

BOB MILLER
Acting Governor

STATE OF NEVADA



5-10-90

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Executive Director

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COMMISSION FOR THE
PRESERVATION OF WILD HORSES

Stewart Facility
Capitol Complex
Carson City, Nevada 89710
(702) 885-5589

May 10, 1990

Dr. William E. Jacott, Assistant Vice President Health Science
Box 501, UMHC
420 Delaware St.
Minneapolis, Minnesota 55455

Dear Dr. Jacott,

I am writing to you regarding an experiment that was carried out in Nevada, by University of Minnesota personnel.

I have been directed by my Commissioners to file a complaint with you against the researchers for their part in the needless pain, suffering and death of over 100 of Nevada's wild horses.

The researchers are:

Dr. John Tester
Dr. Donald B. Siniff
Dr. Edward Plotka
Dr. Katherine Ralls
Dr. Cheryl Asa
Robert A. Garrott

Mr. Tom Eagle was not mentioned in the contract as a researcher, but carried out much of the work in the field.

Our concerns are that due to the lack of experience with handling wild horses by any of the field personnel, and a callous disregard for the welfare of the animals, that many horses suffered and died needlessly.

All principals involved were aware of the contract stipulations and the requirement that changes to the contract be IN WRITING. Yet, your field personnel experimented on horses that were brought through a fence, from a herd area that was not specified in the contract. Forty-eight of those horses died trying to get back through the fence to their home ranges.

In many of the field notes, BLM personnel argued with Mr. Eagle about radio-transmitter collars being too tight. The field notes also show many horses requiring medical attention from the collars being too tight. Many of the wounds became maggot infested.

Dr. William E. Jacott
May 10, 1990
Page 2

In other instances, a horse was darted to treat a collar wound, and the drug took effect near a cliff. That mare died.

Yet, in another instance, when going out to treat horses, Mr. Eagle forgot the drug box.

The cost overrun to treat collar problems was over \$164,000.00.

Helicopter chases often result in abortions. Yet the research makes no provision for accounting for this fact.

The ineptitude of the researchers also shows up in the fact that experimental horses were "lost" in the Lovelock facility. These horses may have been shipped out during the "fee-waiver" program in which case the horses may have gone for human consumption. Has anyone looked at the health risk to humans?

We also have documentation of unnecessary roughness by the researchers when handling horses. In one instance, it led to the death of 5 horses.

Other problems concern running horses so hard that young foals become separated from their mothers. Once this happens, the foals die.

It is interesting to note that Dr. Siniff completed your "Animal Usage Form BA-22." The way the form was completed neglects to show the stress, trauma, pain and suffering to the animals involved in the experiment.

You should be aware that the actions of the researchers may be in violation of the Federal Regulations regarding wild horses. The alleged violations are as follows:

1) Violation of CFR 4740.1(a) - "Use of the helicopter shall be in a humane manner." In some cases, horses were chased by the helicopter for over 20 miles. The use of the helicopter was for the experiment to round up the horses to be treated.

2) Violations of CFR 4770.1(a) - This is the crime of maliciously or negligently injuring or harassing a wild horse or burro. In many instances, the gross negligence of the researchers is very obvious.

3) Violations of CFR 4770.1(j) - This is "Violating an order, term, or condition established by the authorized officer under this part." This would include contracts.

I will be providing all of the pertinent information to the U.S. Attorney's Office for review.

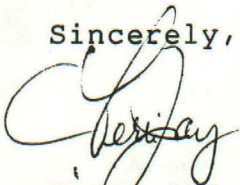
You should also be aware that Dr. U.S. Seal, a member of the National Academy of Sciences Committee on Wild Horse and Burro Research, who voted for the University of Minnesota to get the research, is now attaching his name to the published papers on this research. Even though Dr. Seal is not now affiliated with the University of Minnesota, it definitely appears as a serious conflict of interest.

Dr. William E. Jacott
May 10, 1990
Page 3

I have enclosed documentation for the aforementioned items.
The Commission would like to know what action, if any, your department will be taking against the individuals involved in the harrasment, injury, and deaths of over 100 of Nevada's wild horses.

We await your reply.

Sincerely,



TERRI JAY
Executive Director

Enc.
TJ/cb

CHAPTER 638
VETERINARIANS

GENERAL PROVISIONS

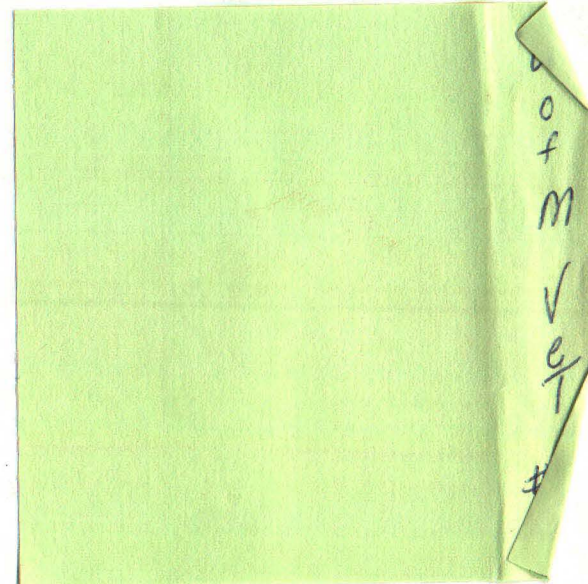
- 638.001 Definitions.
- 638.002 "Animal" defined.
- 638.003 "Animal technician" defined.
- 638.004 "Board" defined.
- 638.005 "Euthanasia technician" defined.
- 638.007 "Licensed veterinarian" defined.
- 638.008 "Practice veterinary medicine" defined.
- 638.009 "School of veterinary medicine" defined.
- 638.010 Definitions. [Replaced in revision by NRS 638.001.]
- 638.011 "Veterinarian" defined.
- 638.012 "Veterinary medicine" defined.
- 638.015 Applicability.
- 638.017 Service of process.

NEVADA STATE BOARD OF VETERINARY
MEDICAL EXAMINERS

- 638.020 Creation; number, appointment, qualifications and removal of members.
- 638.030 Oaths of appointive members.
- 638.040 Compensation of members and employees.
- 638.050 Officers; offices; employment of executive secretary.
- 638.060 Meetings; quorum.
- 638.070 Powers.
- 638.073 Administration of oaths.
- 638.077 Inspections.
- 638.080 Duties of executive secretary; deposit, use and payment of board's money.
- 638.085 Fiscal year.
- 638.087 Records.
- 638.089 Confidentiality of information; limitations; notice of disclosure of contents.

LICENSING

- 638.090 Unlawful to practice without license.
- 638.100 Application for license; qualifications; fee; grounds for refusal.
- 638.105 Admission to practice without examination.
- 638.110 Examinations for license.
- 638.116 Euthanasia technician: Application for license; qualifications; fee.
- 638.117 Euthanasia technician: Examination.
- 638.118 Euthanasia technician: Duties upon cessation of qualified employment.
- 638.119 Euthanasia technician: Regulations.



- 638.120 Admission to practice without examination. [Replaced in revision by NRS 638.105.]
- 638.122 Animal technicians: Application for license; qualifications; fee.
- 638.123 Animal technicians: Examination.
- 638.124 Animal technicians: Regulations by board; responsibility of supervising veterinarian.
- 638.125 Practice by veterinarians licensed by adjoining states in areas not adequately served; conditions.
- 638.127 Renewal of license; penalty for delinquency; examination before renewal.
- 638.129 Restoration of license.
- 638.131 Provision of regulations to licensees.
- 638.133 Duty to report claim for malpractice or negligence and disposition.

