Appendix VII

BLM Draft "Options for Managing a Non-Breeding Component within Self-Sustaining Herds of Wild Horses" July 2006

Options for Managing a Non-Breeding Component within Self-Sustaining Herds of Wild Horses

July, 2006

Introduction

On April 10, 2006, the Wild Horse and Burro Advisory Board recommended that the BLM pursue the development of a program proposal that would consider the use of sterilization as an appropriate management level tool for wild horses on public lands and provide a report at the July 17, 2006, Board meeting.

The numbers of wild horses removed from the range has exceeded the number of animals adopted during the last several years. Feed and care expenses for the present 24,000 captive wild horses currently consumes about half of the funds available for wild horse and burro program management. Approximately 19,000 of these horses are being maintained at long-term holding facilities.

The return of sterile animals (geldings) to the range in lieu of maintenance at long-term holding has some potential to reduce management costs and especially so if considered in combination with other population growth suppression management tools. Annual population growth rates can be reduced by changing herd sex ratios to favor males (either geldings or stallions) and can be further be suppressed by applying fertility control to mares.

These cost saving opportunities are the greatest and most feasible during maintenance gathers conducted 3 to 4 years after Appropriate Management Levels (AMLs) have been achieved.

A combination of these opportunities are analyzed and presented in this paper.

Goal

The primary goal of this paper is to evaluate opportunities to reduce costs for maintaining unadoptable stallions and/or geldings in long-term holding. This discussion does not apply to burros.

Possible Alternatives

BLM has identified alternatives to removing all excess stallions from the range that are currently being gelded and sent to long-term holding (LTH). A large component of the animals at LTH is geldings between the ages of 6 to 10 years old. The alternatives address returning excess stallions and/or gelding a portion of the excess stallions and returning them to their original Herd Management Area (HMA).

1) Maintaining a population of geldings over and above the low end of AML within a HMA. All animals up to the low end of AML would be maintained as a "core breeding population". A component of geldings would then be added back to the herd, not to exceed the mid-point of AML. Animals, comprising the non-reproductive portion of the herd would only be returned to their HMA of origin.

HMA(s) would be gathered and animals would be released back to the range in accordance with the current selective removal policy (up to the low-point AML). This portion of the herd would comprise the "core breeding herd". All released mares (50-80% of remaining mares on range) would be treated with the 22-month PZP vaccine in order to reduce herd growth rates (94%, 82%, 68% efficacy, Years 1-3). An additional number of geldings (up to about the mid-point AML) would also be released; these animals would comprise the non-reproductive population of the herd. The core breeding herd or low-point AML number would continue to be managed as a self-sustaining herd. As herd numbers exceed the high-point of AML, a gather would be scheduled.

2) In HMAs with low point AMLs of 200 or greater, reduce the population to a "core breeding herd" of approximately 150 mares/stallions and add geldings as a non-reproductive herd component up to the low end of AML number.

HMA(s) or HMA complexes with low point AMLs of 200 or greater would be gathered in accordance with the selective removal policy. A core breeding herd of 150 animals (50:50 sex ratio) would be maintained along with a non-breeding component of geldings released to the range to bring the total population number to the low point of AML number. Released mares could be treated with the 22-month PZP vaccine in order to reduce herd growth rates. As herd numbers exceed the high-point of AML, a gather would be scheduled.

3) Intact stallions could be substituted for geldings in each of the above options. This equates to adjusting herd sex ratios in favor of stallions on the range (e.g. 60-70% males).

This option would be least expensive to administer in the short-term, less intrusive on individual stallions, and would result in reduced risk of complications or death loss attributable to castration at the trap site. Disadvantages might include increased social conflict within the herd on the range, impacts on the social structure of the herd and loss of individual animal condition over time. If resources are sufficient (forage, water) and distributed over a large area, then potential social aggression impacts associated with the presence of large numbers of intact stallions might be mitigated.

Available HMAs and Modeling of Alternatives

Available HMAs and Potential Holding Numbers

Eight complexes and seven additional HMAs, 15 total areas, (Appendix 1) were identified as potential areas where geldings or additional intact stallions could be maintained. These areas could potentially support a total of 1,344 stallions/geldings, an estimated 25% of low-end of AML per HMA. Analysis was restricted to HMAs with a low end of AML established at 200 horses or more. HMAs with smaller AMLs may also have some additional potential to utilize this tool on a limited basis.

