



Virginia Range Fertility Control Program

YEAR FOUR REPORT



Submitted by the American Wild Horse Campaign



Introduction

The Virginia Range Horse Fertility Control Program, implemented through a limited-purpose, non-exclusive Cooperative Agreement between the American Wild Horse Campaign (AWHC) and the Nevada Department of Agriculture (NDA) continues to reduce foaling rates and is now showing population reduction. The current program agreement began on April 9, 2019. Although the program began during the peak of foaling and breeding season, there has been a steady decline in the number of foals born each year. Natural mortality rates continue to further reduce the number of surviving foals and reduce the number of adult horses. As we have expanded into more remote areas, birth numbers have continued to further decline. AWHC and NDA signed the Year 5 Cooperative Agreement covering a period of May 1, 2023 - April 30, 2024. The program continues to be supported by the Tahoe Reno Industrial Center (TRIC), Blockchains LLC, a growing number of surrounding communities and organizations, and local wild horse advocacy groups. Participating landowners include TRIC, Blockchains LLC, Switch, The Nature Conservancy, Nevada State Parks, the Bureau of Land Management (BLM), the City of Sparks, Waste Management, Reno Lands, EP Minerals, and many more.

The Virginia Range program continues to be the largest free-roaming horse fertility control program in the world, according to the Science and Conservation Center (SCC), which manufactures the PZP vaccine utilized in the program and provides certification training for its application. This applies to both the treatment area (just under 300,000 acres) and the population size of approximately 3,507 confirmed living horses. This population number, higher than 2022, is due to expansion into previously inaccessible areas where we have gained access permission and closely aligns with the aerial count conducted by the NDA. This program continues to gain national and international recognition from political leaders and management entities striving to improve the management of wild equids on the range.

For the purposes of reporting foal birth rates and fertility control efficacy, this report will only include horses north of State Route 50, the area defined in our Cooperative Agreement, however, we continue to record horse birth, death, and band data of those Virginia Range horses that cross the current NDA darting boundary (State Route 50) to the geographical boundary of the Carson River.

Program Costs

AWHC’s fiscal year runs from January 1 – December 31. In addition to the fertility control program, AWHC funded the diversionary feeding for public safety program at the Tahoe Reno Industrial Center conducted under the range management Cooperative Agreement between NDA and Wild Horse Connection. AWHC’s expenditures on the Virginia Range program are as follows:

Item	2022	2023 (through Q2)
Fertility Control	\$265,000	\$131,090
Public Safety Diversionary Feeding (TRIC)	\$117,000	\$77,184

Funding Sources - *Foundation Grants:* Giant Steps Foundation, Engelstad Foundation, Summerlee Foundation, The Marilyn Lichtman Foundation, T.S. and K.D. Glide Foundation. *Corporate Grants:* Blockchains LLC/Project Frontier, Individual Contributions.

PZP Vaccine (Background)

The program utilizes the Porcine Zona Pellucida (PZP) immunocontraceptive vaccine administered via remote darting of breeding-age female horses with CO2-powered rifles.

PZP is scientifically proven as safe and effective, with over three decades of use, and is recommended by the National Academy of Sciences (NAS) for use in federally protected wild horse herds.

The vaccine produces an immune response that prevents fertilization without impacting the reproductive hormones that drive natural behaviors. It is reversible and safe for delivery to pregnant and nursing mares.

The PZP vaccine requires a primer and booster dose in the first year and annual boosters thereafter. Many mares are now getting their yearly boosters, accounting for our total treatment numbers. PZP is more than 90 percent effective in preventing pregnancy when mares are fully vaccinated within specified time periods.



Virginia Range darter, Johnny Takacs

Fertility Control Year 4 Progress

1. Numbers: During the fourth year of the Fertility Control Program (May 1, 2022 – April 30, 2023), the AWHC team treated 1,225 mares with PZP fertility control and a total treatment count of 1,691 PZP vaccines via dart delivery, including 325 Primers and 1,366 Boosters.

To align with the NDA's Fiscal Year reporting from July 2022 through June 2023:

- Total doses administered - 1,666
- Total primer doses - 330
- Total booster doses - 1,336

With our continued progress in increasing access agreements, and bait feeding approved for limited use by NDA for harder-to-access horses, we expect to continue increasing the impact of the fertility control program in 2023/2024 and the years to come.

2. Foal Counts: For the purpose of this report, we are reporting foal births this year to date (January 1 - June 30, 2023), which represents data through peak foaling season. Foals born during this period total 142, with 2 removed and 41 deceased or missing and assumed dead. In 2020 during the same time period (January-June) 491 foals were recorded as being born.