DISCIPLINARY ACTION

GROUND S

- 638.140 Violation of statute, regulation or order of board; habitual drunkenness; addiction to controlled substance; commission of felony or other criminal offense involving drugs or moral turpitude; incompetence; gross negligence; malpractice.
- 638.1402 Fraudulent acts.
- 638.1404 Claiming professional superiority; accepting money to cure manifestly incurable disease; sharing fees; soliciting patronage.
- 638.1406 Allowing improper use of name; unlawful professional association; failure to report revocation of foreign license to practice.
- 638.1408 Failure to maintain facilities in sanitary condition; failure to maintain or alteration of records; filing false report or failing to make required report; inhumane or cruel treatment of animals.

COMPLAINTS, INVESTIGATIONS AND SUMMARY ORDERS

- 638.1413 Filing of complaint; investigation by board.
- 638.1416 Physical examination of animal after filing of complaint concerning care of animal.
- 638.1419 Conduct of investigation; notice to person investigated.
- 638.142 Mental or physical examination; examination of competency to practice.
- 638.1423 Summary order of suspension or prohibition; hearing; investigation; order.
- 638.1426 Stay by court of board's summary order for suspension prohibited; exception.
- 638.1429 Actions by investigator.
- 638.144 Issuance and enforcement of subpoenas.
- 638.1445 Search warrant.

DISCIPLINARY PROCEEDINGS

- 638.145 Satisfactory proof of violation required for refusing to issue license or taking disciplinary action.
- 638.146 Right of person charged to hearing; continuation; reopening.
- 638.147 Authorized disciplinary actions; deposit of money collected.
- 638.1473 Delegation of board's authority to take disciplinary action; deposit of money from collection of fines; presentation of claim for payment of attorney's fees and cost of investigation.
- 638.1476 Decision of hearing officer or panel final; appeal to board.

- 638.1479** Licensee's statement after board's order; consideration by board.
638.148 Judicial review.

MISCELLANEOUS PROVISIONS

- 638.151** Representation of board at hearing.
638.1515 Requirements for proof.
638.152 Immunity from civil action.

ENFORCEMENT; PENALTIES

- 638.153** Criminal prosecution not precluded by disciplinary action.
638.154 Court may award costs and reasonable attorney's fees incurred by board.
638.155 Injunctive relief for violations of chapter.
638.1551 Injunctive relief for unprofessional conduct.
638.1555 Allegation necessary for injunction.
638.160 Prosecution of violators by attorney general or district attorneys.
638.170 Penalties.
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GENERAL PROVISIONS

638.001 Definitions. As used in this chapter, unless the context otherwise requires, the words and terms defined in NRS 638.002 to 638.012, inclusive, have the meanings ascribed to them in those sections.

[Part 2:17:1919; 1919 RL p. 3204; NCL § 7791] + [Part 8:17:1919; 1919 RL p. 3205; NCL § 7797]—(NRS A 1960, 410; 1965, 364; 1975, 1148; 1985, 534; 1989, 537)—(Substituted in revision for NRS 638.010)

638.002 “Animal” defined. “Animal” excludes man and includes fowl, birds, fish and reptiles, wild or domestic, living or dead.

(Added to NRS by 1989, 536)

638.003 “Animal technician” defined. “Animal technician” means a person who is formally trained for the specific purpose of assisting a licensed veterinarian in the performance of professional or technical services in the field of veterinary medicine.

(Added to NRS by 1989, 536)

638.004 “Board” defined. “Board” means the Nevada state board of veterinary medical examiners.

(Added to NRS by 1989, 536)

638.005 “Euthanasia technician” defined. “Euthanasia technician” means an employee of a law enforcement agency, an animal control agency, or of a society for the prevention of cruelty to animals that is in compliance with the provisions of chapter 574 of NRS, who is licensed by the board and trained to administer sodium pentobarbital to euthanize injured, sick, homeless or unwanted domestic pets and other animals.

(Added to NRS by 1989, 536)

638.007 “Licensed veterinarian” defined. “Licensed veterinarian” means a person who is validly and currently licensed to practice veterinary medicine in this state.

(Added to NRS by 1989, 536)

638.008 “Practice veterinary medicine” defined. “Practice veterinary medicine” means:

1. To diagnose, treat, correct, change, relieve or prevent animal disease, deformity, defect, injury or other physical or mental conditions, including the prescription or the administration of any drug, medicine, biologic, apparatus, application, anesthetic or other therapeutic or diagnostic substance or technique, and including testing for pregnancy or for correcting sterility or

infertility, or to render advice or recommendation with regard to any of these.

2. To represent, directly or indirectly, publicly or privately, an ability and willingness to do any act described in subsection 1.

3. To use any title, words, abbreviation or letters in a manner or under circumstances which induce the belief that the person using them is qualified to do any act described in subsection 1, except where the person is a veterinarian.

(Added to NRS by 1989, 536)

—ANNOTATIONS—

Attorney General's Opinions.

Unlicensed person gratuitously administering certain tests not practicing veterinary medicine. Person not a licensed veterinarian who gratuitously administers pregnancy test

for cows and semen test for bulls does not thereby practice veterinary medicine as that practice is defined in former NRS 638.010 (cf. NRS 638.008). AGO 211 (2-17-1961)

638.009 "School of veterinary medicine" defined. "School of veterinary medicine" means any veterinary college or division of a university or college that offers the degree of Doctor of Veterinary Medicine or its equivalent and that conforms to the standards required for accreditation by the American Veterinary Medical Association.

(Added to NRS by 1989, 537)

638.010 Definitions. Replaced in revision by NRS 638.001.

638.011 "Veterinarian" defined. "Veterinarian" means a person who has received a doctor's degree in veterinary medicine from a school of veterinary medicine.

(Added to NRS by 1989, 537)

638.012 "Veterinary medicine" defined. "Veterinary medicine" includes veterinary surgery, obstetrics, dentistry and all other branches or specialties of veterinary medicine.

(Added to NRS by 1989, 537)

638.015 Applicability. Nothing in this chapter shall be construed to apply:

1. To the gratuitous castrating, dehorning or vaccinating of domesticated animals nor to the gratuitous treatment of diseased animals by friends or neighbors of the owner thereof.

2. To debar any veterinarian in the employ of the United States Government or the State of Nevada from performing official duties necessary for the conduct of the business of the United States Government or the State of Nevada, or a political subdivision thereof, upon which he is assigned.

LICENSING

638.090 Unlawful to practice without license. It shall be unlawful for any person to practice veterinary medicine, surgery, obstetrics or dentistry within the State of Nevada without first obtaining a license so to do as provided in this chapter.

[1:17:1919; 1919 RL p. 3204; NCL § 7790]—(NRS A 1960, 412)

638.100 Application for license; qualifications; fee; grounds for refusal.

1. Any person who desires to secure a license to practice veterinary medicine, surgery, obstetrics or dentistry in the State of Nevada must make written application to the executive secretary of the board.

2. The application must include any information required by the board and must be accompanied by satisfactory proof that the applicant:

(a) Is of good moral character.

(b) Has received a diploma conferring the degree of doctor of veterinary medicine or its equivalent from a school of veterinary medicine within the United States or Canada or, if the applicant is a graduate of a school of veterinary medicine located outside the United States or Canada, that he has received an educational certificate issued after December 31, 1972, by the Educational Committee on Foreign Veterinary Graduates of the American Veterinary Medical Association.

(c) Is a citizen of the United States or is lawfully entitled to remain and work in the United States.

