8-28-90

Antelope

Chin Creek

ANIMAL PROTECTION INSTITUTE OF AMERICA

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August 28, 1990

Interior Board of Land Appeals
Office of Appeals
4015 Wilson Boulevard
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ANTELOPE HMA WILD HORSE REMOVAL PLAN APPEAL
[Ely District, Nevada:
Sampson Creek, Chin Creek,
and Tippett Allotment
Evaluation Appeals}

Dear Sir:

The Animal Protection Institute hereby APPEALS the final decision by the Ely District of Nevada to remove wild horses from the Antelope HMA.

BLM's decision to remove wild horses from the Antelope HMA is based on their "multiple use decisions" arrived at in the evaluation of three of the five grazing allotments in the HMA. API has appealed the wild horse decision portion of each of these three multiple use allotment evaluations (Chin Creek, Sampson Creek, and Tippett Allotment Evaluations) for failure to show that wild horses contribute to the overutilization and other damage in these three allotments. In our response to each final allotment decision, API gave detailed, site-specific objections for reducing wild horses.

Now we have before us the Ely District's decision to proceed with the removal. The rationale for the removal according the FONSI is to be found in the multiple use allotment decisions [the very decisions API has on appeal].

The decision to remove, according to the FONSI, is to be put into "full force and effect" by the Ely BLM.

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But API has not seen a Motion to IBLA for putting the wild horse portion of the decision into full force and effect. We have not seen an IBLA ruling on our appeal of the multiple-use decisions on the three allotments.

API, therefore, filed a MOTION TO STAY the removal until IBLA rules on the multiple-use allotment decisions which are the basis for this removal.

API therefore APPEALS THIS REMOVAL PLAN.

Quite frankly, API feels that BLM makes up the rules of the game as they go along in order to prevent interested and affected parties who are concerned with the implementation of the Wild, Free-Roaming Horse and Burro Protection Act from using the proper administrative process for redress of grievances or reviewing the legality of management actions.

In the three allotments that BLM evaluated, API did not disagree that resource damage is occurring. We did not disagree with the livestock monitoring data or BLM's methodology for measuring livestock usage. API contends that BLM's data fail to support a decision to remove horses from the Antelope HMA; the data fail to support a determination that there are 390 excess animals in the Antelope HMA, the data fail to support a determination of what the Appropriate Management Level for the HMA ought to be. API disagrees with the following two statements which are contained in the Removal Plan:

> In their Environmental Assessment accompanying the Removal Plan, BLM states that wild horses are the <u>primary contributors</u> of overutilization and resource damage in these three allotments and this is the reason for the removal.
>
> BLM declares the removal will restore the range to a thriving natural ecological balance and multiple use relationship.

We believe that our responses to the three evaluations show that in fact wild horses are NOT the primary contributors to overutilization and resource damage. We request the IBLA to review these three evaluations and our site-specific response to each.

We reiterate the points we raised in each allotment to show that damage, if any, by horses is minimal and cannot be the basis for removing horses as excess for the entire HMA.

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Because the damage, if any, by horses is so minimal the removal cannot possibly restore the range or correct overgrazing in the areas where it is occurring in these allotments.

TIPPETT EVALUATION

In our response to the Tippett evaluation, API said that the evaluation shows horses are found in two general areas. These two areas are the Antelope and Schell Creek Range. The utilization data show, more specifically, that horses are in five key areas plus a TAW (a wildlife area) in the Antelope and Schell Creek Ranges. The ecological review showed horses in six of fifteen key areas used in these studies. Of the six, it is shown that horses are in four areas where damage exists. Of these four areas the test is whether or not the data show horse usage and impacts contribute to damage. Just because there is damage in an area where horses happen to go does not mean horses cause the damage. Of the four areas BLM's data show: Key Area 1 (Calcutta Burn) sheep were camped on the transect line when BLM measured the 90 percent utilization on crested wheatgrass. Key Area 2, the North Schell Bench utilization on the key species (bluebunch wheatgrass) was 20 percent. This is far below the acceptable level, far below the carrying capacity of this area. Key Area 14 shows heavy horse use. Here instead of monitoring grasses, which horses eat, they monitored shrubs (mountain big sage) which horses do not eat, but sheep and mule deer do eat. This is a deer area. BLM has no data on the impact of horses in this area. But their data on livestock show damage by livestock. Their data do not show damage by horses. THERE IS NO JUSTIFICATION FOR THE REMOVAL OF HORSES, THERE ARE NOT EXCESS WILD HORSES IN THIS TIPPETT AREA OF THE HMA.

But the data do support a reduction in livestock usage.

CHIN CREEK

The data that BLM provides as monitoring data show horses are in four key areas. In CCR-6, which is the Spring Valley (Flat Spring Seeding), there was heavy to severe utilization in 1985, but current utilization is shown as 20 percent. Looking more closely at this area, the ecological condition data, in Appendix 1, refers to several riparian areas in the Spring Valley portion of the Chin Creek Allotment. These data show that horses are found in the vicinity of six riparian areas. Of the six areas, two are in good condition, one is in excellent condition, and two are "moderately" trampled. Not necessarily by horses--no

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data is provided to show that the trampling is by horses. No mitigating measures are suggested to fence trampled springs and pipe water. CCR-3 is the Antelope Range where horses are found for five months of the year. Utilization is shown at 49 and 50 percent when horses only were in the area. The area was at capacity. Yet BLM allowed livestock to be added to this area. To do so it was necessary to HAUL WATER FOR LIVESTOCK. They overstocked the range, allowing livestock into an area which horses utilized at 49 and 50 percent; which livestock were unable to graze except by hauling water. "Maintenance feeding" is prohibited, but evidently "maintenance watering" is not. In similar situations, BLM argues that the permittee is entitled to use the entire allotment. In the Antelope HMA, we argue that wild horses are entitled to use the entire HMA including the two allotments not evaluated plus the entire portion that falls within the Elko District which are not taken into account. There is no follow up information in the Removal Plan to show the adjustment in movement by horses to this invasion of their summer range by livestock in this portion of the Chin Creek Allotment. Based on the National Academy of Science information (Pgs 104-106), it is reasonable to expect an adjustment by horses. The adjustment would include moving higher onto the ridges, grazing steeper slopes, spreading out in relation to available forage, or modifying seasonal movements to and from other areas of the HMA. CCR-1, CCR-2, CCR-8 are key sites in Antelope Valley where horses are found for seven months of the year. Two of these key areas exceed the 50 percent utilization in 1984, 1985, and 1987. It is estimated that there are 199 wild horses or 1393 AUMs as opposed to 13,000 livestock AUMs in the Antelope Valley.

When site suitability was applied, the entire Chin Allotment provided ONLY 4,545 livestock AUMs--that is forage available in areas that livestock are able to reach (proximity to water, slope degree, terrain, and elevation as well as the kinds of vegetation available). BLM has not shown where horses graze in Antelope Valley in terms of the distance from water and terrain features. We contend that AUMs which are available to horses have been made available to livestock even though livestock are unable to utilize those AUMs. The data on CCR-1, CCR-2 and CCR-8 do not support a determination that there are excess wild horses in the Antelope Valley let alone in the entire Antelope HMA. API contends that if one is to show that excess horses exist their grazing patterns need to be shown in relation to the overutilized areas and to the number of livestock in these areas in keeping with the Nevada State policies ("Thoroughly inventory the biotic environment for

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components which influence wild horse or burro populations. Examples may include: human activity, mining, timber harvest, recreational use, domestic livestock and wildlife. **RECORD THE LOCATION OF SUCH COMPONENTS ON DISTRICT INVENTORY OR URA MAPS AND DOCUMENT EXTENT OR MAGNITUDE."** [emphasis ours]).

Sampson Creek

Sampson Creek Allotment contains the mountainous area of Becky Peak. This is where 36 horses that use the west side bench in summer, also use the east side during winter while some are found year long in the bottomland of Spring Valley. There are eleven springs on the west side, three of which are badly trampled. Winter use is at 70 percent on grasses. Livestock winter use is not given. By not mentioning the number of livestock on the west side in the winter, one must assume that 36 wild horses, (some of which are yearlong on the other side of the mountain in numbers great enough to supposedly cause severe degradation to the Spring Valley Creek there) concentrate on four of eleven springs in such a way as to cause severe degradation. We go to Ely's own descriptions of movement of the Antelope population and the National Academy of Sciences descriptions of movements (which Congress mandated BLM use when they lacked their own specific, measured, and observed information) to say no--it stretches common sense beyond reason to imagine that a portion of 36 horses can cause the kinds of damages described on the west side and the spring creek when they also spend five months in the east side with slight, light utilization. The 36 horses are not in one marrauding band but divided into typical units composed of a dominant stallion, his mares and offspring. The 36 horses do not converge on a spring all at the same time even though conflicts between bands occur most frequently at water sources. If there are 11 springs, as well as undeveloped seeps and springs on the west side, and the 36 horses are in less than 10 bands, it is unreasonable to conclude wild horses cause the damage on the west side. There is no damage on the east bench. Only down in the area of the creek is there a possibility horses cause damage. This can be mitigated by fencing and developing waters for horses by piping out from the area. This would be a reasonable alternative to the removal, but was not even considered in the EA.

What the data show is that of the three allotments, this one area of the creek is possibly damaged by horses. But this alone does not support the Antelope Removal Plan. There is absolutely no rationale for putting the decision into full force and effect.

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API contends that forage needs to be allocated for existing numbers of horses and monitoring studies conducted specifically to meet statutory requirements to establish a proper population level for the Antelope HMA in keeping with Nevada State policy, BLM's own programmatic guidances, and the Antelope HMAP as well as the law and the 1989 IBLA rulings. We attach a copy of the Nevada State manual, entitled " 4730--Management Considerations" to show that BLM's own policy is not being followed in their management actions or decisions related to wild horses. Nothing even remotely resembling these considerations have been done for the wild horses in the Antelope HMA despite being reiterated in the HMAP with nearly ten years to implement. Please see ATTACHMENT A.

With regard to ATTACHMENT A, we wish to say that at a recent meeting in Reno attended by Nevada State officials, a Washington BLM official, and four wild horse interest groups (API, WHOA, The National Society for the Protection of Mustangs and Burros, and the Nevada State Commission for the Preservation of Wild Horses), the groups were in agreement with the policies expressed in the BLM document and agreed that they should be adopted bureauwide as a consistent base for a sound program.