This shows a 66.3% average reduction in the number of foals born in 2023 (through June) vs the same time period in 2020. Foal mortality remains high due to natural predation and other causes, averaging 61.8% for the last full calendar year 2022 (38.2% foal survival rate). Expectations are to see a similar rate in 2023.

Area breakdown of total PZP treatments May 1, 2022 - April 30, 2023


AREA	MARES	PZP*
Biddleman	29	53
Dayton Valley	70	103
Fernley	79	101
Highlands	74	101
HV Hillside	66	103
Lockwood	113	156
Meadows	58	101
Mound House	81	91
Nevada Uplands	51	72
Rhodes Road	96	147
Silver Springs	32	43
Stagecoach	84	120
The D	32	46
USA Parkway	284	358
Washoe	76	96
Total	1,225	1,691

*Primers + Boosters

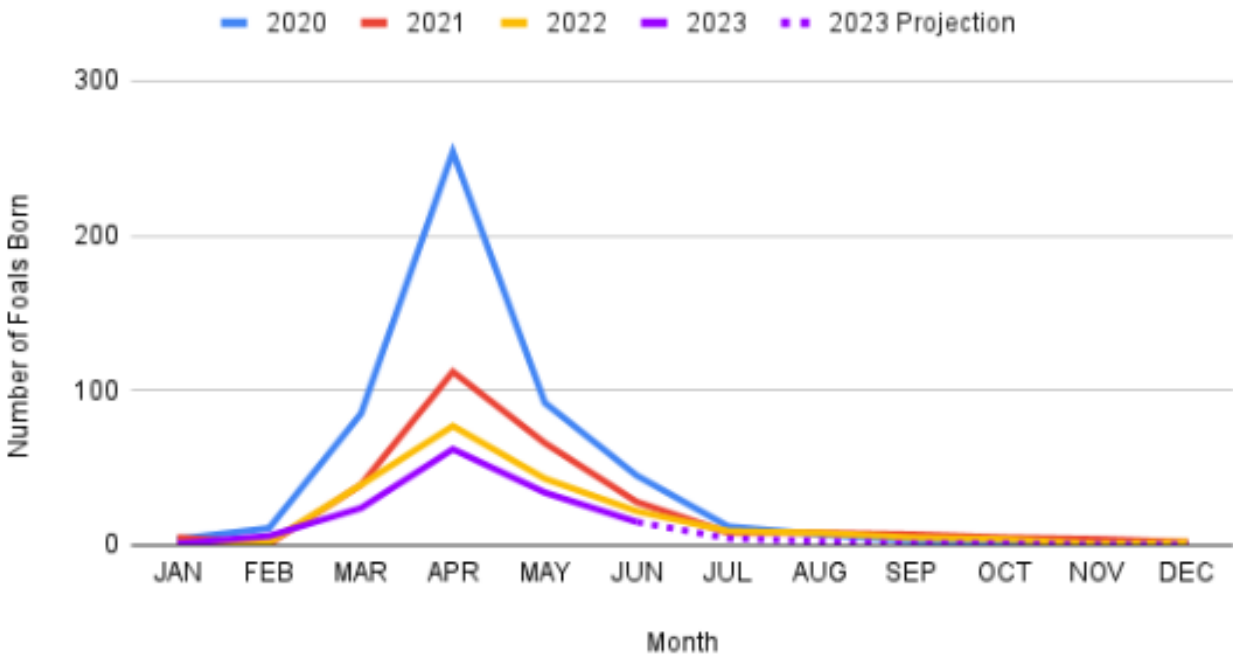
While Fernley mares have been opportunistically darted in previous years, 2022 was the first year volunteers were able to meaningfully delve into Fernley and have been verifying living and dead horses and increasing vaccination numbers. However, because we do not have complete data from 2020 for foal births from this area, it has not been included in the figure below which reflects vaccine efficacy. For this year, from January through June 2023, 34 foals were born in the Fernley area.

3. Standard Operating Procedures (SOPs): SOPs are continuously updated from previous years and cover the darting process, access requirements and safety. The current Darting SOP can be found [here](#). The SOP for data entry and maintenance has also been continuously updated throughout the years with the goal of improved entry standardization and quality control. Standardization and implementation to meet the new requirements in the database SOP takes place on a regular basis, to meet the need of the growing program. Since June 2019 AWHC has been applying the SOP standards to historical records to improve consistency and clarity. Out-of-date data continues to be updated and horses that have not been seen for over 3 years have been archived and marked deceased. The current Database SOP can be found [here](#).