3. The application must also be accompanied by a fee set by the board, not to exceed \$200.

4. The board may refuse to issue a license upon satisfactory proof that the applicant has committed an act which would be grounds for disciplinary action if the applicant were a licensee.

[Part 5:17:1919; A 1951, 63]—(NRS A 1960, 412; 1971, 221; 1975, 1150; 1977, 1566; 1985, 1253)

638.105 Admission to practice without examination.

1. The board may in its discretion license an applicant solely on the basis of oral interviews and practical demonstrations upon sufficient proof that the applicant has, within the previous 5 years, successfully passed the examination administered by the National Board of Veterinary Medical Examiners.

2. The board may, upon payment of the fee prescribed under NRS 638.100, license without examination any person who is a diplomate from an approved specialty board of the American Veterinary Medical Association. The veterinary practice of any person who is licensed pursuant to this subsection, is limited to the specialty in which the person is certified. If an applicant

the district court of any county, on application of the board, may issue an injunction or other appropriate order restraining the act or practice.

(Added to NRS by 1981, 55)

638.1551 Injunctive relief for unprofessional conduct.

1. In addition to any other remedy provided by law, the board, through its president or the attorney general, may apply to a court to enjoin any unprofessional conduct of a veterinarian or animal technician, or to limit his practice or suspend his license.

2. The court may issue a temporary restraining order or a preliminary injunction for such purposes:

(a) Without proof of actual damage sustained by any person, this provision being a preventive as well as punitive measure; and

(b) Pending proceedings for disciplinary action by the board. Such proceedings must be instituted and determined as promptly as practicable.

(Added to NRS by 1985, 1246)

638.1555 Allegation necessary for injunction. Any person seeking to enjoin another person from acting as a veterinarian or animal technician without a license, need allege only that he did, on a specified date in this state, so act without having a license.

(Added to NRS by 1985, 1251)

638.160 Prosecution of violators by attorney general or district attorneys. When requested by the board, the attorney general or the district attorneys of the respective counties of this state shall prosecute violators of this chapter.

[Part 9:17:1919; 1919 RL p. 3206; NCL § 7798]—(NRS A 1975, 1152)

638.170 Penalties.

1. Except as provided in subsections 2 and 3, any person who violates any of the provisions of this chapter is guilty of a misdemeanor.

2. Any person who practices veterinary medicine, without a license issued pursuant to the provisions of this chapter, shall be punished by imprisonment in the state prison for not less than 1 year nor more than 6 years, or by a fine of not more than \$5,000, or by both fine and imprisonment.

3. Any person who practices as an animal technician, without a license issued pursuant to the provisions of this chapter, shall be punished by imprisonment in the county jail for not more than 1 year, or by a fine of not more than \$2,000, or by both fine and imprisonment.

[Part 9:17:1919; 1919 RL p. 3206; NCL § 7798]—(NRS A 1985, 1257)

BOB MILLER
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TERRI JAY
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**COMMISSION FOR THE
PRESERVATION OF WILD HORSES**

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Michael Kirk, D.V.M.
P.O. Box 5896
Reno, Nevada 89513

December 19, 1989

Les Sweeney, Manager
Elko Resource Area
3900 E. Idaho Street
P.O. Box 831
Elko, Nevada 89801

Dear Les,

I am writing to you regarding the University of Minnesota fertility study.

I am aware that there are still problems occurring which is affecting the welfare of Nevada's wild horses.

Therefore, I have placed the University of Minnesota study on the agenda for discussion and possible action, at the next Commission meeting, which is scheduled for January 25, 1990, in Las Vegas.

Would you please send me all of the COR's (CONTRACTING OFFICERS REPRESENTATIVE) reports and PI's (Project Inspector) reports and other related information concerning the study.

I am sure it will help to prepare the Commissioners if they have all of the requested documentation.

Thank you for your assistance in this matter.

Sincerely,

Handwritten signature of Terri Jay in cursive script.
TERRI JAY
Executive Director

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MEMORANDUM

TO: Debra Jeppson

FROM: Terri Jay, Executive Director *Jay*

SUBJECT: University of Minnesota Fertility Study

DATE: December 5, 1989

I have enclosed as much information as I thought you could use. I have highlighted certain areas to save you time.

My main concern at this time, is that if we do not do something, more horses will die unnecessarily this spring in the flyovers.

As I explained in our telephone conversation, the researchers must fly very low above the horses for a long distance, (5 to 10 miles) in order to read the number on the horse's collar. If it is a mare with a foal, they become separated and usually the foal will die.

I also have video tape of an interview with one of the researchers.

Possible witnesses include:

Les Sweeney, BLM
Milt Frei, BLM
Andy Anderson, BLM
Dr. Jerry Peck, DVM
Dawn Lappin, President, WHOA
Tom Pogochnic, BLM
Tim Reuwsaat, BLM

I have never heard back from Kevin Pasquale, the D.A. from Churchill County. Now the statute of limitations has run out.

I know that this isn't a rape, murder, or drug scandal, but why can't we stop this insanity?

Let me know if you need any other information.

University of Minnesota Research - Dr. Fred Wagner
August 18, 1988
Presented by Wild Horse Organized Assistance
Dawn Y. Lappin

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My name is Dawn Y. Lappin, Director for WHOA. WHOA and the general public are appalled by the lack of planning, communication, supervision, and caution regarding the University of Minnesota Mare Fertility Research. In a letter to the Bureau of Land Management (hereafter the BLM), the University of Minnesota Associate Scientist (herein referred to as scientist), implied that the BLM, in it's preliminary investigation, attempted to lay the blame solely on the University for the deaths of 48 wild horses in the Clan Alpine Herd Management Area (hereafter referred to as the Clan Alpine HMA). Clearly, he is upset that any information pertaining to the deaths will reach the eyes and ears of the public and animal welfare groups, as he states that large sections of the text of the investigative report be deleted and only analyzed by unbiased referees. He also must assume that those same people would attribute fault solely on the University. Let me assure the scientist, you, and the BLM, that the Federal agencies have not and will not escape the same scrutiny that is being given the University of Minnesota. The very fact that reports, draft or final, or the subsequent investigations which elicited more inconsistencies, speaks for the continued pressure on the agency to acknowledge and correct their portion of the blame and rectify the possibility of re-occurrences.

Having addressed that issue, I will proceed to address the purpose of the invitation today; my opinion of the University of Minnesota Research. While several individuals reoccur frequently in the text, it is because it is those people who were in the field at the time of the instances. However, I have considered that the University of Minnesota proposal dated 1985 (hereafter referred to as the 1985 proposal) indicates that the research team would be comprised of Drs. Sinoff, Testor, and Plotka. Although Dr. Plotka was to supervise the implantation of the fertility control devices in the mares in the field, his name is noticeably absent from the list of those present during the capture and field surgery of the Augusta Mountain mares in the Clan Alpine HMA. Nor are Drs. Sinoff or Testor mentioned, whom supposedly carried out all aspects of the field studies on those particular mares (as specified by the 1985 CONTRACT). We assume L. Kuecle, although he isn't mentioned, played some role in the fitting of the tight collars, since some of them contained telemetry devices. Although we are confident of the ability of Dr. Peck to perform surgery, we do question whether the laws of the State of Nevada allow unqualified lay people to also perform surgery.

