



U.S. Department of the Interior
Bureau of Land Management

WH&B Research: Recent Success, Management Applications, Future Prospects



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1 WHB Advisory Board October 2019 Meeting, Washington, DC

Photo: USGS



BLM Supports WH&B Research

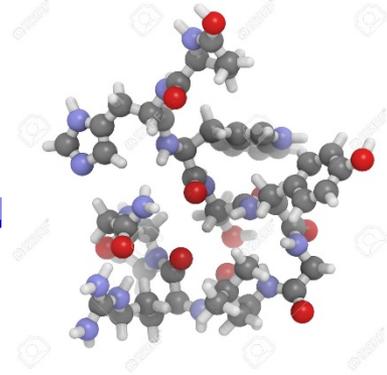
- **Fertility Control Research**
 - **IUDs, Vaccines, Sterilization, Modeling**

- **Other BLM-funded Research**
 - **WH&B Welfare**
 - **Movements, Genetics, Behavior**
 - **Reduce WHB-Vehicle Collisions**
 - **Improved survey methods**



GonaCon Vaccine

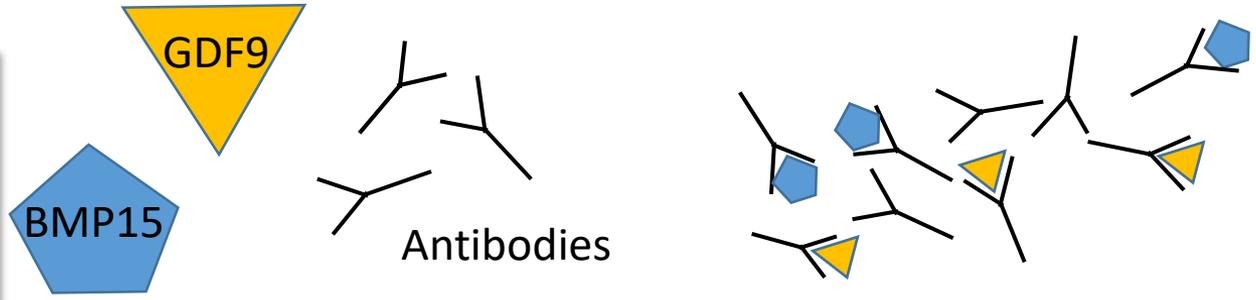
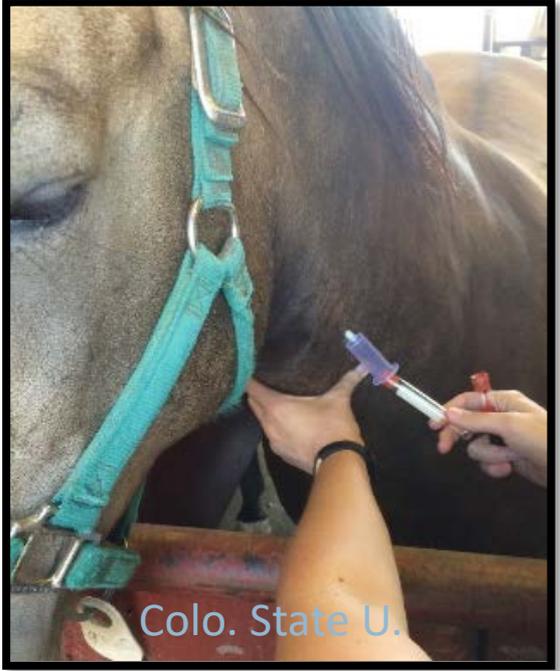
GnRH molecule



- EPA approved, dartable. Best if hand-injected.
- Can prevent estrus cycling; mares may act pregnant
- Primer dose has ~40% foaling rate reduction for 1 year
 - Only ~30% reduction in 2nd year
- **After booster dose by hand, efficacy goes way up:
100% foaling reduction for 1 year
AND ~85% reduction for years 2-4 (at least)**
- **Already in use**

Oocyte Growth Factor Vaccine

❑ Vaccine against two egg maturation proteins



- Incomplete follicle development
- Combined vaccine with weak adjuvant halted estrus:
10 of 10 in 2018
9 of 10 in 2019

❖ Pasture trial for 1-dose version?

IUD (Intrauterine device)

❑ Silicone IUDs

- ✓ For 'open' mares (not pregnant)
- ✓ 19 Mares living with fertile stallions
- ✓ 75% of 'Y' shaped IUDs stayed in > 1 year
- ✓ 100% contraception with IUD in place
- ✓ No damage to uterus
- ✓ Return to fertility
- ◆ ? Field trial?