Population Modeling of Alternatives

Population modeling should be used as a tool to determine how quickly population(s) would exceed high-point AML. Population modeling was done for an HMA with a low-point AML of 200 animals or greater to determine how quickly the population would exceed high-point AML if non-reproductive animals occupied 25% of the available AML range. The most significant variable was the effectiveness of fertility control and the level of application. If fertility control was able to reduce the population growth rate to 10%, then most populations would be at or near AML by Year 5 and exceed AML by Year 6. Refer to Appendix 2 for population modeling of several alternatives.

Castration in the Field

Castration would be surgical and performed by a veterinarian using anesthetic agents and surgical techniques appropriate to field conditions at the surgeon's discretion. Animals would not be held more than 5 days prior to being castrated and would be released 24 to 36 hours after castration. Under field conditions, a good crew should be able to castrate 3 - 5 animals per hour depending on the chute setup. As with any large number of wild horse castrations, serious complications and death loss should be expected. The incidence should be similar or only slightly higher than that typically encountered in BLM preparation facilities (less than 5%). The public relations impact of serious complications occurring in the relatively public setting of a gather site could be substantial in some states.

Veterinary costs are expected to vary substantially from gather to gather. Charges would probably range from $65 to $250 per animal for anesthesia and surgery plus a trip or mileage fee of $45 and up depending on travel time. Costs would average $100/animal plus $50-$100 mileage fee. If contracted on a daily or hourly basis, costs would probably average $150/hour or $1200/day.

Conclusion

A portion of the LTH demand could be met by managing for a core breeding population together with a non-reproductive population component on the range or a herd sex ratio skewed towards stallions (~70%). Some savings in both short-term holding (STH) and LTH costs could be expected on an annual and continuing basis. Nevada, followed by Wyoming, has the greatest potential opportunity for implementing this tool.

It is estimated that the opportunity exists to hold about 1,673 additional stallions/geldings on the range in 15 different areas that include 8 HMA complexes. The preparation and initial STH costs of about $750,000 for 1,673 head would be saved. The annual savings in LTH costs for 1,673 head would be approximately $775,000. Another 100,000 in transportation costs from STH to LTH facilities would be also be saved.

Costs are estimated at $100 per animal for castration at the trap site. These costs could be avoided if intact stallions are returned to the range.

Concerns for increased social disorder as a result of the heavily skewed sex ratio might be mitigated by sufficient acreage and reasonable distribution of good quality forage and water throughout the HMA.

The opportunities to return geldings as a component of the low end of AML number and modify sex ratios to suppress population growth are most feasible and applicable during maintenance gathers that normally occur three to four years after AML has been achieved. The advantages of maintaining geldings on the range and/or modifying sex ratios are further enhanced when fertility control is also applied.

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APPENDIX 1: HMAs or Complexes with Low end of AML at 200 or Greater

(Highlighted low end AMLs were estimated at 40% below a single point AML; Potential Number of released geldings estimated at 25% of low-end of AML.)

State	HMA	Low end AML 200 +
CA	**Twin Peaks**	448-758 (112 geldings)
NV	**Antelope Complex**	472-788 (118 geldings)
	Antelope	194-324
	Antelope Valley	155-259
	Spruce-Pequop	49-82
	Goshute	74-123
	Blue Wing Complex	331-553 (83 geldings)
	Blue Mountains	22-36
	Kamma Mountains	46-77
	Lava Beds	89-148
	Seven Troughs	94-156
	Nightingale Mountains	36-63
	Shawave Mountains	44-73
	Buffalo Hills Complex	465-756 (116 geldings)
	Buffalo Hills	188-314
	Granite Range	155-238
	Fox-Lake Range	122-204
	Calico Mountains Complex	417-694 (104 geldings)
	Black Rock East	56-93
	Black Rock West	56-93
	Calico Mountains	200-333
	Warm Springs Canyon	105-175
	Buck & Bald Complex	477-794 (119 geldings)
	Buck & Bald	254-423
	Butte	57-95
	Maverick-Medicine	166-276
	USFS	
	Callaghan	142-237
	Clan Alpine	612-979 (153 geldings)
	Diamond Complex	126-209
	Diamond	91-151
	Diamond Hills North	22-36
	Diamond Hills South	13-22
	Fish Creek Complex	191-319 (48 geldings)
	Fish Creek	108-180
	Seven Mile	60-100
	Little Fish Lake	23-39
	USFS	
	Little Owyhee Complex	284-438 (71 geldings)
	Little Owyhee	194-298
	Snowstorm Mountains	90-140
	Monte Cristo Complex	325-542 (81 geldings)
	Monte Cristo	142-236
	Sand Springs East	154-257