The deaths of 48 horses in the Clan Alpine HMA resulted in an investigation by BLM, as well as from numerous others. WHOA objected strenuously to the inclusion of the researcher and the BLM employee being a part of the investigating team, investigating themselves, both of which had altered research parameters and captured horses outside the Clan Alpine HMA. The BLM employee, reacting to pressure from the subcontractor about the difficulty in locating horses (which has been a continuous problem with that specific subcontractor), left the Clan Alpine HMA and evaluated horses in the Augusta Mountain HMA. Supposedly he spotted 3 - 5 collared horses in the Augusta range that could have only been collared in Clan Alpine, at the Hole-in-the-Wall Spring. From that alleged evidence he concluded the two populations moved back and forth. Furthermore, he alleges 4 gaps in the fence separating the two herd areas, with well marked trails. However, investigations, not only by the BLM, but by others as well, ascertained there were NO gaps in the fence, as alleged, and NO repairs had been made in the otherwise continuous fence. The ONLY area where wild horses could have migrated was at the end of the fence, and I repeat could have, not did. If indeed those horses constantly went around that fence to migrate, then wouldn't those same horses brought from the Augusta's once again go around the end of the fence to the habitat and waters they were familiar with?

The investigations clearly show the BLM employee lied in the investigative report regarding the gaps in the fence. Based on those inconsistencies and lies, it is entirely possible that there were no collared horses at Hole-in-the-Wall spring either, and the decision to go north into another herd area was based on the fact that it was KNOWN prior to the capture that insufficient horse numbers remained in the Clan Alpine HMA.

My rationale for the former conclusion is as follows: Professor Testor wrote BLM in 1/86 stating "There are two areas that would be available this summer where sufficient numbers occur (100 mares between 4-15 years of age requires at least 400 horses). They are the Black Rock - Warm Springs Canyon area and the Clan Alpine area. These were the most satisfactory choices to all concerned but it would be necessary to plan and coordinate our research and BLM gatherings in these areas". Furthermore, Testor agreed in another letter of 1/86, that Sand Springs would be dropped due to the fact sufficient numbers of wild horses would be available in the Clan Alpine HMA for not only the fertility study, but the control areas as well. Subsequently, BLM reduced the Clan Alpine herd by approximately 50% in October of 1986. The Helicopter Round-Up Services was the contractor on that reduction. So all three participants, the researcher, the BLM employee and the helicopter contractor knew BEFORE the field study even began that insufficient horses were available in Clan

Alpine. Please look at the Table below for the chronological occurrences:

TABLE

Testor letters regarding sufficient horses	1/86
Distance dispute with helicopter contractor	7/86
BLM reduction of populations in Clan Alpine ...	10/86
Research capture and treatment in Clan Alpine ..	8/87

During the month of August, when the Helicopter Round-Up Services was capturing wild horses for BLM in Gerlach, a dispute arose over the fact that the contractor ran the horses too far. This resulted in dozens of colts in varying stages of hoof separation, hooves worn down to the quick, too lame to even walk. His operation was shut down during an investigation and subsequent directions were to limit the distance wild horses were driven to NO MORE THAN 5 MILES! The personnel from the University of Minnesota were also advised at the same time of the new distance limitation. The BLM employee, an employee of the Carson City District, (which has the responsibility of managing the Palomino Valley Wild Horse Facility, where the lame colts were being kept), also knew of the problems caused by excessive distances, and was also aware of the BLM instruction memorandum regarding the new distance limitation.

So, in August of 1987, all three participants, the researcher, the subcontractor for helicopters, and the BLM employee, knew that the October 1986 capture had reduced the horses population to 50%, leaving approximately 798 horses in the Clan Alpine, requiring almost a 100% removal of the Clan Alpine horses to obtain the necessary numbers for research; they also knew of the distance limitation. The Sand Springs area had been dropped from consideration (Testors calculation of requiring approximately 400 horses to obtain 100 test animals). Using the same ratio as Testor, it would then require the capture of 200 horses to obtain the necessary 50 horses of the right age and sex for the control group - - the sum of both which is 600. So rather than reassessing the combination of the fertility study area and the control area, or reviewing the use of Sand Springs, the participants opted to vacate the parameters of the research proposal and bring the Augusta Mountain herd into the Clan Alpine research study. But, in order to use those horses, the new limitation on distance had to be ignored and WAS! It is my experienced opinion that all three participants were in collusion. The lies in the investigation, the researchers chastisement of BLM, were in layman's language, an attempt to cover one's fanny. These types of actions indicate the sacrifice of basic research principals for the purpose of expediency.

Had the horses from the Augusta's not died, and had the investigations not uncovered the lies, the general public would have never known that the Augusta horses had become a part of the Clan Alpine research study. For any research institute or its' personnel to admit to the running of poor conditioned horses in over 90 degree heat and an estimated 15 to 20 miles, speaks clearly about the insensitivity of the participants. Not only is it clearly inhumane, but violates numerous policies, and State and Federal laws. The fact that no one has ever complained doesn't mean these attitudes have not occurred elsewhere, they just weren't caught. The research scientists question the ability of Dr. Peck to assess the stress of the horses during their attempt to return to their range and water is especially insensitive. Several other veterinarians have expressed much the same conclusion as Dr. Peck, including the veterinarian in Susanville, who also received some of the crippled colts, but the sheriff and BLM personnel as well. I must presume the scientist believes that to state opinion based on years of experience, rather than education, is somehow not professional. The scientists' potential for a Ph.D does not necessarily make him an expert. The scientist would have BLM silence all questions and critiques of the research project. I dare say the public's trust of a researchers' conclusions will be based on how sensitive he is to the animals he is researching.

The researcher was warned that collars had been fitted too tightly in the fall of 1986. I had attended a meeting of the BLM personnel in Stone Cabin, where the ranchers' complaint was the fitting of the collars. But the re-fitting of some of those horses did not occur until well into 1988. The suffering, maiming, and deaths of horses by the research personnel have been sluffed off and attributed to normal research losses. . . . BALONEY! They ALL KNEW that there were insufficient horse numbers in Clan Alpine. They ALL KNEW the restrictions on distance. They ALL KNEW early on about the tight fitting collars. They ALL KNEW the restrictions on combining areas, and no one will ever convince me otherwise.

Of critical concern is the researchers attempt to keep quiet the missing or misplaced animals, implanted or control, or the penned mares in Lovelock. It was my understanding of the research proposal that penned mares data would be used to compare those mares in the field studies, i.e., hormonal dosages, weights, parentage, etc. Are the missing horses mixed in the general population at Lovelock, or were they a part of the fee waived horses that were shipped to Canada for slaughter, or are they in some unsuspecting adopters yard, with the potential of being sold? How will the researchers ascertain whether animals implanted with steroids have not entered the food chain? Has the FDA been advised of the possibility of the steroid implanted mares reaching the food chain? How does the disappearance of

these animals used to determine the results in the research, affect the data being collected? If the conclusions reached in the research are dependent upon the data collected from ALL the animals, how then do the missing animals skew the conclusions?

To catch up to what we know so far, we have:

- 1) insufficient horses in Clan Alpine HMA before the field studies began, (those numbers had nothing to do with not having helicopters to adequately census, but due to the fact that BLM had captured 50% of the population the previous October).
- 2) Vacated parameters of the research proposal by using animals outside the study area.
- 3) Total disregard for the instructions on the maximum distance animals would be brought.
- 4) Lies in the investigation pertaining to the above.
- 5) Missing, misplaced or unlocatable steroid implanted mares in Lovelock.
- 6) Imbedded collars and the unnecessary delay in re-fitting.
- 7) Inhumane treatment of animals.
- 8) Dead horses....AND STILL THE RESEARCH CONTINUES!

The research project used helicopters without benefit of public hearings in violation of the law. No environmental impact was analyzed to access the impact of the research proposal on the population, or the environment. There was no communication with anyone other than a substitute BLM employee, as to whether or not the COR approved of the change in the research areas. The foregoing attests to the lack of supervision, planning, coordination, communication, and sensitivity, and opens up yet another entire set of questions.