We ask IBLA to reject this Removal Plan as inadequate. It fails to determine that there are excess horses in the Antelope HMA. It fails to establish an optimum number based on monitoring and inventories for the HMA. It falls far short of what their own policy requires as a management program for wild horses.

In our response to each of the multiple-use evaluation decisions for the three allotments we have asked IBLA to order BLM to adjust the number of horses to current levels in their allotment evaluation decisions [allocate forage for current numbers of horses] then proceed with their livestock reductions based on their data for livestock which show overutilization, overstocking, and uneven livestock distribution causing damage and/or preventing other objectives in the allotments from being met. We believe this is the fairest and most rational solution to the situation that exists in the Antelope HMA. Their proper monitoring will show how many horses should be in the HMA--but in the interim forage needs to be provided for those that are there. Proper assessments of available forage based on suitability criteria will disclose where there is an actual spatial overlap with livestock. Proper assessment of grazing patterns will disclose where spatial overlap does occur if there is actual competition occuring in accordance with the site selection information in the NAS materials.

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For instance, on a recent field trip high into the summer ranges of the Black Rock HMA in the Piaute Meadows allotment of the Winnemucca District, where a map would show spatial overlap, we saw cows congregated in the upland wet meadows while horses were on the highest ridges well over a mile away. Here, according to the BLM wild horse specialist, horses move up the mountain from their wintering range on the valley floor migrating in altitude in relationship with the phrenology of the vegetation (e.g., horses follow the green-up pattern up the mountain).

Elsewhere, I have observed horses and antelope grazing together on a steep hillsides with cows grazing on flat ground near the bottom of the hillside. On a map this would look like spatial overlap. But when viewed in actuality, site selection by animals has resulted in a segregation of cows and wild horses at different altitudes, so that they are not grazing the same plants even though they are in the same area. Knowing where animals graze in a given area is essential in determining remedial actions to prevent overgrazing or other damage associated with too many animals in a given area. This is why API contends that suitability criteria must be applied when determining the amount of forage available to livestock and to wild horses in a given area, why actual competition needs to be known, and why a description of seasonal movement and grazing patterns are so essential for both a sound wild horse management program and range protection program. This contention is supported by the National Academy of Science and by BLM's own policies.

FOR THE ANIMAL PROTECTION INSTITUTE OF AMERICA

Sincerely,

Nancy Whitaker

Nancy Whitaker
Assistant Director of Public Land Issues,
Specializing in Wild Horses

NW:di

ANIMAL PROTECTION INSTITUTE OF AMERICA

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July 30, 1990

Gary Larson
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DRAFT EIS RESPONSE
Animal Damage Control Program

The Animal Protection Institute appreciates the opportunity to express the concerns of our 150,000 members in response to the draft EIS on the Animal Damage Control program.

The comprehensive information on control methods and practices contained in this document make it a significant contribution to the literature on wildlife management. The information contained and the compilation of data is excellent. The descriptions of the biological environment and the maps in Chapter 3 are so well done, we believe whole portions of that chapter should be extracted and distributed to public schools as an educational pamphlet. However, the EIS does not address the program concerns of our members and what we believe are the concerns of the vast majority of Americans. That is, first the disruption of natural populations of target and nontarget animals; second, inhumane treatment programs; and third, the switch of the predator control program from USFWS to the Animal Damage Control of APHIS. We disagree with the fundamental premise of APHIS, which is that wild animals, insects, birds, etc. are a threat to agriculture.

By evaluating only one program alternative, rather than a spectrum of mixes, we feel the EIS fails to evaluate realistic alternatives to the current management program. The list of eight alternatives that were rejected from further consideration included two programs and six alternative administrative plans. All of these were such either/or extremes we could not accept any as effective, efficient, or realistic possibilities to be considered. The Compensation program as described lacks all potential for a workable, cost effective, technically sound program.

We believe the failure to distinguish between public land and private land predation is a serious technical error in the current program. The failure to consider returning the entire predator control program back to USFWS, as a reasonable and viable alternative for evaluation, misses the basic complaint and criticism of our members.

It is our understanding that wildlife on public lands are recognized and protected as values of those lands by mandates of both FLPMA and the EPA under NEPA restrictions. On range-lands, which API is most experienced with, wildlife are managed under the multiple use principles as well as BLM's own Wildlife Plan 2000. Our response to an Animal Damage Control program to protect public land livestock is very different from our response to a damage control program for private land livestock operators. For instance, the use of guard dogs and other husbandry practices can be required as a grazing permit restriction on the public lands whereas it is a freedom of choice for the private rancher that could be a prerequisite for either damage control service or compensation for losses. In fact, compensation for private property losses are covered under agricultural programs, subsidies, and private insurance. We believe the public land permittee assumes a risk by allowing open range lambing or calving since he has a choice of returning the herd to his base property during lambing and calving. We believe wildlife, which includes the predators have a right on the public land whereas the livestock operator exercises only a privilege subject to constraints of laws such as the Endangered Species Act or the the Wild, Free-Roaming Horse and Burro Protection Act. Under multiple use principles both are to share the land as co-equals where livestock use is consistent with management objectives. The ADC program grants a higher priority to livestock than to the predator which we believe violates public land laws. None of these arguments apply to the private rancher. We would support fair market compensation for loss on private lands (with the restriction that all proper safeguards had been taken beforehand) and would also support financial aid for the construction of calving or lambing pens on private land. But we would adamantly oppose the construction of such pens on public lands.

Our fundamental criticism is switching the Predator Control Program from USFWS to the ADC program on a Continuing Resolu-tion that was never debated or voted on by Congress and never subjected to public scrutiny. There is, we believe, a general feeling that a special interest group "pulled a fast one" on the American public. Nonetheless, it is our opinion that the vast majority want all wildlife under the jurisdiction of the USFWS with the authority to contract for damage control either with APHIS or a private outfit. But the important factor would be that USFWS would be the federal agency with the primary responsibility and authority for the nation's wildlife on the public lands in concert with state game agencies. Under USFWS, contracts for public land predator control would be automatically submitted to the public for comment under NEPA.

It is impossible for us to adequately respond to this EIS since we reject those components of the integrated management program ("IMP") currently employed that are inhumane methods: namely, chemical, leg-hold trapping, denning, dog hunting, and lack of selectivity for taking the offending animal(s). We cannot accept the "No Action" alternative. We find the only advantage of the Compensation Alternative is that it would send the whole thing back to Congress forcing them to review the entire predator control program in open debate with full public scrutiny. This is, we believe, exactly where the public land predator control program belongs. For this purpose, the present document provides sound technical background information and a comprehensive overview of the predation problem paving the way for an informed and effective public debate.

We will continue to object to inhumane, non-selective methods and will continue to argue the fact public land wildlife are protected values of the public lands equal to livestock usage on public lands which must be recognized in a predator control program. We will also continue to seek restoring predator control to USFWS. Because of this we feel our most adequate response at this time is to protest the adequacy of the EIS as either a program or policy document.

Sincerely,

Nancy Whitaker

Nancy Whitaker
Animal Protection Institute

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August 14, 1990

COPY

Interior Board of Land Appeals
Office of Hearings and Appeals
Department of Interior
4015 Wilson Boulevard
Arlington, VA 22203

IBLA 90-412, 90-413

WY-048-EA9-212, WY 048-EA9-213
RESPONSE TO IBLA ORDER JUL 27 1990

WORLAND BLM DISTRICT REMOVAL
FIFTEEN MILE HMA
API/WHOA STANDING

Dear Sir:

In keeping with the IBLA Order (July 27, 1990) requiring WHOA and API to show cause regarding why the Worland District Removal Plan (IBLA 413) does not meet statutory requirements for the determination of excess we offer the following arguments to substantiate our contention. With regard to the standing of WHOA and API in appealing these removal plans we wish to add to our previous statement on this matter.

FIFTEEN MILE HMA REMOVAL PLAN (WY-048-EA9-213)

In 1985 the Worland District issued an HMAP for the Fifteen Mile HMA. Wild, free-roaming horses were to be managed and protected in keeping with a long list of specified objectives stated on pages 16 through 23. Management concerns were clearly defined.

The range condition objective in the HMAP says: "Due to historic overgrazing, current spring-summer grazing practices, the non-allocation of forage for wild horses, and an over-allocation of domestic grazing forage, some of the area is in poor range condition and forage production is below potential."

continued . . .

On page 19, the HMAP promises that adequate forage will remain after domestic livestock use to sustain wild horses and utilization is be kept to 50 percent on key species and 25 percent on the south slopes and upper ridges in order to guarantee a winter supply for horses. Domestic sheep use is to be converted to winter use "stringently limited to November 1 through March 31 within the HMA to protect wild horses."

Utilization studies are to be conducted prior to turn out by domestic livestock to ensure adequate forage is available for wild horses during the severe winter months. The HMAP assures that if utilization exceeds accepted limits at turnout time, then turnout by domestic livestock will be denied or limited.

After a five year cycle, the amount of domestic sheep AUMs will be established by "stringently" observing the established utilization objectives and the grazing preference for livestock adjusted.

This year, 1990, is the end of that five-year cycle. These decisions regarding livestock stocking levels are due. Instead we have a decision to reduce wild horses.

Their utilization data is shown in Table 4, the Actual use of livestock is given in Table 3 that were included with the removal plan.

Only Allen Basin and Pitchfork show livestock actual use figures, all other allotments show "nonuse or information not available" for the five year grazing cycle. Only in Spring 1990, in Badger Basin do utilization levels exceed 50 percent on key species.

API constructed the following table from the census maps and the utilization data given in BLM's Table 4. Our purpose in constructing this table was simply to put all the information in one place to show the number of bands in a given area and the fact utilization occurred in areas where no horses were grazing. Whether this is unrecorded livestock usage or wildlife usage needs to be known before automatically assuming all utilization listed is wild horse actual use measurements.

continued . . .