66.3%
**decline in foal births,
 comparing Jan-June 2020
 to the same time
 period in 2023.**



Virginia Range, Nevada: 2020-2023 Foal Births by Month



July-Dec 2023 represent the foaling rate within a 95% confidence level based on trend.



Photo credit to Deb Sutherland

4. Database: The database is used to record information such as horse ID, number, alias, gender, band affiliation, age (if possible), physical color and unique markings, and general range/territory as reported by volunteers, PZP application and other pertinent information about individuals or bands. The AWHC's wild horse database is the tool used for the PZP fertility program to track all information relating to the PZP application, foaling rates, and details such as date of darting, darter, darting location, distance from a horse when darted, CO2 pressure level, primer vs. booster vaccine, PZP lot number, as well as dart performance and recovery status. This allows us to track data trends such as dart recovery rates. For Year 4 of the cooperative, we have a 100% recovery rate, with 1,691 treatments and 1,691 darts recovered.

The current database has been updated to include 3,507 individually identified and confirmed living on the range, which includes 381 listed as missing. This number reflects a higher number of horses that have been found and documented, as well as treated, over the last year in previously inaccessible areas. Additional property permissions and off-road access have allowed volunteers into areas not entered before. The number also correlates closely to the NDA's most recent flyover count.

Treating these horses as found will also stabilize and start to show a population decrease in those areas. Over the life of the database which was started in 2015, 143 horses are listed as removed and 2,144 dead over both darting and non-darting areas of the range. Deceased horse numbers include some historical records of horses for lineage purposes from before the programs began.

5. Data Analysis: AWHC is partnering with the University of Pretoria for program data analysis with a focus on the efficacy and safety of the PZP vaccine and its impact on Virginia Range horse birth rates. This is a ground-breaking analysis since previous studies have used smaller populations and study areas and have not been treated year-round.

Analysis of 2019-2021 data was presented at The International Symposium on Equine Reproduction in Brazil by University of Pretoria Veterinarian and Professor Martin Schulman and AWHC Conservation Scientist Nicole Hayes. A manuscript analyzing data through 2022 is currently in preparation with publication submission expected later in 2023.

6. Spreading the Word: AWHC was a platinum sponsor of the Botstiber International Wildlife Fertility Control Conference held in Colorado Springs in May 2022, where we were able to discuss the details of the Virginia Range program with many experts and researchers. Both the Nevada State Director and the Virginia Range Program Coordinator attended along with other employees.

7. Population in Decline: Due to the dedication of our team and volunteers, many of the herd treatment areas are beginning to show population decline. A large contributing factor to this decline is the healthy population of predators that are well documented within the Virginia Range. With birth rates dramatically declining through the use of PZP, these natural factors aid in the healthy regulation of the population. For the calendar year 2022, we had many herd treatment areas experience a population decline:

- Within the four combined herd treatment areas along the City of Reno interface (from Hidden Valley to Geiger Grade) only three foals total were born, with none surviving. Eight additional adults were confirmed deceased during that time period within this treatment area. An additional 44 horses of varying ages were marked deceased having not been seen for three years or more, or being too young to survive alone, as laid out in our SOP.
- In the Dayton herd treatment area, seven foals were documented, with only two surviving as of July 2023. Four additional adults were confirmed deceased during this time period, and another 27 horses of varying ages were marked deceased after meeting the time protocol as described above.
- Within the combined herd treatment areas of Stagecoach and Silver Springs, there were only eleven surviving foals as of this report. Eleven adult horses were confirmed deceased and through data cleanup, another 50 horses of varying age met the protocol for being declared deceased.

These results demonstrate the marked success of the Virginia Range Fertility Control Program and show that future population declines are anticipated. In conjunction with natural systems like predation, the horse population on the Virginia Range can exist in a thriving ecological balance with their environment.

8. Continued Education: Several AWHC employees, including the Nevada State Director, attended the 2022 Free-Roaming Equids and Ecosystem Sustainability (FREES) Summit in October and participated in the round table exercises and discussions on fertility control.

In addition, several national contacts were made including a USGS researcher who came out to the Virginia Range to talk more about and see the program, on her travels.

9. Partners: Tahoe Reno Industrial Center and AWHC held a Wild Mustang Conference at TRIC developing supportive relationships and educating businesses on the fertility control program and employee safety.