1) Why were stallions vasectomized when this portion of the research has been completed?

2) How do you separate the affects of the stress of the collars imbedded 2-3 inches into the neck muscle tissue from the affects of the hormonal implants?

3) If a mare aborts due to the stress of repeated captures, imbedded collars, or collars inhibiting sight or hearing; will the absence of a colt be recorded as a successful hormonal

implant.

4) How can visually or hearing impaired animals retain their social structure in the band, and what will the affect of the displacement have on the conclusions of the research?

5) How do you know whether the lack of reproduction in the mare was attributable to hormones or the fact the stallion had a collar over his eyes?

6) To what degree does the stress from repeated captures or imbedded collars prevent the animal from reproducing?

7) How is it that the research will allow capture around the implanted mares in the Augusta Mountain HMA, but not allow for the reduction of horses in Stone Cabin? Is this a double standard?

8) Why will the reduction in the Augusta HMA be permitted when it violates the parameters of the research proposal?

9) When studying a methodology from animals' natural state, you attempt to alter that natural state as little as possible; if you run horses too far, if you take them from their previous habitat, or have repetitive captures, or improperly fitted collars, you create even more of an unnatural state. How will you evaluate the insensitivity to the methodology?

10) How can you validate or trust the researchers conclusions on the project if the researcher is insensitive to the needless stress or suffering of the animals they are researching?

11) How will you be able to monitor those animals from which the collar was imbedded and removed?

12) Will you use a magnet as was previously accessed to locate the steroid rods on ALL wild horses that will be removed from the study area?

13) If not, how will you find the implanted mares whose collars have been removed in order to collect data?

14) What happened to the money saved by dropping Sand Springs as a control area and combining the fertility study with the control study?

15) How, when the research is based on a certain sample size, do you compare the results when significant numbers of animals are missing, misplaced, or unlocatable?

16) How do you evaluate the effectiveness of the fertility control animals when so many are missing?

17) If 48 dead horses represent a mere 5% death loss from the Clan Alpine, what does the 101 animals represent? And is that reasonable considering that 35 more animals are to be sacrificed for necropsy purposes?

18) How many penned, implanted mares died? Were any of them the result of ringworm treatment?

19) Has anyone who worked on this research project published any papers pertaining to this research?

20) Was anyone on the NAS committee, who voted in favor of the research proposal, ultimately awarded the contract, or a portion of the contract?

21) Did anyone who wrote the proposal work on the project?

22) Did anyone on the NAS committee receive subcontracts?

23) Did either of the principal investigators have any background in field surgery or the manipulation of horses?

24) Did the Associate Scientist have any background in field surgery?

25) Did any of the research proposals suggest any method other than hands-on, field surgery, or the use of steroid hormones?

26) Have the researchers submitted, as indicated in the 1985 proposal, any of the 1/86, 3/86, 9/86, 10/87, 3/88, or 9/88 progress reports to the BLM?

In conclusion, the public is generally aware of the multiple deaths associated with this research project and the potential affects that all of the above will have on the scientific validity of the research. Those incidents not currently known by the public will soon become public. The results of the research will be skewed and therefore a waste of taxpayer dollars. We definitely question who will bear the costs of recapture to refit collars. It is my opinion, based on the foregoing, the research should be terminated IMMEDIATELY!

Respectfully Submitted,
Dawn Y. Lappin
Director, WHOA

BOB MILLER
Acting Governor

STATE OF NEVADA

TERRI JAY
Executive Director



**COMMISSION FOR THE
PRESERVATION OF WILD HORSES**

Stewart Facility
Capitol Complex
Carson City, Nevada 89710
(702) 885-5589

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15640 Sylvester Road
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Michael Kirk, D.V.M.
P.O. Box 5896
Reno, Nevada 89513

MEMORANDUM

TO: Wild Horse Commissioners
FROM: Terri Jay, Executive Director *Terri Jay*
SUBJECT: University of Minnesota Experiment
DATE: January 2, 1990

Enclosed is a packet of information regarding the University of Minnesota Fertility Study.

I am forwarding this information to you so you will have time to review all of the material prior to the January 25, 1990 meeting.

THIS WILL BE A DECISION ITEM.

I have forwarded all of the pertinent information to Debra Jeppson, our Deputy in the Attorney General's office. It is my hope that the Attorney General's office can provide suggestions as to how we can end this experiment.

As you can see by Les Sweeney's recommendation, he is strongly recommending the study be stopped immediately.

I have also asked the A.G.'s office to look into allegations of criminal activities involving the study. Please feel free to give me a call if you have any questions complicated matter.



COMMISSION FOR THE
PRESERVATION OF WILD HORSES

Stewart Facility
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December 20, 1989

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MEMORANDUM

TO: Debra Jeppson, D.A.G.

FROM: Terri Jay, Executive Director

SUBJECT: University of Minnesota Fertility Study

I have tried to organize the information in as clear and concise a manner as is possible, due to the complicated nature of the material. I have requested more reports from the BLM (Bureau of Land Management) which include their recommendation to terminate the study. (I doubt the request for termination will be honored.)

Just to summarize the study, the National Academy of Sciences Subcommittee on Wild Horse and Burro Research, chose which study the BLM should fund. The University of Minnesota's study was selected. *BLM req. study.*

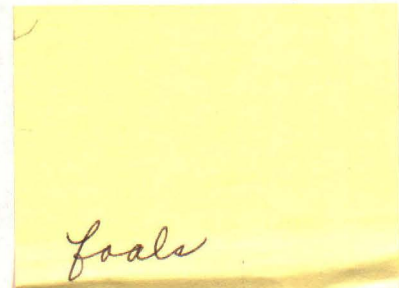
The study consisted of three phases:

1) Dominant stallions in the wild would be vasectomized.

2) Mares in the Lovelock holding facility would be implanted with silastic rods - some of which would have various hormones, various levels of hormone, and some control rods which would have no hormones. The rods would be implanted in various locations in the horses' bodies. This is referred to as the "pen studies."

3) The third phase consisted of determining which herd areas to use to implement the study in the wild, supposedly under normal or natural conditions. The herd areas were chosen after consultation with the BLM and the research contract was modified to reflect those specific herd areas. (As you will see later, the herd area boundaries were ignored.) The horses in the various herd areas were rounded up and implanted with the silastic rods; some were fitted with radio transmitter collars, other with just marking collars (collars with numbers three inches high).

The observation phase consists of flying low over the horses to read the numbers on the collar. Most of the time, it requires running the horses at top speed for several miles in order to read the small numbers on the collar. This is done twice a year, often when BLM round-ups are prohibited due to the dangers posed to young foals and unborn foals.



2

Debra Jeppson
December 20, 1989
Page 2

There are many questions raised regarding alleged illegal activities. Hopefully these will be demonstrated by the enclosed information.

What is the statute of limitations for the various alleged crimes? Is there a statute of limitations for filing a civil suit? Since the research is ongoing and problems such as helicopter harassment are continuing, can the individuals still be charged?

The alleged violations are as follows:

1) Violation of CFR 4740.1(a) - regarding the use of helicopters - "All such use shall be conducted in a humane manner." State BLM policy dictates that horses can only be run 5 miles maximum, and that is under ideal conditions including condition of animals, terrain, temperature and time of year.

Documents show several captures where horses were run 15 to 20 miles under the worst conditions -- in one case alone, 48 horses died after such a run from hypothermia, dehydration, and exhaustion.

See Exhibit 17, page 41 for CFRs.