	Sand Springs West	29-49
	USFS	
	Nevada WH Range	300-500 (75 geldings)
	New Pass-Ravenswood	286-476 (72 geldings)
	Owyhee Complex	337-561 (84 geldings)
	Owyhee	139-231
	Little Humboldt	48-80
	Rock Creek	150-250
	North Stillwater	123-205
	Pilot Mountain	249-415 (62 geldings)
	Stone Cabin Complex	267-445 (67 geldings)
	Stone Cabin	218-364
	Saulsbury	24-40
	Hot Creek	25-41
	USFS	
UT	**Sulphur**	150-250
WY	**Adobe Town**	610-800 (153 geldings)
	Salt Wells Creek	125-175
	Divide Basin	415-600 (104 geldings)
	White Mountain	205-300 (51 geldings)

APPENDIX 2: MODELING OF ALTERNATIVES

Example Evaluation One: No Fertility Control and No Geldings Released on Range

NV	**Calico Mountains Complex**	398-694

Gather when herd size exceeds 700 horses
Gather Efficiency = 80% (700 X .8 = 560); 140 animals left on the range (70 female/70 male)
Captured Horses = 560; 280 males/280 females
Released Horses = 130 stallions, 130 mares with no fertility control. (260 breeding core)
No Geldings Released.
Horses released back: **260 breeding core horses**
140 horses not captured (70 male/70 female)
400 total (LOW END of AML)

Post-Gather Growth:

Year 1: Base Herd = 400
130 mares; 70 mares not captured/fertile.
200 fertile mares X .5 = 100 foals produced (50 male/50 female)
Herd Size = 500
Growth Rate: 25%

Year 2: Base Herd = 500
130 mares; 70 mares not captured/fertile.
200 fertile mares X .5 = 100 foals produced (50 male/50 female)
Herd Size = 600
Growth Rate: 20%

Year 3: Base Herd = 600
130 mares; 70 mares not captured/fertile; add 50 2-yr olds
250 fertile mares X .5 = 125 foals produced (63 male/62 female)
Herd Size = 725
Growth Rate: 21%

Year 4: **GATHER YEAR** Base Herd = 725
130 mares; 70 mares not captured/fertile; add 50 3-yr olds; add 62 2-yr olds
312 fertile mares X .5 = 156 foals produced (78 male/ 78 female)
Herd Size = 881
Growth Rate: 22%

Example Evaluation Two: Fertility Control plus Released Geldings to Low End of AML

NV	**Calico Mountains Complex**	398-694

Gather when herd size exceeds 700 horses
Gather Efficiency = 80% (700 X .8 = 560); 140 animals left on the range (70 female/70 male)
Captured Horses = 560; 280 males/280 females
Released Horses = 75 stallions, 75 mares all treated with 22-month PZP. (150 breeding core)
Available males for gelding: 280-75 core stallions to range = 205
Horses released back: **150 breeding core horses**
140 horses not captured (70 male/70 female)
110 gelded stallions (herd sex ratio 255 male/145 female) 64% 36%
400 total (LOW END of AML)

Post-Gather Growth:

Year 1: Base Herd = 400
75 mares X .9 = 68 infertile/7 fertile; 70 mares not captured/fertile.
77 fertile mares X .5 = 39 foals produced (19 male/20 female)
Herd Size = 439
Growth Rate: 10%

Year 2: Base Herd = 439
75 mares X .8 = 60 infertile/15 fertile; 70 mares not captured/fertile.
85 fertile mares X .5 = 43 foals produced (23 male/22 female)
Herd Size = 482
Growth Rate: 10%