Year	No. of bands by Allotment	Key Species		
DICKIE		ATNU	ORHY	AGSP
Aug. 1985	1	25	10	15
Feb 1988	1	15	25	15
BADGER BASIN		ATNU	AGSP	
STCO				
Aug. 1985	1	10		--
1988	7	no reading Fall 1988		
1989	14	--	35	45
Feb. 1986	3	no reading Spring 1986		
1987	1	55	15	--
1988	6	15	30	--
ALLEN BASIN		ATNU	ORHY	
STCO				
Aug 1985	1	--	15	20
1988	1	no reading Fall of 1988		
1989	no horses	--	35	45
Feb. 1986	no horses	no reading Spring 1986		
1987	no horses	40		--
1988	no horses	25		15
PITCHFORK		ATNU	ORHY	
AGRP				
Aug. 1985	1	5		
1988	2	no reading Fall 1988		
1989	1	20	10	5
Feb. 1986	1	20	15	20
1987	2	25	15	
1988	2	30	25	
HUNT OIL		ATNU	AGSP	
Aug. 1985	no horses	25	--	
1988	1	no reading		
1989	no horses	5	30	
Feb 1986	2	no spring reading		
1987	4	15	20	
1988	1	20	35	

continued . . .

HORSE USE
Dickie One Band 1985 Aug
One Band 1988 Feb

TABLE 3
Fifteenmile HMA Actual Use Summary
by Livestock Class and AUMs Utilized

	1981	1982	1983	1984	1985	1986	1987	1988	1989	SEASON of USE
No. 0604 Dickie	625 S (65)	2000 S (1555)	610 S (48)	N	N	N	N	N	N	SPRING
	1975 S (369	2000 S (1555)	568 S (354)	374 C (175)	181 C (180)	N	N	N	N	WINTER
No. 0652 Badger Basin	3100 S (165)	N	2200 Y (1017)	N	N	N	N	N	N	SPRING
	N	N	N	N	N	N	N	N	N	WINTER
No. 0669 Allen Basin	1150 S (583)	1800 S (762)	1800 S (833)	1200 S (269)	N	1450 S (424)	1500 S (372)	1475 S (402)	N	SPRING
	N	N	N	N	N	N	N	N	1400 S (410)	WINTER
No. 0676 Pitchfork	N	1450 S (573)	N	2600 S (863)	1200 S (505)	1450 S (482)	1500 S (506)	1500 S (498)	N	SPRING
	1500 S (273)	1400 S (314)	1950 S (340)	N	N	N	N	600 S (494)	N	WINTER
No. 1070 Hunt Oil	N	N	N	2600 S (479)	N	N	N	N	N	SPRING
	N	N	N	N	N	N	N	N	N	WINTER
Total AUMs	2932	4759	2592	1786	685	906	878	1394	410	

Y- Yearling (cattle)
S - Sheep
C - Cattle
N - Nonuse or information not available
() AUMs shown in parentheses

Table 4
Utilization Study Data in Fifteenmile HMA (2)

Allotment	Plant Species (1)	Spring(3) 1982	Fall 1982	Spring 1984	Fall 1984	Fall 1985	Spring 1986	Spring 1987	Fall 1987	Spring 1988	Spring 1989	Fall 1989	Spring 1990
No. 0604 Dickie	AtNu	-	-	-	15	25	-	25	15	15	-	10	5
	OrHy	-	-	-	55	10	-	25	15	25	-	40	25
	AgSP	-	-	-	40	15	-	15	15	15	-	10	10
No. 0652 Badger Basin	AtNu	-	-	40	25	10	-	55	20	15	35	-	90
	AgSp	-	-	55	60	10	-	15	15	30	15	35	30
	StCo	-	-	55	-	-	-	-	-	-	-	45	45
No. 0669 Allen Basin	AtNu	65	15	70	60	0	-	40	20	25	20	15	45
	OrHy	40	40	50	60	15	-	40	30	25	20	45	55
	StCo	-	-	65	70	20	-	-	-	15	10	-	-
No. 0676 Pitchfork	AtNu	50	-	55	15	5	20	25	15	30	20	20	10
	OrHy	17	-	55	55	5	15	15	25	25	5	10	10
	AgSp	-	-	40	50	5	20	15	15	25	10	5	20
No. 1070 Hunt Oil	AtNu	-	-	80	15	25	-	10	15	20	10	5	5
	AgSp	-	-	-	65	-	-	15	20	35	5	30	20
			=========		=======	=======			=======			=======	
AVERAGE UTILIZATION			N/A		45	12			18			23	

Notes:

(1) Plant Species
AtNu - Atriplex nutalii
OrHy - Orysopsis hymenoides
StCo - Stipa comata
AgSp - Agropyron spicatum
AgSm - Agropyron smithii

(2) Utilization is measured as a percentage of annual growth.

(3) Season specified is the time the data was collected. Spring collection measures utilization that occured October through March; fall collection generally measures grazing use April through September.

But of specific interest in making a determination of whether there are excess animals in the HMA is the low utilization and the broad dispersion of bands. In Section C of the removal plan, which is entitled utilization, BLM admits that the utilization levels "in all allotments are currently recorded at acceptable levels."

API contends the data do not support that there are excess animals in the HMA.

BLM has attempted to make a case for a skyrocketing population, based on a geometric model of hypothetical populations speculating on a steady 20 percent increase level, to predict that horses will consume all available forage in a certain time frame to justify the removal rather than base the determination of excess on monitoring the habitat as required by law.

There are two shortcomings of a demographic model to calculate population increase. The first is the failure to include mortality rates as well as the movement into and out of the population by means other than birth and death. But to not include losses is equivalent to predicting a declining population by looking only at deaths without considering births or addition by immigration. The second shortcoming is the failure to account for the many variables that affect a specific population in a specific condition.

They quote from a paper by Garrod. On page 3 of Garrod's paper, the researcher states that the highest foaling rate (in the Pryor Mountain Herd) occurred after a 51 percent reduction suggesting a density dependent population. In other words, the population increase/decrease rate is tied directly to the condition of the habitat. Both the condition of the habitat and the impact on it by different grazing species can be measured and monitored. Grazing capacities and site suitability for different species can be calculated. Because of the density dependent influence on wild horse increase rates, BLM's use of a demographic model to calculate an expanding population using such a high rate of increase contradicts the reason for removing horses. A high birth rate indicates a healthy habitat. If there are too many horses it will show up in over-utilization, loss of production per acre measured by frequency and composition studies.

continued . . .

An example of this possible density dependency factor is shown in the ATTACHED computer graphic (ATTACHMENT A). This graphic depicts the actual census over a ten year period in Nevada. Even though some 30,000 horses were removed between 1985 and 1988, the total population remains essentially stable. API, basing its interpretation on the National Academy of Science Phase I field study guide, sees this phenomena as indicating that the AUMS available to and used by horses are not the same AUMs available to and used by livestock. Because horses are highly mobile, grazing further from water, on steeper slopes, and at higher elevations than livestock, API contends that horses select areas to graze where the forage is good. Whether this situation exists in 15-Mile is not known. (ATTACHMENT B on habitat suitability is taken from the National Academy of Sciences Final Report.) If there is spatial overlap, that is, wild horses and livestock competing for the same AUMs, the condition of the habitat would be reflected in the number of foals produced and the number surviving the first year as well as in the range monitoring data.
ATTACHED is a paper by Dr. Walter Conley, who served on the original National Academy of Sciences committee on wild horses, which addresses the rate of increase controversy. He says:

> "There are major problems involved with the appropriate estimation of demographic parameters from wild populations. Although problems of estimation are real, and associated implicit assumptions are highly restrictive, these two facts do not excuse the continued misuse of demographic techniques, nor do they excuse statements regarding "realized" rates of increase that are impossible even in a theoretical context, much less in the real populations presumably being described."

API's contention is that the law requires that the determination of excess be based on monitoring range conditions and determining whether there are too many animals in a given area based on damage to the range or the ecological balance of the natural system.

The law also requires that two determinations be made: first is whether or not there are too many horses in a given area and the second is whether or not removal from the public lands is the appropriate management response. With regard to this second determination, Congress suggests that other options be considered. They mandated the

continued . . .

National Academy of Sciences to advise on this. The question of population dynamics and birth rates/death rates arise AFTER it has been determined that excess animals exist. Demography and population dynamics arise in relation to whether horses should be removed, how many should be removed, what age structure and sex ratio should be left or other options taken.

API believes that Congress wrote the law the way they wrote it because the message to BLM is that the condition of the range and the health of the natural system determines how many animals are there and not the number listed in a permit. The provisions in PRIA governing wild horse management are consistent with the ecological considerations expressed in NEPA and the multiple use/sustained yield principles in FLPMA.

Without calculating carrying capacity in terms of AUMs that are actually available to and used by livestock and AUMs that are actually available to and used by horses and the amount of spatial overlap between the two species BLM cannot determine when there are too many horses nor can they predict by demographic modeling alone how many horses to remove from a population that will leave an optimum number in that population under multiple use conditions.

The National Academy of Sciences says "Clearly the problem of allocating forage to the two species is more complex than merely estimating the gross number of AUMs for an area and assuming direct equivalence between the two species in using that forage. As Wright (1979) put it: "I doubt that the agencies [sic] statement, 'ten thousand horses on, ten thousand cattle off,' is all that accurate."

The NAS report lists three specific points applicable to wild horse range management under the Section on utilization studies.

> 1. Winter stocking densities as high as 8 AUDs per hectare are unlikely to lead to undesirable successional changes in plant communities...dormant condition of vegetation during winter also renders plants less subject to physiological stress from grazing.
>
> 2. Summer utilization. . .The number of animals that would produce such utilization on any particular area can only be determined by site-specific, periodic utilization studies.

continued . . .

3. Animal distribution over the range, and its relationship to animal numbers and length of the graze period on particular sites, is a key element in plant community impacts.

By removing all the livestock during the five year study period (that, according to their HMAP, was to result in making livestock determinations), BLM has created a situation in which they are unable to monitor actual usages in order to make these livestock
adjustment but at the same time they've created a situation in which their monitoring does not show that there are excess horses based on monitoring range conditions.

MOTION TO DISMISS THE QUESTION ON STANDING

API formally requested of all State BLM offices, that we be listed as an interested and affected party to every decision involving wild horses. If we had no standing, if we were not recognized as an interested and affected party, we would not be receiving the information related to the wild horse removal. We do not receive site specific allotment evaluations except in those allotments affecting wild horses, in keeping with our original request to the state offices. By the very fact BLM recognizes us and sends us the information soliciting a response from us in the public participation process, they recognize our standing as an interested and affected party. The Secretary and BLM are accountable to the public in areas where sections of the public have clearly expressed their concern and interest as API and WHOA have done in the management of wild horses in those areas of the public lands where they existed in 1971. The arguments we stated in response to the Rock Springs Removal plan (IBLA 90-412) extend to our situation in the Worland district.