See Exhibit 10, page 3 of field report. Shows no clearly drawn line between harassment and "research."

See Exhibit 11, page 6, admission of horses being run 15 to 20 miles.

See Exhibit 9, page 6, distance horses were run. Page 7, terrain and prevalent conditions. Page 14, admission by BLM that the distance limitation was ignored. Page 12, veterinarian's determination of cause of death.

2) Violation of NEPA (National Environmental Protection Act) The Act and the Guidelines from the Council on Environmental Quality require an assessment for actions that may cause public controversy or result in animal mortality. The actions may have also caused impacts to cultural resources, etc.

See Exhibit 3, page 3. My testimony addresses several of the items that an EA would have addressed had one been prepared. Also, the stress of the helicopter chase, either for capture or observation of a collar number or to dart for treatment, has been determined to cause spontaneous abortions. It is interesting to note that in a study to determine whether or not a specific drug is reducing a population increase, that the OBSERVATION of the horses by helicopter alone may be reducing the birth rate due to stress induced abortions.

See Exhibit 9, page 13. In this draft report, BLM admits that no EA was prepared.

Debra Jeppson
December 20, 1989
Page 3

3) Violation of CFR 4740.1(b). Failure to hold a helicopter hearing as required by PRIA (Public Rangelands Improvement Act) and the CFRs.

See Exhibit 3, page 3. My testimony.

4) Violation of CFR 4770.1 (a). This is maliciously or negligently injuring or harassing a wild horse or burro.

See Exhibit 1, page 3. Running horses three to four times the distance limitation.

See Exhibit 5. Letter from Farm Bureau to National Academy of Science Subcommittee on Wild Horse and Burro Research demanding end to study due to inhumane treatment of study horses.

See Exhibit 8, page 2. Letter from livestock operator to Director of BLM. Man witnessed inhumane treatment of study horses.

See Exhibit 11, page 5. Surgery performed on horses by individuals who were not veterinarians. Radial nerve damage done to two horses; one horse died from surgery; vasectomized wrong horse.

See Exhibit 12, page 2. Large number of horses losing implants due to large infections at the site of implant. Infections can be caused by lack of proper veterinary care of surgical site. Page 7 - more loss of implants causing pain and suffering to the animals.

See Exhibit 13, page 2 - 30% of horses losing implants which causes pain and suffering. Page 6 - Horse dead from ruptured bowl caused by improper implant in peritoneal cavity; also horses dead from handling.

See Exhibit 14, page 2 - Collars too tight or too loose from improper (negligent) fitting. Maggot infestations. Page 3 - Lack of pregnant mares in study MORE likely caused by stress induced abortions from observation flights, darting for collar adjustments, and captures rather than the implants working.

See Exhibit 15, page 10 - More injuries due to improper fit of collars.

5) Violation of CFR 4770.1(f) - Treating a wild horse or burro inhumanely; The CFRs definition of "inhumane" is "any intentional or negligent action or failure to act that causes stress, injury, or undue suffering to a wild horse or burro and is not compatible with animal husbandry practices accepted in the veterinary community."

See Exhibit 1, page 1. Unacceptable for individuals other than veterinarians to perform surgery. Page 3 - running horses three to four times the accepted or allowed distance. Page 4 - death loss to research unacceptable.

See Exhibit 8, page 2. Witness to inhumane treatment.

See Exhibit 9, pages 6 & 7. Documentation of distance limitation exceeded. Page 12 - Veterinarian's cause of death. Page 14, Item 7 - Admission of negligence.

Debra Jeppson
December 20, 1989
Page 4

See Exhibit 11, pages 1 & 2. Implants causing abscesses which rupture and expell the implant at great pain and suffering to the animals. Page 6 - Horse run too far, horse injured during surgery.

See Exhibit 12, page 2 - 53 horses lost implants (abscesses)

See Exhibit 13, page 6 - Horse died from procedure, horses lost in Lovelock due to negligence, one died of ruptured bowel due to improper veterinary procedure. Page 12 - more dead study horses.

See Exhibit 14, page 2 - Collars too tight and too loose causing injuries.

See Exhibit 15, page 12 - Summary of flights to fix collar problems in October 1988. Page 17, Table showing dead horses and those horses removed from study due to collar problems.

See Exhibit 16 in it's entirety. This is the draft of a letter from a BLM employee to the State Office of BLM recommending an end to the study due to the stress on the horses and the high foal loss. I will have the final shortly.

6) Violation of CFR 4770.1 (j) "Violating an order, term, or condition established by the authorized officer under this part." It is my lay opinion that only what was specified in the research contract would be permitted, so abrogating the research contract would constitute a violation of this regulation. The "authorized officer" for the research was located in Washington, D.C. The BLM personnel that permitted U of M to gather horses from a non-research herd area had no authority except to prevent violations of the Wild Horse and Burro Act and the CFRs.

7) "Violation of NRS 504.490 (3) - "Our" statutes begin by stating, "Any person, NOT AUTHORIZED to do so, who:" It is my lay opinion that whatever was authorized in the contract would be compatible with state law. It appears as though as soon as the individuals involved abrogated the research contract, they were in violation of state wild horses laws, too. It is interesting to note two things here:

1) The wild horse and Burro Act only authorizes research into wild horse habits. The Act does authorize the formation of an Advisory Board which may advise the Secretaries of the Departments of Agriculture and Interior on any matter relating to wild horses and burros, their management and protection.

It appears as though the research was authorized through an Appropriations Act on the advice of the National Academy of Sciences Subcommittee on Wild Horse and Burro Research. The Wild Horse and Burro Advisory Board may have recommended research into fertility control.



United States Department of the Interior



BUREAU OF LAND MANAGEMENT
ELKO DISTRICT OFFICE
3900 E. IDAHO STREET
P.O. BOX 831
ELKO, NEVADA 89801
GOVERNMENT MEMORANDUM

IN REPLY REFER TO:
4700 (NV-014)

To: State Director, Nevada (NV-910)
Chief Division of Wild Horses and Burros (WO-250)
Contracting Officer for the University of Minnesota Research
Contract (WO 852)

From: Les Sweeney, Contracting Officer's Representative

Subject: Recommendation to Terminate the U of M Research Contract on
Fertility Control in Wild Horses

Bureau Policy prohibits the gathering of horses by helicopter during the months of March, April, May or June because of the impacts on foals from helicopter gathering operations. The reasoning for this foaling season "shutdown" is that young foals that can't keep up have been lost, mares will frequently abandon the foals and refuse to claim them even if the colts do make it to the trap site, and mares have also aborted at the trap site.

Horses are different from many other animals in the way they care for their young and it's this difference that makes it so critical to assure that they are handled properly. For example, deer, antelope, and cows will hide their young and go off to forage or drink and always come back. The mother will always come back to their young even if driven off, whereas in horses the foal must stay with the mare from birth or the colt has little chance of survival.

Mares with foals are always a part of a band controlled by a lead mare and dominant stallion. The lead or dominant mare determines the direction in which a band will move providing the dominant stallion approves. If he doesn't, he determines the direction. Other mares in the band are not allowed to leave the band and must follow the direction set by the lead mare. If a colt is left behind its only chance of being reunited with its mother is if:

1. The colt belongs to the lead mare and she is allowed to take the band back.
2. The lead mare takes the band back to the area at random, which they normally do if the area is within their home range. However, it is usually several days to weeks later and too late for the colt.
3. The band is turned back with the helicopter providing they see the colt fall behind (this cannot always be done and is almost impossible in most portions of the Clan Alpines).
4. Or occasionally a mare will hang back and wait for her colt, if the pressure from the helicopter isn't too great.