Year 4 Progress

Darting Access: We continue to add new properties approved for darting access, bringing the total number of properties approved range wide for darting to 90. In addition, the large business landowners continue to renew their access yearly and have positively impacted other landowners in the area. Continued community support adds to our success by influencing personal property owners to partner with AWHC for darting access.

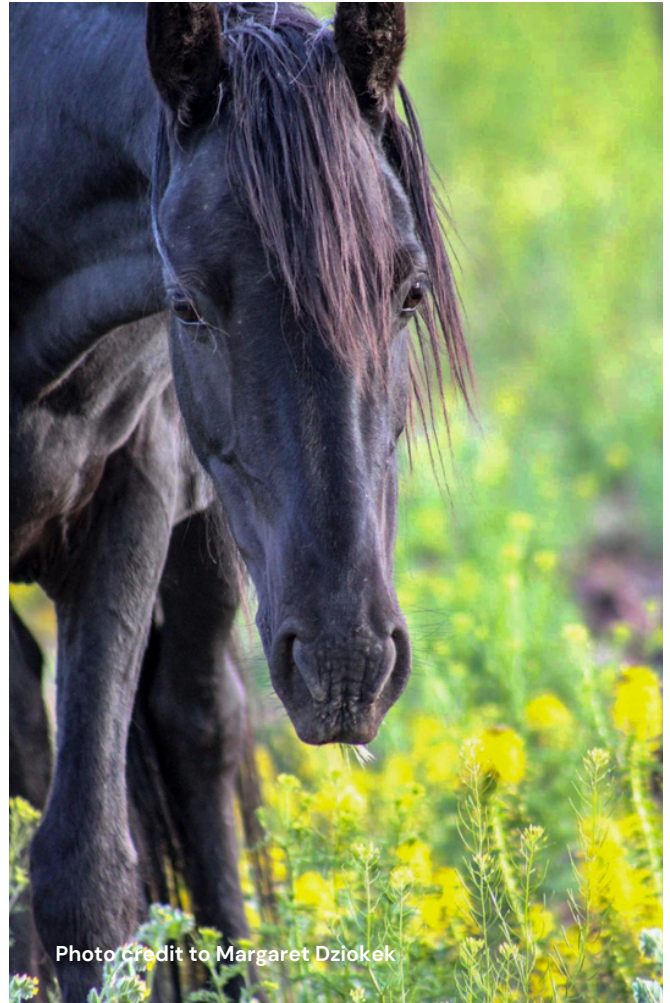


Photo Credit to Margaret Dziok

Volunteers, Personnel, and Training:

1. During the reporting period, four new darters were trained through the Science and Conservation Center (SCC) certification class. This brings the total number of available certified darters to 24.
2. Three additional documenters were trained, bringing the documenter total to 20.
3. Refresh training for veteran documenters and spotters continues via both Zoom and in the field.
4. Feedback from herd leads is discussed as an ongoing process to be certain best practices are being followed and updates in the protocol are implemented where necessary.

Our Nevada-based team has grown to include a state director, a conservation scientist, a special projects coordinator (all working on projects both on and off the Virginia Range), the Virginia Range program coordinator, and one full-time plus one part-time field representative.

Challenges for the Program

1. New Volunteer recruitment and training have had delays due to SCC ramping higher lab output and has affected remote training opportunities for perspective new darters by the SCC.
2. Slow access approvals for darting and documenting due to legal requirements from companies that have high-security access restrictions for the property at TRIC.
3. Horses south of Highway 50 and north of the Carson River are not being included in the current efficacy reporting of the PZP fertility control program, as they fall outside of the current agreement southern boundary, which is Highway 50. However, mares (and bands) travel into this area via wildlife underpass or unfenced roadway to the naturally observed geographical border of the Carson River. This area creates a treatment gap and some mares may miss crucial booster vaccinations when they travel back and forth.

Goals for Year 5

1. Continue to treat any yearling fillies to prevent pregnancies.
2. Continue to expand into the hard-to-reach areas of the Virginia Range to further increase the number of mares treated.
3. Further expand our scientific analyses of the data, looking at what questions the robust dataset can help answer for range managers.
4. Work with BLM and NDA to gain access to treat and retreat transient Virginia Range mares between Highway 50 and the Carson River who are currently moving in and out of the NDA fertility control agreement area, crossing the southern boundary through wildlife passages and unfenced roadways.
5. Continue to increase public education opportunities for program understanding through new business and public safety training and community outreach.
6. Complete preparation, with the University of Pretoria, of 2022 data for peer-reviewed publication submission later in 2023.

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This report should be cited as follows:

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