We <u>move</u> that IBLA dismiss the question of standing.

We <u>move</u> that the question of whether we had standing to raise the question about the Checkerboard lands be dismissed so that it remains with that question in case we do raise it in federal court, then the federal court will decide it at the proper time.

continued . . .

We urge IBLA to find that Wyoming BLM has failed to show that excess animals exist in the 15-Mile HMA and have no grounds for removing horses from the HMA. We believe they have not properly analyzed their utilization data in keeping with the objectives stated in the HMAP that they are monitoring for. They have not implemented the June 1989 IBLA order or used it as a test by which to judge their possible actions and decisions before announcing them. Finally, their data show that the number of animals that are currently in the HMA is below the carrying capacity of the area. We suspect a fair judgment, in keeping with the HMAP objective, would be to provide forage for the current number of wild horses as the optimum number in order to allow the remaining AUMs to go for livestock as a multiple use objective, then monitor actual use by each species for further population adjustments based on actual species-specific overutilization or other resource damage.

FOR THE ANIMAL PROTECTION INSTITUTE OF AMERICA

Sincerely,

Nancy Whitaker

Nancy Whitaker
Assistant Director of Public Land Issues,
Specializing in Wild Horses

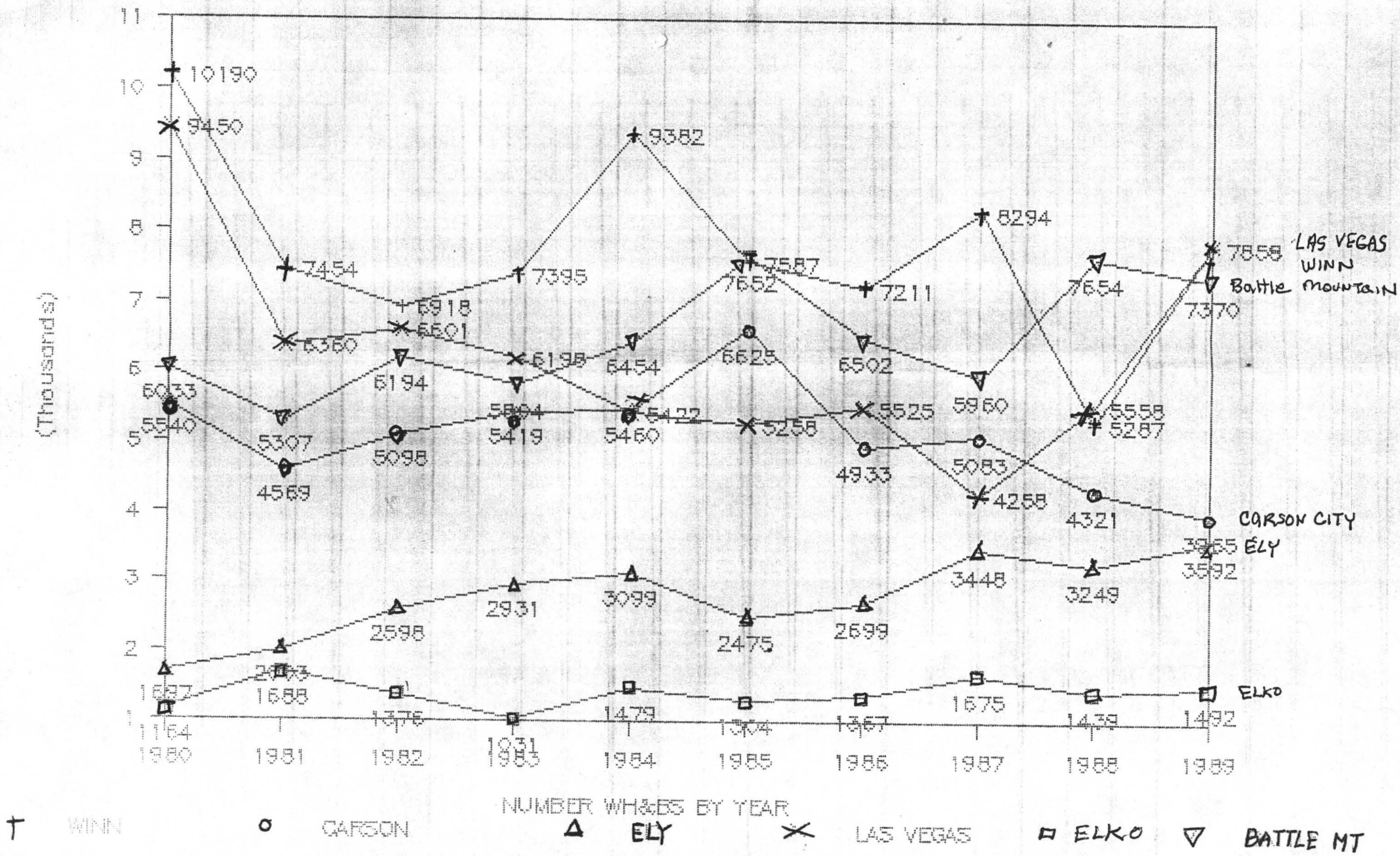
Dawn Lappin

Dawn Lappin
Wild Horse Organized Assistance

NW:di

ATTACHMENT A

NEVADA WH&B POPULATION EST.(80–88)



ATTACHMENT B

Reprinted from
Contributions in Mammalogy in Honor of
Robert L. Packard (R. E. Martin and B. R. Chapman, eds.)
Spec. Publ. Mus., Texas Tech Univ., 1984, 22:1-234.

RATES OF INCREASE IN LONG-LIVED ANIMALS WITH A SINGLE YOUNG PER BIRTH EVENT

Walt Conley

The potential for increase has been a primary subject of interest to population biolgists since the original essay by Malthus (1798). Even though population parameters that reflect rate of increase are intuitively appealing and necessary for various applications, adequate estimates are difficult to obtain. There are various reasons for such difficulties, which have led to a diverse literature that attempts to provide solutions for both analytical and estimation problems. In this paper, I deal primarily with the analytical and conceptual difficulties associated with estimated rates of increase in animal populations. Much of the discussion to follow is general in that it applies to any population with similar life-history patterns. My purpose is to establish a series of theoretical upper boundaries for rates of increase in such populations. At the same time, I have provided a series of graphs that represent various combinations of the primary population parameters of mortality and natality, in an effort to clarify the interactions that result in various observed rates of increase.

A theoretical approach of this form establishes certain biological and mathematical "rules of the game." Additionally, given agreement on basics, a foundation is thus provided for the interpretation, and judgment of the worth, of available information pertaining to real populations.

The available literature on mathematical demography ranges from highly sophisticated and abstract to superficial and perhaps trivial. Within this body of literature, presentations exist that are intermediate in mathematical complexity, and that are intended to facilitate understanding of the biological processes involved (for example, Caughley, 1966, 1967*a*, 1967*b*, 1977; Cole, 1954; Conley, 1978; Eberhardt, 1969; Mertz, 1970). Throughout, however, there are major problems involved with the appropriate estimation of demographic parameters from wild populations (see Pospahala *et al.*, 1974; Anderson, 1975).

Although problems of estimation are real, and associated implicit assumptions are highly restrictive, these two facts do not excuse the continued misuse of demographic techniques, nor do they excuse statements regarding "realized" rates of increase that are impossible even in a theoretical context, much less in the real populations presumably being described.

It is not my purpose here to contribute to a discussion of the various interpretations available concerning "rates-of-increase" in populations. As a result, I have avoided such terms as "intrinsic rate of increase," "r-max," "Malthusian rate of increase," and the like. For an introduction to the discussion that follows, see Caughley (1977), Conley (1978), Conley and Nichols (1978), and Slade and Balph (1974).

METHODS

Specification of the Model

I have chosen to present rates of increase in the form of finite rates over specified, discrete units of time. Example life history patterns shown here typify species that are iteroparous and long lived, that produce a single young per birth, provide extensive maternal care, and are polygynous. Definitions and model structure follow Conley (1978).

A cohort is a group of individuals of the same age in a population. A cohort of age zero individuals (that is, a group of newborn), can be followed through time, and the pattern of survival can be determined. When the cohort is exhausted, the resultant pattern is converted into a schedule of survival probabilities by:

$$l_x = n_x/n_o \qquad (1)$$

where x represents age, l_x is the probability that an age zero individual will survive to enter the xth age class, and n_x is the number of individuals in the x to x+1 age class. Survival schedules are often sex-specific; for our purposes, I will deal only with the female portion of the population under the assumptions that:

1) there are sufficient males to provide for the breeding demands of the females; and

2) that the sex-ratio at birth (expressed as proportion males) is one, and that survival probabilities are the same for males and females.

A fertility schedule for a population (m_x) typically reflects the expected births of daughter offspring for a female aged x to x+1. This includes females that are producing young, those that are not, and a term for expected clutch size. In this manner, we incorporate clutch size, a result of an ultimate evolutionary trend, and proportion of females giving birth, a more proximate ecological attribute (Conley, 1978). Thus defining F_x as the expected production (that is births) of daughter offspring for a female of age x to x+1 *that does produce* at time t, and B_x as the proportion of females age x to x+1 that are producing, the traditional m_x as defined above is given by:

$$m_x = F_xB_x . \qquad (2)$$

In the model used here, I substitute the right side of Equation 2 for m_x. In this manner, the importance of whether or not a female breeds during any given time step becomes apparent.

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Thus, with l_x, F_x, and B_x as above, the finite rate of increase for a birth-pulse population at stable age distribution is given by:

$$1 = \sum_{x=1}^{\omega} \lambda^{-x} l_x F_x B_x \quad , \tag{3}$$

with ω being the last age class of reproduction, and λ the finite rate of increase.

The rate of increase, λ, may be obtained by the interactive solution of the polynomial in λ (Equation 3), or by utilizing a compatible projection model and iterating time steps through attainment of stable age distribution, and computing λ at that time.