At this time, the field portion of the research actively being conducted by the University of Minnesota in the Stone Cabin Herd Area and the Clan Alpine Herd Area consists of the use of a helicopter to locate bands of wild horses with collars and flying close to the band in order to identify each collared animal to determine which study mares have foaled. This activity causes the disruption of every horse in the herd area during the period of the flights.

This monitoring of collared horses is causing stress in the herd. All horses, collared and uncollared, that have been subject to monitoring (which requires getting the helicopter down close enough to read collar numbers) begin to run as soon as they hear a helicopter and continue to run for some time after the helicopter passes out of the area. As a result of this monitoring, the horses are moving outside their normal home ranges and herd area into other herd areas or into non-herd areas and on to Forest Service lands. Many of the foals are newborn during this time of the year in which the University conducts repeated flights, (April through June) and an undetermined number are left behind to become orphaned. Those that are too young to keep up with the older horses when running from the helicopter are also too young to survive on their own. In the Stone Cabin Area the problem is somewhat less than in the Clan Alpines, because of the mostly open country and the young colts can keep the band in sight for a longer period of time and its easier for the mares to keep track of their colts. However, in the Clan Alpines the terrain is broken and tree-covered and very young foals can be lost from sight of the band within a few hundred yards. Once out of sight the mares have a tendency to forget their foals. The rugged, tree-covered terrain also makes it much more difficult for the mares to find their colts if they do come back. At the time of year observations (monitorings) are made, April, May and June, the colts are at the most vulnerable stage (new born to a few weeks old or unborn).

The stress from collar monitoring is as impacting as from gathering or more so since collar monitoring entails the disturbance of the herd on four separate occasions and during the most critical period, April through June. The distance these animals are running, even when not directly pursued, is causing the same problems as encountered during gathering operations.

Impacts To Animals in the Herd

The types of stress put on the herd from research monitoring is far from normal. The stress and impacts to a herd from this activity includes:

1. Loss of young foals. After the monitoring flights began the horses have become so stirred up and flighty that a mare will seldom leave the band to wait for her foal.
2. Disruption of the natural homogenous/family structure of the bands. In many cases the total continuity of the band is lost.
3. Turmoil in rearranging bands during breeding and foaling season. This also may be contributing to the loss of foals.

4. Moving horses outside the herd areas which has other ramifications, such as causing them to be removed.
5. Causing abortions.

Darting/immobilizing of horses to treat severe neck injuries and remove collars has further aggravated the problems. This kind of disruption to a herd raises the question as to how many other, yet to be identified, impacts the herd is experiencing.

Impacts on the Research

Many of the research animals have died or have been lost to the study from one cause or another. For example in Stone Cabin approximately 30 out of 100 implanted mares, in the healthiest most durable age group, were lost from the study and in Clan Alpine, 48 of the control animals were lost at one time before the study got underway. Many have lost their collars and many of the numbers on the collars are no longer legible; taking out of the research project a significant number of animals. The natural habitats of the animals are put in total disarray potentially affecting the breeding behavior and conception rates. The loss of young is unknown in terms of exact numbers but may be significant to the research results. There are impacts from injuries caused by collars that were too tight. The severity of the injuries may be affecting cycling or other natural behavior.

Other Impacts

The military is becoming even more uncooperative in providing windows in their training schedule to allow for safe aircraft operations in both the Stone Cabin Area and Clan Alpines.

Since none of the mares with hormone implants were identified with markings other than a collar, the loss of collars has made it impossible to track and/or identify those mares. However remote, the possibility now exists for a mare with hormone implants to surface in the human or pet food chain. This is the reason we are freeze marking all mares with hormone implants. During gathering operations they will be returned to the herd area.

In conclusion, the research activities 1) are separating foals from their mothers, and 2) have caused loss of sample animals. The problem is particularly of concern in the Clan Alpine area where we may be losing 3 to 6 foals per flight.

The Stone Cabin portion of the study was extended one year and doesn't appear, in my opinion, to warrant this extension when weighed against the loss of young foals and injury (and/or death) from collars. One more years information can't provide a significant amount of additional information especially when tainted by loss of adults and foals, abortions and fetus absorptions, and other unnatural impacts.

Military cooperation to allow flights to be safely and effectively scheduled in these two areas is practically nonexistent.

I therefore highly recommend the Stone Cabin portion research activity be discontinued and the collars removed.

I also recommend the Clan Alpine study be discontinued and the collars removed or at the very least an evaluation made as to the impacts of foal loss to the research results and the justification of the loss of such a large number of foals.

U of M should be notified of the gathering to remove the collars, so that they have the opportunity to draw blood samples and make other observations while the animals are restrained for freeze marking and collar removal.

17771

Project Inspection Log (Stone Cabin)

3/1/89

On February 28, 1989, I received notification from Tom Eagle as to the 1989 monitoring flight schedule. The Stone Cabin flights are tentatively scheduled for April 17-18, May 1-2, May 15-16, and May 30-31. Tom will call April 10th to confirm the dates.

Since the last monitoring flights of October 17-18, there have been no reported problems with collared horses. It was a colder than normal winter with an abundance of moisture. The 1989 growing season should be normal with potential for above normal forage production

Project Inspection Log (Stone Cabin)

4/17/89

Conducted monitoring flights with Tom Eagle of U of Minn. We surveyed the majority of the Stone Cabin HMA. In general, the horses are in fair to good physical condition despite the current drought. The horses are not as "fat" as last year. We had good success in keeping the new foals and mares together. We did have one mishap. A young grey foal was separated from the band. The U of M helicopter herded the band back to where the foal was left. I do not know if the horses paired-up again. I'll check during the next monitoring flight. We treated 3 horses for collar problems.

1. Stud, bay collar f171, 20 years old as of 8/86. The collar had pulled up over his ears. There were no cuts or apparent injury. We removed the collar. The horse was in fair physical condition with his ribs showing. This could be attributable to his age and the drought.
2. Stud, bay collar f187, 3 years old as of 8/86. The collar was tight on the neck. There were cuts under the neck with some infection. We removed the collar and treated the wounds with nitrophenol. The horse was in good physical condition.
3. Mare, sorrel collar f886, 4 years old as of 8/86. The collar was tight under the neck with very deep cuts. There was infection around the wound. We removed the collar and treated the wound with nitrophenol. The horse was in good physical condition.

Tom expressed that he wanted to stop removing collars up over the ears. I said no, that he would remove any collar that was tight or over the head. Tom was short of parts for the darts (plungers). I told him that I would provide them if needed for the 4/18 flight.

(H)

Project Inspection Log (Stone Cabin)

4/19/89

Completed first set of monitoring flights with U of M. We found the majority fo the remaining radio collars using the radio receiver. We found one dead mare with a radio collar f851. Carcass was fresh (1 to 1 1/2 weeks). There was no apparent cause of death and no obvious neck injuries. We removed the collar. We had no problems with foals and we cut the flight short to avoid disturbing the foals any more than necessary.

Project Inspection Log (Stone Cabin)

5/2/89

Completed second series of monitoring flights with the U of M. We observed a majority of the radio collars. We did not find any collar problems. We had one mishap with the possible separation of a foal from its mare. The U of M helicopter herded the band back to where the foal was.

A white/grey foal was separated in the same general area last set of flights (4/17-18/89). We could not find the foal in the band it had been separated from. It is presumed dead. I will continue to search for it and the other foal we separated in the future flights.

There were no collar or horse health problems observed.

Project Inspection Log (Stone Cabin)

5/3/89

The U of M helicopter developed mechanical problems which grounded the flights.