Year 3: Base Herd = 482
75 mares X .7 = 53 infertile/22 fertile; 70 mares not captured/fertile; add 20 2-yr olds
112 fertile mares X .5 = 56 foals produced (28 male/28 female)
Herd Size = 538
Growth Rate: 12%

Year 4: Base Herd = 538
75 mares fertile; 70 mares not captured/fertile; add 20 3-yr olds; add 22 2-yr olds
187 fertile mares X .5 = 94 foals produced (47 male/47 female)
Herd Size = 632
Growth Rate: 18%

Year 5: Base Herd = 632
75 mares fertile; 70 mares left; add 20 4-yr olds; add 22 3-yr olds; add 28 2-yr olds
215 fertile mares X .5 = 108 foals produced (54 male/54 female)
Herd Size = 740
Growth Rate: 18%

Year 6: **GATHER YEAR** Base Herd = 740
75 mares fertile; 70 mares left; add 20 5-yr olds; 22 4-yr olds; 28 3-yr olds; 47 2-yr olds
262 fertile mares X .5 = 131 foals
Herd Size = 871
Growth Rate: 18%

Example Evaluation Three: Fertility Control plus Released Geldings over Low End of AML.

NV	**Calico Mountains Complex**	398-694

Gather when herd size exceeds 700 horses
Gather Efficiency = 80% (700 X .8 = 560); 140 animals left on the range (70 female/70 male)
Captured Horses = 560; 280 males/280 females
Released Horses = 75 stallions, 75 mares all treated with 22-month PZP. (150 breeding core)
Available males for gelding: 280-75 core stallions to range = 205
Horses released back: **150 breeding core horses**
140 horses not captured (70 male/70 female)
205 gelded stallions (herd sex ratio 350 male/145 female) 70% 30%
495 total (over LOW END of AML)

Post-Gather Growth:
Year 1: Base Herd = 495
75 mares X .9 = 68 infertile/7 fertile; 70 mares not captured/fertile.
77 fertile mares X .5 = 39 foals produced (19 male/20 female)
Herd Size = 534; **herd sex ratio 369 male/165 female) 69% 31%**
Growth Rate: 8%

Year 2: Base Herd = 534
75 mares X .8 = 60 infertile/15 fertile; 70 mares not captured/fertile.
85 fertile mares X .5 = 43 foals produced (21 male/22 female)
Herd Size = 577; **herd sex ratio 390 male/187 female) 68% 32%**
Growth Rate: 8%

Year 3: Base Herd = 577
75 mares X .7 = 53 infertile/22 fertile; 70 mares not captured/fertile; add 20 2-yr olds 112 fertile mares X .5 = 56 foals produced (28 male/28 female)
Herd Size = 633; **herd sex ratio 418 male/215 female) 66% 34%**
Growth Rate: 10%

Year 4: Base Herd = 633
75 mares fertile; 70 mares not captured/fertile; add 20 3-yr olds; add 22 2-yr olds
187 fertile mares X .5 = 94 foals produced (47 male/47 female)
Herd Size = 727; **herd sex ratio 465 male/262 female) 64% 36%**
Growth Rate: 15%

Year 5: **GATHER YEAR** Base Herd = 727
75 mares fertile; 70 mares left; add 20 4-yr olds; add 22 3-yr olds; add 28 2-yr olds
215 fertile mares X .5 = 108 foals produced (54 male/54 female)
Herd Size = 835; **herd sex ratio 519 male/316 female) 62% 38%**
Growth Rate: 15%

Example Evaluation Four: Fertility Control (Sex Ratio 70% Stallions to Low end of AML)

NV	**Calico Mountains Complex**	398-694

Gather when herd size exceeds 700 horses
Gather Efficiency = 80% (700 X .8 = 560); 140 animals left on the range (70 female/70 male)
Captured Horses = 560; 280 males/280 females
Released Horses = 75 stallions, 75 mares all treated with 22-month PZP. (150 breeding core)
Additional males for release: 280-75 (core) stallions = 205
Horses released back: **150 breeding core horses (75 male/75 female)**
140 horses not captured (70 male/70 female)
110 additional stallions (herd sex ratio 255 male/145 female)64% 36%
400 total (LOW END of AML)