In general, the number of young entering the population at time t is given by:

$$n_{o,t} = \sum_{x=1}^{\omega} n_{x,t} F_x B_x \quad , \tag{4}$$

and the number of individuals entering subsequent age classes at the next time step is:

$$n_{x+1,t+1} = n_{x,t} p_x \quad , \tag{5}$$

where p_x is age-specific survival given by:

$$\begin{aligned} p_x &= 1 - [(l_x - l_{x+1})/l_x] \\ &= l_{x+1}/l_x. \end{aligned} \tag{6}$$

It should be noted that rates of increase as expressed above are compatible with classical population theory (Lotka, 1956; Hutchinson, 1978; Mertz, 1970), but are not similar to current applications of matrix projections that stem from the works of Leslie (1945, 1948), Lewis (1942), and Bernardelli (1941), where recent usage has eliminated the originally defined top row of the projection matrix (Leslie, 1945, 1948) and replaced it with a standard m_x schedule. It is beyond the scope of this paper to discuss these distinctions (see Goodman, 1967; Keyfitz, 1968; or Michod and Anderson, 1980).

Population Projections

The above model is programmed in FORTRAN IV along with various extensions not essential to this discussion. Additional examples of the use of this model are given by Conley (1978), Conley *et al.* (1977), Lenarz and Conley (1980), Watts and Conley (1981), Nelson (1978, 1980) and Tipton (1975).

No attempt has been made for this presentation to document extensively life history patterns of the kind discussed here. Much of the information required for an adequate analysis is simply lacking. There are, however, some aspects of feral equid biology upon which general agreement can be obtained, and I have used those data for examples.

Gestation period in the domestic horse (*Equus caballus*) is about 330 days, with considerable variation being induced by seasonal or nutritional factors (Asdell, 1964). In the domestic ass (*Equus asinus*), gestation is 365 days (Asdell, 1964). Twinning is particularly rare in *E. caballus* but does occur (Speelman *et al.*, 1944; Feist and McCullough, 1975), and is also of no demographic consequence in *E. asinus*. Copulation usually begins not sooner than two years in *E. caballus* and one year in *E. asinus*, with subsequent birth occurring in the three and two-year olds, respectively. Information on breeding proportions is scanty; Nelson (1978) reported 55 per cent of breeding age females (*E. caballus*) having foals; *E. asinus* appears to be comparable (Moelman, personal communication). Assuming one young per year and a sex ratio of one, the basic F_x value was set at 0.5 for ages 2-14. Modifications to this schedule generally involved manipulations of the proportion breeding vector except for questions involving effects of age at first breeding.

Survival schedules are also difficult to find in the formal literature. Nelson (1978, 1980) constructed a tentative l_x schedule for *E. caballus* from New Mexico, and Conley (unpublished data) reconstructed a series of age-structure patterns from various *E. caballus* populations. In general, both species appear to have high adult survival, (that is, the l_x curves are fairly flat prior to old age), and there is some suggestion that males survive less well than do females (Nelson, 1978, 1980). This may be the result of differential migration or other behavior in the males, which superficially shows as mortality in the capture data.

In order to keep the number of possible combinations of life history patterns within reason, I have chosen 14 years as maximum age; the effects of such a choice are discussed below.

Given the above general considerations, an extensive series of simulations were conducted that represent the various combinations of life history patterns of interest. Eight hypothetical survival schedules were constructed, and each was matched against sequences representing various age-at-first-breeding, proportion breeding, reproductive life spans, and maximum age patterns. All simulations were continued to attainment of stable age distribution. Subsequent finite rates of increase thus obtained represent theoretical upper boundaries; behavior of such response variables as λ during transition periods prior to stable age distribution is discussed elsewhere (Conley, Gross, and Rebar, unpublished data). All simulations were conducted on the New Mexico State University Amdahl 470-V5 computer.

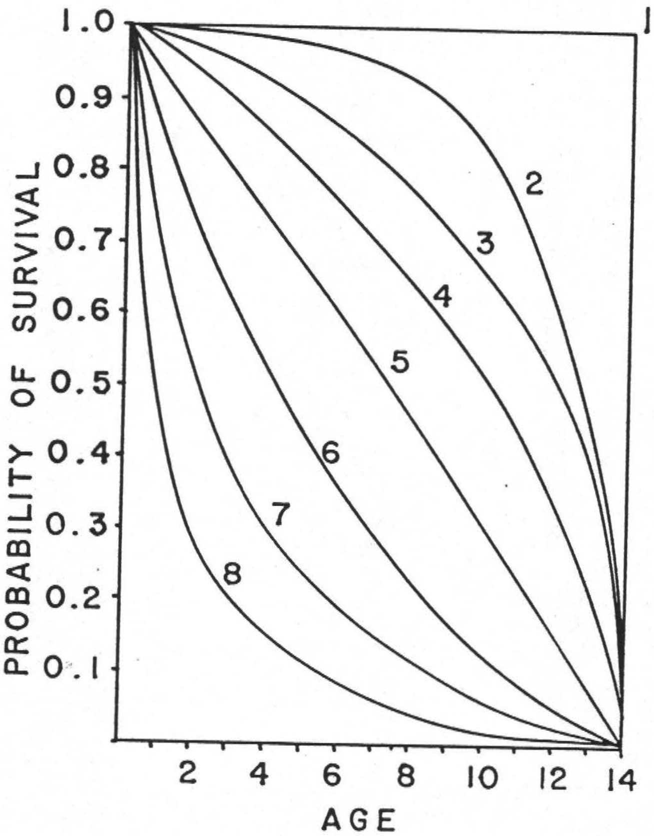

FIG. 1.—The array of survival schedules across which simulations were conducted. Schedule 1 represents a theoretical maximum; schedules 2 through 8 are simply representative of the variation available.

RESULTS

The eight hypothetical survival schedules are shown in Fig. 1. Schedule 1 represents a theoretical maximum, with no deaths prior to maximum age 14. Schedules 2 through 8 simply represent successive decreases in survival rates.

Initially, an important decision involved what age to use for the maximum. Most large-mammal populations are aged according to various tooth eruption and wear patterns. Such techniques typically provide somewhat less than satisfactory results through the stage where all teeth are at occlusal level, and increasingly notorious results in older animals. Thus, the question arises: how important is maximum attained age in determining rate of increase? The answer can be seen in Fig. 2, which suggests that knowing maximum age is not particularly important. The curves representing λ at various maximum ages inflect and tend to flatten at about age 14.

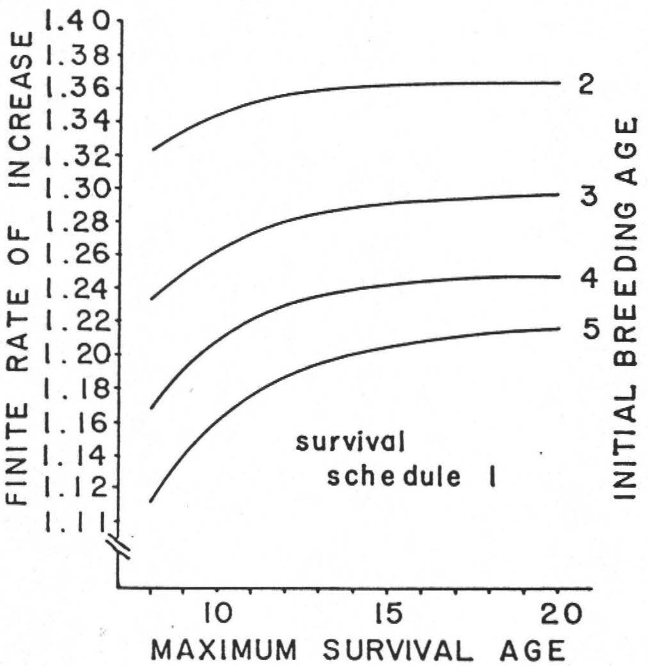

FIG. 2.—Finite rates of increase (λ) obtained at various maximum ages and at four differing ages at first breeding schedules. Note that these simulations were conducted using the maximum theoretical survival schedule, and 100 per cent breeding across all breeding-age females.

This flattening effect would be even more pronounced given realistic survival schedules, where the proportion of older individuals in the population would be considerably less than that resulting from survival Schedule 1. It is this effect that led to the decision to use 14 as "generalized-old-age;" the results described here would not be greatly different if this age were increased by several time units. The conclusion is that summarization techniques that combine older age classes for subsequent analysis are probably appropriate, and that accurate aging techniques for these categories would (even if available) simply provide a level of detail to which the rate-of-increase question is insensitive.

The question of whether postreproductive individuals are important to rates of increase has been alluded to occasionally (Allee *et al.*, 1949; Cole, 1954; Wilson, 1975; Tipton, 1975), but little substantive data seems to exist.

In contrast, age at first breeding (that is, parturition) is important in determining rate of increase. The four curves shown in Fig. 2 reflect rates of increase attained across various maximum ages, with breeding beginning in years two through five. Finite rates of increase at maximum age 14 vary from approximately 1.2 to 1.35 and represent an increase in doubling time in the population by about a factor of two. The relative positions of the

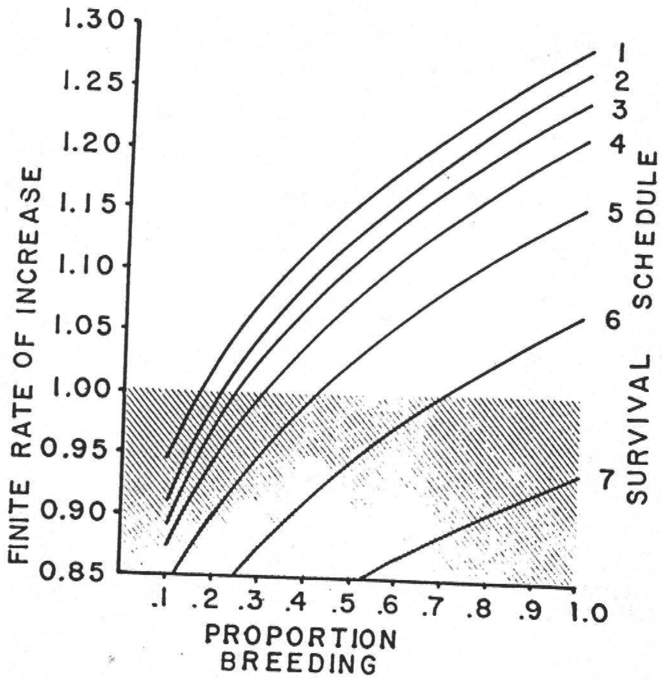

FIG. 4.—Finite rates of increase (λ) obtained at various proportions breeding across survival schedules. Age at first breeding was three for all simulations, and proportion breeding was constant across breeding ages within simulation sets.

considerations such as size of female and embryos, skeletal structure, physiological and energetic demands of the young and capabilities of the mother, extent of maternal care, and so forth. It is thus no mistake, from an evolutionary viewpoint, that both *E. caballus* and *E. asinus* typically have one foal per birth. This being so, and assuming a sex ratio (proportion males) at birth of one, F_x values are 0.5 for all age classes where breeding occurs.

