spearheading the contraception effort. "It also has the potential to be reversible."

When the Porcine Zona Pellucida vaccine - "PZP," in short - derived from pig eggs, is injected into the muscle of a female bison, it stimulates the immune system to produce antibodies against the vaccine. These antibodies attach to the sperm receptors on the surface of the female's eggs and distort their shape, blocking fertilization.

"Basically, the wall of the egg 'thickens' and the sperm can't penetrate the egg," King explains.

King and Conservancy colleague and fellow wildlife biologist Calvin Duncan made contact earlier in the year with Dr. Jay Kirkpatrick, Director of ZooMontana's Science and Conservation Center and renowned expert on the use of PZP, to explore its use on Catalina bison. When PZP was determined an appropriate strategy for controlling bison herd size on Catalina, King and Duncan went to work penning a five-year plan using PZP to stabilize the Island's bison population. Duncan and fellow Conservancy biologist Kevin Ryan then trained with Kirkpatrick to learn how to safely and effectively administer the inoculation.

"We were impressed by PZP's efficacy and safety in the animals treated by Dr. Kirkpatrick, and were hopeful that it would be a cost-effective, socially acceptable method to humanely control the increasing Catalina bison herd," King said.

Ann M. Muscat, President and CEO of the Catalina Island Conservancy, describes contraception as "the next evolution of a management strategy" for the Island's non-native bison herd.

"After exploring a number of solutions over the years, we've arrived at contraception as an approach we're committed to testing," Muscat said. In recent years, Catalina bison have been shipped to Indian reservations under an agreement that the Catalina animals would live out their natural lives on the plains.

The contraceptive alternative has also become "much more cost-effective," Muscat notes, making the solution economically viable. But even with decreases in cost, the contraception program will require an investment of approximately \$200,000 over a five-year period. "The Conservancy is grateful for IDA's contribution of a quarter of the cost," Muscat said.

PZP Now Tested on Like Species

The idea of using contraception on the Catalina bison herd was suggested in past years by Island resident Debbie Avellana, a long-time advocate for Catalina pets and wildlife. Then in its infancy, besides being costly, the method was untested on "ruminant animals" such as cattle, oxen and bison. Since then, PZP has been used successfully to limit reproduction of captive female bison housed at 11 zoos nationwide, but never on a free-ranging herd. It has been used to safely and successfully limit wild horse populations for a number of years.

Avellana, who described the contraception effort as "a dream come true," said she is thrilled that the Catalina bison will be getting non-hormonal injections.

"The buffalo get to live out their natural lives and keep on acting like buffalo; there aren't the health risks associated with hormones, and there's no more worry about where to ship them," she said. "What could be more of a win-win?"

Bill Dyer, Southern California Regional Director for IDA, commented, "The time is right and we're very excited to be working with the Conservancy on this ground-breaking effort.

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"We share a number of goals in common with the Conservancy including habitat protection, and also ensuring that the Catalina bison may live out their natural lives without the stress of having to be relocated to new homes," Dyer said. "We are proud to be part of a collaboration that aims to ensure the lifelong welfare of the Catalina herd."

More About PZP

More than 85 different species have been successfully treated with PZP in more than 100 zoos world wide. Its success has been lauded in numerous peer-reviewed veterinary and medical journals. In 1987, researchers at the University of California, Davis, successfully tested PZP in domestic mares.

The non-hormonal PZP was shown to have a 97% percent efficacy when properly administered to 45 captive bison. This high success rate will likely allow the Conservancy to reduce the annual growth of the Catalina herd from near 10 percent to approximately the annual mortality rate of 4 percent according to King.

"Given the typical natural mortality rate among the Island's bison, the herd population should remain stable," she continued. "And, the vaccinations do not cause permanent sterilization; each individual female bison can be managed to make genetic contributions to the herd over time."

Bison on Catalina?

In 1924, 14 bison were brought to the Island for a starring role in a silent movie rendition of Zane Grey's popular Western novel "The Vanishing American." Scenes featuring the bison were relegated to the cutting room floor, and due to cost overruns, the animals were left to roam Catalina's rugged interior. With no predators, the bison population grew to as many as 600 individuals in the 1960s.

When the Conservancy was created in 1972, it took on management of the bison herd which had become part of the cultural and historic fabric of the Island. However, the herd of between 300 and 600 animals were trampling native plants and causing ecological degradation to the Island's freshwater systems. At that time, the population was managed by shipping bison to auction on the mainland. In the early 2000s, researchers from the University of North Dakota and the University of California Davis conducted a scientific study to determine a management plan that would address both the health of the ecosystem and the health of the bison - plains animals that on Catalina are forced to forage on a dessert-like landscape. The study gave recommendations for herd size aimed at ensuring the ecological integrity of the Island. Considering both the recommendation of the study and the needs of the Island community given the important cultural and economic role of the bison, the Conservancy has aimed to maintain the herd between 150-200 animals.

Recent Management Approaches

In 2003 and 2004, the Conservancy collaborated with Island resident Avellana, IDA, the Morongo Band of Mission Indians, and the Lakota people of South Dakota to relocate bison to their home range to live out their natural lives. Relocation efforts did not, however, address the challenge of the yearly growth of Catalina's remaining herd. Enter, contraception.

"Contraception is an effective tool for animal management that will work for certain wild populations under particular circumstances," Muscat said. "The herding nature of the Catalina bison, the small size of the herd and the likely ease of yearly inoculation has all the makings of success.

"We have remained open to finding the right tool for each conservation management challenge and the time and circumstances have led us to contraception and what we believe will be a humane and permanent solution to herd-size management," she concluded.

IDA has worked nationwide to promote the use of contraceptive solutions in lieu of lethal removal of animals, with successful efforts to control small numbers of deer in residential areas. The group has also sponsored contraception efforts on elk in Point Reyes, California, where flat terrain and smaller herd size suggest they may be effective.

Muscat and Dyer said that their respectful organizations are optimistic that the contraceptive program on Catalina will be successful and will preclude the need for shipment of bison off the Island in the foreseeable future.

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