Post-Gather Growth:
Year 1: Base Herd = 400
75 mares X .9 = 68 infertile/7 fertile; 70 mares not captured/fertile.
77 fertile mares X .5 = 39 foals produced (19 male/20 female)
Herd Size = 439; **herd sex ratio 274 male/165 female) 62% 38%**
Growth Rate: 10%

Year 2: Base Herd = 439
75 mares X .8 = 60 infertile/15 fertile; 70 mares not captured/fertile.
85 fertile mares X .5 = 43 foals produced (23 male/22 female)
Herd Size = 482; **herd sex ratio 297 male/187 female) 61% 39%**
Growth Rate: 10%

Year 3: Base Herd = 482
75 mares X .7 = 53 infertile/22 fertile; 70 mares not captured/fertile; add 20 2-yr olds 112 fertile mares X .5 = 56 foals produced (28 male/28 female)
Herd Size = 538; **herd sex ratio 325 male/215 female) 60% 40%**
Growth Rate: 12%

Year 4: Base Herd = 538
75 mares fertile; 70 mares not captured/fertile; add 20 3-yr olds; add 22 2-yr olds
187 fertile mares X .5 = 94 foals produced (47 male/47 female)
Herd Size = 632; **herd sex ratio 372 male/260 female) 59% 41%**
Growth Rate: 18%

Year 5: Base Herd = 632

75 mares fertile; 70 mares left; add 20 4-yr olds; add 22 3-yr olds; add 28 2-yr olds
215 fertile mares X .5 = 108 foals produced (54 male/54 female)
Herd Size = 740; **herd sex ratio 426 male/314 female) 58% 42%**
Growth Rate: 18%

Year 6: **GATHER YEAR** Base Herd = 740

75 mares fertile; 70 mares left; add 20 5-yr olds; 22 4-yr olds; 28 3-yr olds; 47 2-yr olds
262 fertile mares X .5 = 131 foals (66 male/65 female)
Herd Size = 871; **herd sex ratio 492 male/379 female) 56% 44%**
Growth Rate: 18%

Example Evaluation Five: No Fertility Control (Sex Ratio 64% Stallions to Low end of AML)

NV	**Calico Mountains Complex**	398-694

Gather when herd size exceeds 700 horses
Gather Efficiency = 80% (700 X .8 = 560); 140 animals left on the range (70 female/70 male)
Captured Horses = 560; 280 males/280 females
Released Horses = 75 stallions, 75 mares (150 breeding core)
Additional males for release: 280-75 (core) stallions = 205
Horses released back: **150 breeding core horses (75 male/75 female)**
140 horses not captured (70 male/70 female)
110 additional stallions (herd sex ratio 255 male/145 female)64% 36%
400 total (LOW END of AML)

Post-Gather Growth:

Year 1: Base Herd = 400

75 mares fertile; 70 mares not captured/fertile.
145 fertile mares X .5 = 73 foals produced (36 male/37 female)
Herd Size = 473; **herd sex ratio 291 male/182 female) 62% 38%**
Growth Rate: 18%

Year 2: Base Herd = 473

75 mares fertile; 70 mares not captured/fertile.
145 fertile mares X .5 = 73 foals produced (36 male/37 female)
Herd Size = 546; **herd sex ratio 327 male/219 female) 60% 40%**
Growth Rate: 15%

Year 3: Base Herd = 546

75 mares fertile; 70 mares not captured/fertile; add 20 2-yr olds
165 fertile mares X .5 = 83 foals produced (41 male/42 female)
Herd Size = 629; **herd sex ratio 368 male/261 female) 59% 41%**
Growth Rate: 15%

Year 4: Base Herd = 629

75 mares fertile; 70 mares not captured/fertile; add 20 3-yr olds; add 22 2-yr olds
187 fertile mares X .5 = 94 foals produced (47 male/47 female)
Herd Size = 723; **herd sex ratio 415 male/308 female) 57% 43%**
Growth Rate: 15%

Year 5: GATHER YEAR Base Herd = 723

75 mares fertile; 70 mares left; add 20 4-yr olds; add 22 3-yr olds; add 28 2-yr olds
215 fertile mares X .5 = 108 foals produced (54 male/54 female)
Herd Size = 831; **herd sex ratio 469 male/362 female) 56% 44%**
Growth Rate: 15%