In contrast to the ultimate reasons why a species has a given expectation of young at birth, the determination of whether or not a female joins the breeding component involves more proximate ecological and behavioral information. Separating these factors in the above model through the use of the B_x vector thus focuses attention on the proximate causes involved in population potentials, even though, algebraically, the results are similar to those treated in a more standard fashion.

The effects of varying proportion breeding on rates of increase for seven survival schedules are shown in Fig. 4. Those curves are quite steep, and provide evidence for the importance of determing proportion breeding in populations of *E. caballus* and *E. asinus*.

Given the various interactions of demographic variables shown in Figs. 2 through 4, and the resultant rates of increase, the question of interpretation

As can be seen from Figs. 1 through 4, the rate of increase is particularly sensitive to: 1) the shape of the survival function; 2) proportion of the adult female population that actually produces young; and 3) the age at first breeding. In contrast, the rate of increase is relatively insensitive to: 1) maximum age attained by the breeding females; and 2) the presence of post-reproductive animals. The latter two attributes have a decreasing effect and, within our abilities to estimate ages and breeding span in wild populations, can be effectively ignored beyond about 14 years of age and six to eight years of reproductive life, respectively.

The survival patterns shown in Fig. 1 represent an array of possible patterns, but are probably too simple to be related directly to wild populations. It is reasonable to expect higher age-specific mortality in the zero age class (that is, probability of surviving from $x = 0$ to $x = 1$). Although such patterns could be simulated, the number of combinations would increase drastically and appropriate data for comparison are currently lacking. Thus, the patterns evaluated in this study, with their resultant rates of increase, must be considered as generally conservative. This is particularly true of Fig. 2, where only the theoretical maximum survival schedule was utilized.

The question of what values for finite rates of increase can be reasonably expected in wild equid populations can be answered in part. Assuming that female survival schedules in wild populations are approximately similar to schedule 4 in Fig. 1, and that proportion breeding is on the order of 50 or 60 per cent, finite rates of increase of about 1.05 are to be expected.

Additionally, if survival schedules in the males are lower than those of females, the results presented here are higher than would be obtained in wild populations. Again, the λ values presented here are conservative.

At stable age distribution, finite rates of increase higher than 1.20 can be obtained only (see Figs. 3, 4) if the real survival schedules are similar to schedules 1, 2, or 3 (Fig. 1), *and* if the proportion breeding is 0.8 or greater across all age classes, *and* if age at first breeding is three years, *and* if breeding span beginning at age three, extends beyond about age 8 to 10. Although adequate data currently do not exist to provide a definitive answer, the conclusion from data that are available is inescapable; empirical values for the various population attributes considered here are simply too low to conclude that rates of increase in wild equid populations approach 20 per cent, much less exceed that level. Higher rates could obtain, but only on a short term basis; such rates, resulting from unnatural sex ratios, are unstable and tend to damp out quickly (Conley, Gross, Rebar unpublished data).

The presentation of population doubling times across various finite rates of increase (Fig. 5) is designed to illustrate the point that even at rates of increase between 1.01 and 1.10 (that is 1 per cent to 10 per cent) populations with similar demographic patterns do increase, with the relative concern that must be attached depending on whether the population doubles every six or so years (10 per cent increase) or whether the doubling time approaches infinity (as $\lambda \rightarrow 1.0$).

Acknowledgments

I thank Lee Metzgar, Norm Slade, and an anonymous reviewer for critique and helpful suggestions.

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ATTACHMENT C

per head). This led the researchers (Rittenhouse et al., 1982) to conclude ". . . when comparing intake for horses and cows of approximately the same body sizes, reporting intake on a per body size basis may be more confusing than helpful."

Utilization of nutrients (as measured by apparent digestion coefficients) was higher in cows than in mares, with the exception of protein that was digested more thoroughly by mares (44 percent versus 36 percent). Cows digested (cell wall constituents) much more extensively (65 percent) than did mares (53 percent). The rate of passage of food material through the alimentary tract of cows was considerably slower than through mares, hence the longer residence time of ingesta in cows partially accounted for the higher fiber digestion. Theoretical concepts relating to consumption rates in equids and ruminants are discussed in considerable detail in the Phase I Report.

Although some need further research, results from this study carry potentially important implications for wild horse management. Findings on consumption rates add support to the practice noted in the Phase I Report (see p. 97) of attributing an animal unit equivalent of 1.25 to mature horses. Although this value appears high in light of the current Colorado results (i.e., an average 14 percent greater forage consumption by mares), unreported evidence suggested that the 14 percent difference was conservative (L. R. Rittenhouse, personal communication, 1982). The difference appeared to hold over a fairly wide range of forage quality conditions.

The findings also raise the temptation to speculate on relative adaptive strategies of horses and cows. Differences in passage rates of ingesta would appear to confer an advantage on horses over cattle under poor forage conditions. For example, horses would appear to be able to consume more forage per day to compensate for the low nutrient concentrations, whereas cows (and other ruminants) would not. Horses are well equipped to extract the scarce quantities of dietary protein that are usually nutritionally limiting under such conditions. Behavioral attributes, such as the greater mobility of horses would also appear advantageous; they could quickly move to alternate areas when forage became scarce. However, the appropriate data to test hypotheses relating to competition definitively are still insufficient. This statement is not intended to detract in any way from the major contribution made by the Colorado researchers to our knowledge of nutrition and grazing ecology of horses and cows. The reader is encouraged to refer to their original report (Rittenhouse et al., 1982) for details.

Habitat Preference and Use The problem of making decisions on forage allocations to combined populations of horses and livestock, and of assessing competition between the two, is a more complex one than can be solved with measurements of dietary overlap alone. For, in an oversimplified case, if horses and cattle chose very different habitats on the basis of topography or vegetation type, there would obviously be no chance for interspecific competition even though they fed on the same plant species. And all of the allowable forage offtake in each habitat could be allocated to the respective occupants of the habitats without any trade-offs.

Of course the world is not that simple, but varying degrees of habitat segregation between horses and cattle have been reported. For this reason, we advocated studies of habitat preference and use during Phase II, and one such project was carried out in the Wyoming Red Desert by scientists of the University of Wyoming Department of Zoology and Physiology (Denniston et al., 1982). A major goal of this project was to contribute information toward the development of site-suitability criteria, a need reported to the Committee by Robert Springer of BLM (personal communication) and by Wright (1979).

The most extreme case of habitat segregation was shown to the Committee by Martin Vavra in the Three Fingers Herd Management Area, Shepherd Mountains of eastern Oregon. Here, horses largely occupied mountain-top terrain, while cattle occurred almost entirely on the lower elevations. Vavra (personal communication) commented that horse habitat in this area coincided more closely with that of bighorn sheep than of cattle.

Somewhat less complete segregation has been reported by Pellegrini (1971) and Salter and Hudson (1980). Pellegrini observed horses in western Nevada in an area used for both sheep and cattle grazing. In about December the horses moved up on ridge tops unoccupied by livestock. He surmised that the animals were attracted to these areas by the food available on ridges swept free of snow by wind. But he also suspected that part of the movement may have been hastened by introduction of sheep onto the lower elevations. Cattle were moved onto the lowlands in early April after the horses had moved out and sheep had been removed. Horses returned to the lowlands in late spring or early summer to use springs for watering. They coexisted with cattle at this elevation until the latter were removed in early June.

Similarly, in an Alberta study area, horses used nearly all vegetation types. But they moved out of those occupied by cattle during the latter's June to October occupancy period (Salter and Hudson, 1980).

Wright (1979), like Pellegrini, has observed a preference for the ridges by horses in winter. In summer, they are forced to move to the lowlands for water, where they overlap with cattle distribution. But the latter remain near the water sources, while horses return some distance to the ridges after drinking. He concludes that horse-cattle competition is less pronounced than widely believed.

The thorough Wyoming Phase II study by Denniston et al. (1982) describes less marked, and subtle, forms of habitat segregation. Cattle tended to remain relatively close to water sources, year-round, and ranged over a small fraction of the 540-mile^2 (1,399-km^2) study area. Horses (and pronghorn antelope) moved much farther from water in fall and winter, ranging over the entire study area. During spring and summer they remained as close to water as the cattle, but grazed to a considerable degree in winterfat (*Ceratoides lanata*) and nuttall saltbush (*Atriplex nuttallii*) vegetation, types used less by cattle.

By the same token, cattle grazed in certain types less often frequented by horses, namely greasewood (*Sarcobatus vermiculatus*) and rabbitbrush (*Chrysothamnus viscidiflorus*).

One can generalize all of these examples with the statement that horses are considerably more wide-ranging than cattle and less tied to water. In all of these cases, with the possible exception of Vavra's, horses ranged over nearly all the terrain occupied by cattle--though not necessarily at the same time of year--while cattle ranged over only a small portion of the area used by horses.

Clearly the problem of allocating forage to the two species is more complex than merely estimating the gross number of AUMs for an area, and assuming direct equivalence between the two species in using that forage. As Wright (1979) put it: "I doubt that the agencies [sic] statement, 'ten thousand horses on, ten thousand cattle off', is all that accurate."

None of this is said in any way to imply that horses and cattle cannot or do not compete for forage. Denniston et al. (1982) concluded that they did not have evidence to prove the existence or absence of competition, but they acknowledged that there was a potential for it on their area. In their view, it was most likely to occur, if at all, in the areas close to water where year-round cattle use and spring-summer horse use were concentrated.

Competition may also occur for space. When two species seek different habitat, the possibility exists that they are avoiding each other for behavioral reasons. The possibility was suggested to us that horses may on occasion move out of an area occupied by cows, and testing this hypothesis was one of the objectives of the Denniston et al. study. However there were not enough cattle on the study area, nor was the study conducted long enough to provide a definitive test.