Gelding

- ❑ Effects of Geldings in a breeding herd
 - ✓ Pre-treatment collars: August 2016
 - ✓ Gather and gelding Fall 2017
 - 27 studs gelded and returned
 - Observations of all age and sex classes
 - ✓ 2018-19 Gelding behavior similar to fertile stallions





Population Model: "Pop Equus"

Updating... x +

https://doi.sciencebase.gov/equus/model-1

popEQUUS Beta Release (provisional software not for official use)
an Equine Matrix Population Model



Introduction

popEquus Model

Advanced Options

About

Help

popEquus Model Run

Input Parameters for All Models

Select a State
Nevada

Select a HMA
NEVADA WILD HORSE RANGE

NEVADA WILD HORSE RANGE is a HMA in Nevada

Year for Model to Begin
2019

Number of Years to Model
10

Starting Population
500

Growth Rate % 1-100
20

Captured Proportion (1-100)
- % caught in a Gather
80

Are Foals included with the starting population?
 Yes No

Select Options for Model Run

No Action

Yes No

No Action Options

This option should be run (checked yes) for all models and scenarios as a baseline.

Removal

This scenario models removals without any accompanying fertility control. Users specify when to gather, what population level triggers a removal, and target population size to remove to. Future versions will

Yes No

Removal Options

Select Type of Removal
 Reactive Specific

Minimum Interval: 5 500 300

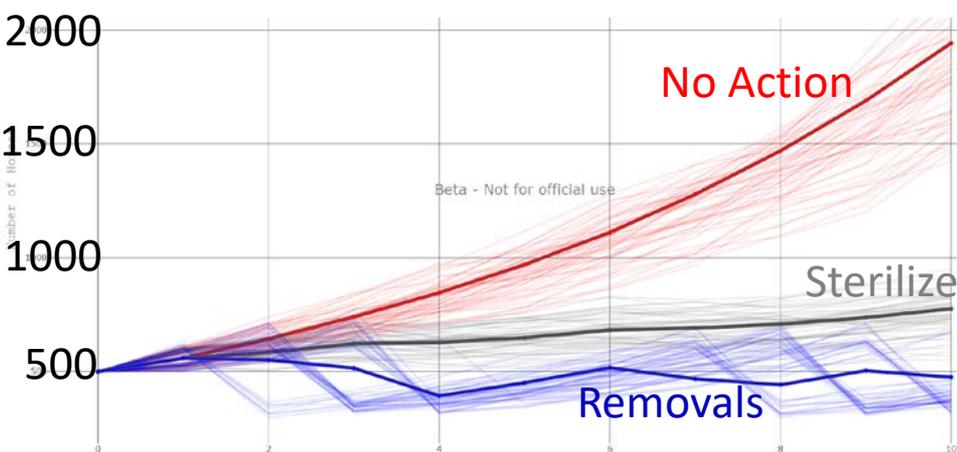
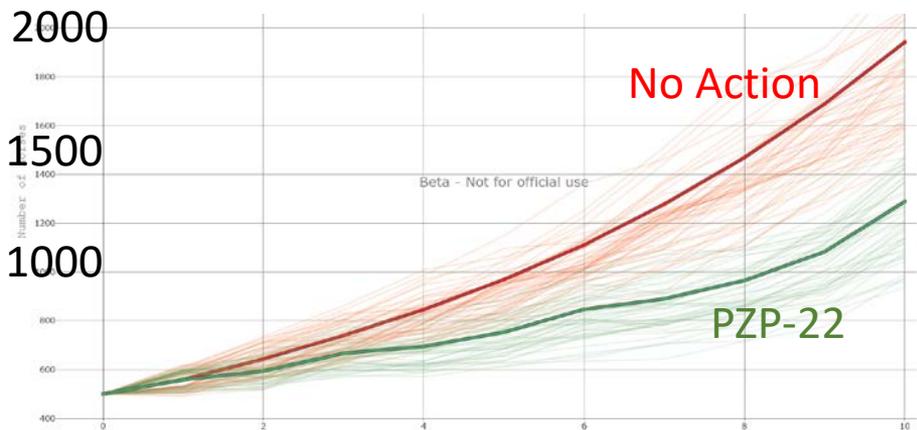
Gather when population exceeds:

Wild Horse and Burro Program
U.S. Department of the Interior
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7



Population Model: "Pop Equus"



Example Scenario	On Range Cost (95%) \$ Mil	Off Range Cost (95%) \$ Mil	Total Population, Year 10 (95%)	Total Removals (95%)
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No Action	0.0	0.0	1942 (1469 - 2240)	0
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Removal	0.62 (0.0 - 0.9)	5.76 (0.0 - 6.7)	492 (314 - 812)	654 (402 - 909)
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PZP-22	1.6 (0.1 - 1.8)	0.0	1289 (1000 - 1458)	0
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Sterilize	1.45 (0.1 - 1.0)	0.0	776 (688 - 1177)	0
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Future Research & Applications

- Field trials for new methods
 - Adaptive Management
- Update WHB Research Strategy
- Request for Proposals in 2020?





Questions / Discussion