One may argue that the cattle and horses coexisted during spring and summer. But this may have been forced by the mutual water need. When water was no longer scarce, horses moved away from the areas occupied by cattle, and as Pellegrini (1971) suspected they may have moved away from areas occupied by sheep. In the Phase I Report we discussed two cases in which elk appear to have avoided areas occupied by cattle (p. 142), and Child and Wilson (1964) have discussed similar avoidances between roan and sable antelope in Africa.

In short, we do not assert that behavioral competition prompts habitat segregation between horses and cattle. We only suggest it as a possibility needing investigation. The main point here is that forage-allocation decisions will become more effective and sound when studies like that of Denniston and his coworkers have provided a thorough understanding of the complexities involved. In the Phase I Report we recommended that studies of this type be repeated in several areas of the West.

Forage-Plant Utilization Discussion in the Phase I Report recognized that short-term studies (less than about 5 years' duration) can offer little direct insight into grazing impacts on plant community composition and production (range trend). However, the Report indicated that useful management-related data could be obtained from studies in relatively small paddocks (as opposed to the open range) where numbers of animals and days of grazing use could be closely controlled. Insignts into such questions as dietary botanical composition under different grazing intensities, dietary relations between horses and cattle, also under different grazing intensities, and relative levels of plant consumption under various grazing intensities and animal species combinations would be particularly important in this light.

Plant-utilization studies by the Wyoming researchers (Smith et al., 1982) showed relatively heavy utilization on grass and sedge species (range = 61 to 95 percent) during summer irrespective of the stocking density of animals. The two stocking densities used during the summer study were: "heavy" (about 12 animal unit days (AUDs) per hectare) and "moderate" (about 3 AUDs per hectare). They also observed utilization of about 75 percent on two shrub species, winterfat (Ceratoides lanata) and rabbitbrush (Cnrysothamnus viscidiflorus), during the summer period.

This is in contrast to Utah studies (Reiner, 1982) conducted during early summer, where shrub utilization was negligible, even though stocking densities were six- to ninefold higher (moderate = 27 AUDs per hectare; "heavy" = 68 AUDs per hectare) than in the Wyoming study. Grass utilization in the Utah study averaged 44 percent and 76 percent for moderate and heavy stocking densities, respectively, wnile comparable values for forbs were 8 percent and 19 percent. These utilization patterns, coupled with observations of higher production in the desirable snrub bitterbrush (Purshia tridentata) on horse-grazed paddocks, led the researchers to the conclusion tnat intensive grazing by horses could be used effectively for improving the habitat value of their ranges for wintering deer and elk. Apparently, the selective utilization of herbaceous plants witn no effective grazing on the shrubs reduced competition for scarce moisture by grasses and forbs in favor of snrubs.

The major differences in grazing treatment design between the Wyoming and Utah studies were stocking density, quantities of forage available, and length of the grazing period. The Utan paddocks were small (0.5 to 1.0 ha) and were grazed by a proportionately higher density of animals over a short (5- to 9-day) grazing period, whereas the Wyoming paddocks were larger (32 to 194 ha), were grazed by a lower density of animals, and for a 34-day period. Apparently much of the forage reported as utilized (i.e., tnat which disappeared over the course of the grazing period) in tne Wyoming study was not actually consumed by horses (or cattle) but was lost to other factors, including natural weathering and consumption by other herbivorous vertebrate and invertebrate organisms. In contrast, a much higher proportion of the forage that disappeared in the Utah study was due to outrignt consumption by horses.

Observations from these two studies illustrate a feature of grazing management that is becoming more widely recognized in domestic livestock production systems and that may have implications to wild equid management. In situations where animals graze a particular pasture or range unit for long periods of time (i.e., season-long, or even yearlong in the case of some feral horse herds), often at relatively low animal densities, the efficiency of forage harvest by grazing is low. Considerably more forage must be allocated per animal unit than in situations where the graze time is short and animal density per unit of land is high. There seem to be at least three causes for this effect. First, under the low-intensity situation, a disproportionately large part of the forage biomass is lost to unaccountable "wastage" factors. (However, we do not overlook the fact that, from the standpoint of soil protection and watershed features, much of this "lost" forage may become litter, which has other nonforage values.) Secondly, the increased off-take possible from short-term intensive grazing periods interspersed with rest periods may result from increased plant vigor due to the rests. Third, if the animals are forced to graze quickly under high intensity, they may be less selective for preferred plants and grazing sites, thereby using forage that they might avoid if given time and leisure to select.

Wyoming researchers (Smith et al., 1982) also conducted winter grazing trials during November and December 1981. Until this study, there had been little work on horse-forage relationships during winter, even though the winter season is often suggested as the period that sets limits on survivability for certain segments of the population. As summarized in the Phase I Report, Salter and Hudson (1979) reported that horses were effective foragers during winter in the upper foothills of the boreal forest zone in western Canada.

Stocking densities used by Wyoming researchers were about 3.5 AUDs per hectare for "moderate" grazing and about 8.8 AUDs per hectare for "heavy" grazing. Under this regime, utilization levels for grass were about 15 percent for moderate and 49 percent for heavy stocking densities. A few differences were found in utilization of particular plant species by individual animal species (i.e., horses, cows, or horse-cow combinations), but no important departures from the means presented above were seen.

Winterfat was the only shrub to sustain noticeable utilization during winter, and the levels observed were appreciable: 59 percent under moderate and 80 percent under heavy stocking. No major differences were seen for either horses or cows in this regard.

<u>Utilization Studies in Perspective</u> The Wyoming and Utah studies discussed above were both conducted under confinement conditions, a necessary experimental constraint for accurately relating a particular level of forage use to a known stocking intensity, duration, and time of grazing. Critics may argue that wild horses and burros rarely, if ever, exist under such conditions. This may be a valid point, but not one that voids the applicability of such studies to wild and free-roaming populations.

Specific points applicable to wild horse range management are:

1. Winter stocking densities as high as 8 AUDs per hectare are unlikely to lead to undesirable successional changes in plant communities under conditions similar to the Wyoming Red Desert. The relatively heavy use on winterfat, a palatable and nutritious

suffrutescent shrub, merits some concern, but early studies (Hutchings and Stewart, 1953) showed steady improvement in winterfat yields under 60 percent winter utilization. Winter conditions may prompt animals to concentrate in particularly favorable sites, leading to increased risk of overuse, but the dormant condition of vegetation during winter also renders plants less subject to physiological stress from grazing.

2. Summer utilization levels similar to those applied in the Wyoming study would probably lead to undesirable changes in the plant community, whether by horses or cattle. Shrubs in particular seem vulnerable to heavy defoliation during periods of active growth (Cook, 1971). The number of animals that would produce such utilization on any particular area can only be determined by site-specific, periodic utilization studies. This proved to be about 3 AUDs per hectare in the Wyoming area.

3. Animal distribution over the range, and its relationship to animal numbers and length of the graze period on particular sites, is a key element in plant community impacts. The importance of short, but perhaps intensive, grazing periods (as contrasted to protracted or season-long grazing) is illustrated by the comparison of the Wyoming and Utah studies and resultant utilization levels. The longer animals remain on a particular site, the higher the likelihood of regrazing plants and the regrowth of vegetation produced after the initial defoliation. Recent research (e.g., Caldwell et al., 1981) indicates that certain Agropyron bunchgrasses may be placed at a competitive disadvantage by this kind of grazing during the growing season.

Finally, it goes without saying that grazing duration is more easily controlled with domestic animals than with wild herbivores. The high mobility of feral horses could perhaps be an advantage in this regard, and management activities should explore ways to capitalize on this behavior. Opening and closing water points could be one possible measure in certain areas.

Range Hydrology The existing knowledge about the impact of wild equids on range hydrology is scanty, at best. Virtually no information exists in scientific journals, nor was such research funded during Phase II of the NAS effort. However, numerous anecdotal comments have appeared from time to time, and some limited in-house reports have been issued by various federal agencies that purport to identify the hydrologic impacts of wild equids (Dixon and Sumner, 1939; Weaver, 1959; Buechner, 1960; Welles and Welles, 1960, 1961b; Koehler, 1974; Fisher, 1975; Stoddart et al., 1975; Woodward and Ohmart, 1976; Carothers et al., 1977; Norment and Douglas, 1977; Zarn et al., 1977; O'Farrell, 1978; Hansen, n.d.; Jones, 1980). Lacking an adequate and systematic knowledge base on which to judge the effects of feral equids, the Committee has no choice but to assume that wild equids impact range hydrology in a manner similar to that of livestock. Considerable information exists in scientific journals on the hydrologic impacts of livestock grazing (Skovlin, 1981; Blackburn et al., 1982) and this was reviewed in some detail in the Phase I Report.

PROOF OF SERVICE

I hereby affirm that API's document entitled Response to IBLA Order July 27, 1990, Worland BLM District Removal Fifteen Mile HMA API/WHOA Standing (IBLA No 90-412, 3) has been sent by certified mailed to the following parties

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this 16th day of August, 1990 BY

Diane Hines Hinman

ANIMAL PROTECTION INSTITUTE OF AMERICA

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August 14, 1990

Interior Board of Land Appeals
Office of Hearings and Appeals
Department of Interior
4015 Wilson Boulevard
Arlington, VA 22203

IBLA 90-412, 90-413

WY-048-EA9-212, WY 048-EA9-213
RESPONSE TO IBLA ORDER JUL 27 1990

WORLAND BLM DISTRICT REMOVAL
FIFTEEN MILE HMA
API/WHOA STANDING

Dear Sir:

In keeping with the IBLA Order (July 27, 1990) requiring WHOA and API to show cause regarding why the Worland District Removal Plan (IBLA 413) does not meet statutory requirements for the determination of excess we offer the following arguments to substantiate our contention. With regard to the standing of WHOA and API in appealing these removal plans we wish to add to our previous statement on this matter.

FIFTEEN MILE HMA REMOVAL PLAN (WY-048-EA9-213)

In 1985 the Worland District issued an HMAP for the Fifteen Mile HMA. Wild, free-roaming horses were to be managed and protected in keeping with a long list of specified objectives stated on pages 16 through 23. Management concerns were clearly defined.

The range condition objective in the HMAP says: "Due to historic overgrazing, current spring-summer grazing practices, the non-allocation of forage for wild horses, and an over-allocation of domestic grazing forage, some of the area is in poor range condition and forage production is below potential."

continued . . .

On page 19, the HMAP promises that adequate forage will remain after domestic livestock use to sustain wild horses and utilization is be kept to 50 percent on key species and 25 percent on the south slopes and upper ridges in order to guarantee a winter supply for horses. Domestic sheep use is to be converted to winter use "stringently limited to November 1 through March 31 within the HMA to protect wild horses."

Utilization studies are to be conducted prior to turn out by domestic livestock to ensure adequate forage is available for wild horses during the severe winter months. The HMAP assures that if utilization exceeds accepted limits at turnout time, then turnout by domestic livestock will be denied or limited.

After a five year cycle, the amount of domestic sheep AUMs will be established by "stringently" observing the established utilization objectives and the grazing preference for livestock adjusted.

This year, 1990, is the end of that five-year cycle. These decisions regarding livestock stocking levels are due. Instead we have a decision to reduce wild horses.

Their utilization data is shown in Table 4, the Actual use of livestock is given in Table 3 that were included with the removal plan.

Only Allen Basin and Pitchfork show livestock actual use figures, all other allotments show "nonuse or information not available" for the five year grazing cycle. Only in Spring 1990, in Badger Basin do utilization levels exceed 50 percent on key species.

API constructed the following table from the census maps and the utilization data given in BLM's Table 4. Our purpose in constructing this table was simply to put all the information in one place to show the number of bands in a given area and the fact utilization occurred in areas where no horses were grazing. Whether this is unrecorded livestock usage or wildlife usage needs to be known before automatically assuming all utilization listed is wild horse actual use measurements.

continued . . .

Year		No. of bands by Allotment	Key Species		
DICKIE			ATNU	ORHY	AGSP
Aug.	1985	1	25	10	15
Feb	1988	1	15	25	15
BADGER BASIN			ATNU	AGSP	
STCO					
Aug.	1985	1	10		--
	1988	7	no reading Fall 1988		
	1989	14	--	35	45
Feb.	1986	3	no reading Spring 1986		
	1987	1	55	15	--
	1988	6	15	30	--
ALLEN BASIN			ATNU	ORHY	
STCO					
Aug	1985	1	--	15	20
	1988	1	no reading Fall of 1988		
	1989	no horses	--	35	45
Feb.	1986	no horses	no reading Spring 1986		
	1987	no horses	40		--
	1988	no horses	25		15
PITCHFORK			ATNU	ORHY	
AGRP					
Aug.	1985	1	5		
	1988	2	no reading Fall 1988		
	1989	1	20	10	5
Feb.	1986	1	20	15	20
	1987	2	25	15	
	1988	2	30	25	
HUNT OIL			ATNU	AGSP	
Aug.	1985	no horses	25	--	
	1988	1	no reading		
	1989	no horses	5	30	
Feb	1986	2	no spring reading		
	1987	4	15	20	
	1988	1	20	35	

continued . . .

But of specific interest in making a determination of whether there are excess animals in the HMA is the low utilization and the broad dispersion of bands. In Section C of the removal plan, which is entitled utilization, BLM admits that the utilization levels "in all allotments are currently recorded at acceptable levels."

API contends the data do not support that there are excess animals in the HMA.

BLM has attempted to make a case for a skyrocketing population, based on a geometric model of hypothetical populations speculating on a steady 20 percent increase level, to predict that horses will consume all available forage in a certain time frame to justify the removal rather than base the determination of excess on monitoring the habitat as required by law.

There are two shortcomings of a demographic model to calculate population increase. The first is the failure to include mortality rates as well as the movement into and out of the population by means other than birth and death. But to not include losses is equivalent to predicting a declining population by looking only at deaths without considering births or addition by immigration. The second shortcoming is the failure to account for the many variables that affect a specific population in a specific condition.

They quote from a paper by Garrod. On page 3 of Garrod's paper, the researcher states that the highest foaling rate (in the Pryor Mountain Herd) occurred after a 51 percent reduction suggesting a density dependent population. In other words, the population increase/decrease rate is tied directly to the condition of the habitat. Both the condition of the habitat and the impact on it by different grazing species can be measured and monitored. Grazing capacities and site suitability for different species can be calculated. Because of the density dependent influence on wild horse increase rates, BLM's use of a demographic model to calculate an expanding population using such a high rate of increase contradicts the reason for removing horses. A high birth rate indicates a healthy habitat. If there are too many horses it will show up in over-utilization, loss of production per acre measured by frequency and composition studies.

continued . . .

An example of this possible density dependency factor is shown in the ATTACHED computer graphic (ATTACHMENT A). This graphic depicts the actual census over a ten year period in Nevada. Even though some 30,000 horses were removed between 1985 and 1988, the total population remains essentially stable. API, basing its interpretation on the National Academy of Science Phase I field study guide, sees this phenomena as indicating that the AUMS available to and used by horses are not the same AUMs available to and used by livestock. Because horses are highly mobile, grazing further from water, on steeper slopes, and at higher elevations than livestock, API contends that horses select areas to graze where the forage is good. Whether this situation exists in 15-Mile is not known. (ATTACHMENT B on habitat suitability is taken from the National Academy of Sciences Final Report.) If there is spatial overlap, that is, wild horses and livestock competing for the same AUMs, the condition of the habitat would be reflected in the number of foals produced and the number surviving the first year as well as in the range monitoring data.
ATTACHED is a paper by Dr. Walter Conley, who served on the original National Academy of Sciences committee on wild horses, which addresses the rate of increase controversy. He says:

> "There are major problems involved with the appropriate estimation of demographic parameters from wild populations. Although problems of estimation are real, and associated implicit assumptions are highly restrictive, these two facts do not excuse the continued misuse of demographic techniques, nor do they excuse statements regarding "realized" rates of increase that are impossible even in a theoretical context, much less in the real populations presumably being described."

API's contention is that the law requires that the determination of excess be based on monitoring range conditions and determining whether there are too many animals in a given area based on damage to the range or the ecological balance of the natural system.

The law also requires that two determinations be made: first is whether or not there are too many horses in a given area and the second is whether or not removal from the public lands is the appropriate management response. With regard to this second determination, Congress suggests that other options be considered. They mandated the

continued . . .

National Academy of Sciences to advise on this. The question of population dynamics and birth rates/death rates arise AFTER it has been determined that excess animals exist. Demography and population dynamics arise in relation to whether horses should be removed, how many should be removed, what age structure and sex ratio should be left or other options taken.

API believes that Congress wrote the law the way they wrote it because the message to BLM is that the condition of the range and the health of the natural system determines how many animals are there and not the number listed in a permit. The provisions in PRIA governing wild horse management are consistent with the ecological considerations expressed in NEPA and the multiple use/sustained yield principles in FLPMA.

Without calculating carrying capacity in terms of AUMs that are actually available to and used by livestock and AUMs that are actually available to and used by horses and the amount of spatial overlap between the two species BLM cannot determine when there are too many horses nor can they predict by demographic modeling alone how many horses to remove from a population that will leave an optimum number in that population under multiple use conditions.

The National Academy of Sciences says "Clearly the problem of allocating forage to the two species is more complex than merely estimating the gross number of AUMs for an area and assuming direct equivalence between the two species in using that forage. As Wright (1979) put it: "I doubt that the agencies [sic] statement, 'ten thousand horses on, ten thousand cattle off,' is all that accurate."

The NAS report lists three specific points applicable to wild horse range management under the Section on utilization studies.

> 1. Winter stocking densities as high as 8 AUDs per hectare are unlikely to lead to undesirable successional changes in plant communities...dormant condition of vegetation during winter also renders plants less subject to physiological stress from grazing.
>
> 2. Summer utilization. . .The number of animals that would produce such utilization on any particular area can only be determined by site-specific, periodic utilization studies.

continued . . .

> 3. Animal distribution over the range, and its relationship to animal numbers and length of the graze period on particular sites, is a key element in plant community impacts.

By removing all the livestock during the five year study period (that, according to their HMAP, was to result in making livestock determinations), BLM has created a situation in which they are unable to monitor actual usages in order to make these livestock
adjustment but at the same time they've created a situation in which their monitoring does not show that there are excess horses based on monitoring range conditions.

MOTION TO DISMISS THE QUESTION ON STANDING

API formally requested of all State BLM offices, that we be listed as an interested and affected party to every decision involving wild horses. If we had no standing, if we were not recognized as an interested and affected party, we would not be receiving the information related to the wild horse removal. We do not receive site specific allotment evaluations except in those allotments affecting wild horses, in keeping with our original request to the state offices. By the very fact BLM recognizes us and sends us the information soliciting a response from us in the public participation process, they recognize our standing as an interested and affected party. The Secretary and BLM are accountable to the public in areas where sections of the public have clearly expressed their concern and interest as API and WHOA have done in the management of wild horses in those areas of the public lands where they existed in 1971. The arguments we stated in response to the Rock Springs Removal plan (IBLA 90-412) extend to our situation in the Worland district.

We <u>move</u> that IBLA dismiss the question of standing.

We <u>move</u> that the question of whether we had standing to raise the question about the Checkerboard lands be dismissed so that it remains with that question in case we do raise it in federal court, then the federal court will decide it at the proper time.

continued . . .

We urge IBLA to find that Wyoming BLM has failed to show that excess animals exist in the 15-Mile HMA and have no grounds for removing horses from the HMA. We believe they have not properly analyzed their utilization data in keeping with the objectives stated in the HMAP that they are monitoring for. They have not implemented the June 1989 IBLA order or used it as a test by which to judge their possible actions and decisions before announcing them. Finally, their data show that the number of animals that are currently in the HMA is below the carrying capacity of the area. We suspect a fair judgment, in keeping with the HMAP objective, would be to provide forage for the current number of wild horses as the optimum number in order to allow the remaining AUMs to go for livestock as a multiple use objective, then monitor actual use by each species for further population adjustments based on actual species-specific overutilization or other resource damage.

FOR THE ANIMAL PROTECTION INSTITUTE OF AMERICA

Sincerely,

Nancy Whitaker

Nancy Whitaker
Assistant Director of Public Land Issues,
Specializing in Wild Horses

Dawn Lappin

Dawn Lappin
Wild Horse Organized Assistance

NW:di