Project Inspection Log (Stone Cabin)

5/4/89

We completed the second series of monitoring flights for the U of M. We were able to observe all but 1 of the radio collared horses. There were no collar or health problems noted on the observed horses.

We had one incident where a lone foal was observed on top of Bald Mtn. We did not observe the separation of the foal from its band. We are not sure if it was our activities which caused the foal to be separated. Although the foal was alone, there were other bands in the general area.

Project Inspection Log (Stone Cabin)

5/16/89

Completed third series of monitoring flights with the U of M. We were able to observe the majority of the radio collared horses. We did not see several radio collared horses presumed to be in the south half of the valley due to closure of the MOA by the military which restricted our flight. Recent rains have dispersed the herd and band sizes are down to 6-10 animals. The horses I observed are in good condition.

As in the previous flights, we had a problem with separating a foal from its mare. We were able to herd the band back to the foal and there is a good probability of reuniting the foal with the band. During the 4/17-18/89 flight, we separated a white foal from its band. I observed the foal back in the band during the most recent flight.

We found a dead radio collared mare. Her location in rough terrain precluded our landing. All that remained was the bones and some mummified flesh. As I could not get to the carcass, I could not determine the cause of death.

We removed the collar off a stallion. The collar had slipped up over the ears. There were no cuts or hair loss. The horse was in good physical condition.

I conducted a census to estimate foaling rates for the Stone Cabin herd. My approximation is a 9% (nine) foal crop. Last years census (5.23.88) showed a 10% foal crop.

Project Inspection Log (Stone Cabin)

11/1/89

Completed fall 1989 monitoring flight. We were able to only observe about 2/3 of the radio collared mares due to Air Force closure of the Reveille MOA airspace in the south half of the Stone Cabin Valley. This was the second monitoring in 1989 to be restricted due to Air Force closures of an airspace.

We found one dead radio collared mare (f864). Inspection of the carcass indicated no apparent cause of death. We found several implants in the body cavity. The mare was seven years old when collared in 8/86.

We darted and treated one collared mare. The mare was NOT radio collared.

Collar Number: 152. Sorrel mare with star, 3 years old as of 8/86.

Location: Six miles Northeast of Stone Cabin Ranch.

The mare had deep cuts under the neck. The wounds were badly infected and gave off a foul odor. No fly infestations were observed. The collar was removed and the wounds treated with nitrophenol. The mare was in good physical condition.

Other BLM employees in Stone Cabin Valley at the time of our survey reported that the horse continued to run and appear disrupted even after the helicopters had moved to another area. I did not observe any small foals and there did not appear to be a problem with foals being separated from their mares.

Project Inspection Log (Clan Alpine)

4/19/89

Wassuk HMA--Observed 162 adults and 35 very young foals. Generally the horses did not appear to abandon the young foals, many of which ranged in age between 1-14 days. However, one foal did drop behind its mare in a wooded canyon resulting in a very real chance that it was abandoned. One horse was observed with a collar over it's ears. Tom Eagle (University of Minn.) advised me that he only had 8 doses of M-99 and that it would be best to wait until May to remove the collar because he felt that horses in the Clan Alpine HMA may be in worse condition. Later that week Mike Phillips and Tim Beuswant advised me that in the past they had problems with University of Minn. not bringing a sufficient quantity of M-99 and they were led to believe that such a problem would not occur again.

Other than the above incidents, there were no other problems encountered.

Project Inspection Log (Clan Alpine)

4/20/89

Clan Alpine--One foal was observed to drop behind its mare, an attempt was made to run back the mare, however, the foal was never relocated. There is a reasonable chance that it never reunited with its mare.

A mare and stud were observed standing near a young foal trapped in a ditch. The foal was removed from the ditch by the University of Minnesota representative on site. Seventeen minutes of helicopter time was spent attempting to turn the mare back toward the foal. This effort was not successful because the stud would not let the mare turn back toward the foal. An unsuccessful attempt was made to separate the mare from the stud.

It was not clear whether the foal became entrapped earlier in the day when we flew over the area or found its way in before we started flying. On the way back to Fallon, the foal was still alone with no sign of its mare or other horses. Tom Eagle then captured the foal and we placed it with a qualified adopter.

In the Dixie Valley Area the horses appear to run when they first hear a helicopter and their dust clouds can be observed from several miles away. I am concerned that young foals may be left behind before we are able to identify them. Because of their small size, young foals are very difficult to locate once they are separated from adult horses. These horses also appear to run for some time after the helicopters have left the area. Although I have no way of verifying the abandoning of foals on the flat valley, I feel that it may be occurring. However, the flat terrain does afford good visibility for long distances. Although, I am not convinced that this is sufficient to insure that foals are not permanently separated from their mares.

Project Inspection Log (Clan Alpine)

4/21/89

Because of adverse winds, only 3-4 hours were spent reading collars. No problems were encountered.

Project Inspection Log (Clan Alpine)

4/22/89

Clan Alpine--A stud in a large band of mares with radio collars was observed with a collar over his ears. Because of several very young foals in the band and since the collar was not posing an immediate risk to the stud, it was decided to remove the collar during a later flight when the foals are larger.

Other than horses running in Dixie Valley (described 4/20/89 report) no other problems were encountered.

Due to the experimental design of this study it appears inevitable that a certain number of foals will be permanently separated from their mare. This number would probably be reduced if the flats in Dixie Valley were not flown until the foals were older.

Project Inspection (Clan Alpine)

4/23/89

Clan Alpine--No problems were encountered. In 4 days in the Clan Alpine, 122 of 130 radio collars were located.

Project Inspection Log (Clan Alpine)

5/5/89

Two horses were observed with collars over their ears. One horse was darted and the collar removed. The skin was unbroken and the collar did not appear to be causing an immediate problem.

Near the end of the day a second horse was observed with a collar over it's ears. A dart was fired, however, it bounced out before injecting the M-99. Both helicopters were low on fuel. By the time a second dart was loaded, both pilots felt that we did not have sufficient fuel to dart the horse. The horse was a stud running with several radio tagged mares.

After refueling, both pilots were tired and the winds were picking up so we decided to relocate the mares the next day. The next day the mares were relocated. However, we could not find the stud. He either left the band of mares or the collar slipped back into a proper position.

Project Inspection Log (Clan Alpine)
5/6/89

A stud in a band of mares with young foals was observed with a collar over his ears. He was in very steep terrain and it was felt that if he was darted in the area, he may fall and injure himself. The very young foals precluded any attempt to drive the horses to suitable terrain.

Project Inspection Log (Clan Alpine)
5/7/89

The foals are better able to keep up with the mares and mares appear to be running less. During the three days of observation, there did not appear to be a problem with foals being separated from their mares.

Project Inspection Log (Clan Alpine)
5/19/89

Clan Alpine HMA--There did not appear to be any problems.

Project Inspection Log (Clan Alpine)
5/20/89

Clan Alpine HMA-Dee Crowe (fuel truck driver) saw a foal less than 1 week old trying to get close to a cow. Dee said that the cow would chase the foal when it approached closely. Dee did not see any other horses in the area. We flew over this same area on May 19, 1989. We tried to locate the foal from the air. However, we were unsuccessful. After we had finished, I drove back out to the area and scanned the terrain with binoculars and a spotting scope which also were not productive. If the foal was laying down near a bush, I probably would not have been able to identify it. Other than the above foal and the large numbers (100) horses running as soon as they hear a helicopter

in the Antelope Valley, there were no other apparent problems. In both Antelope and Dixie Valleys, the horses run as soon as they hear a helicopter and although I have not seen any foals permanently separated in the above areas, they may be separated before we are close enough to identify them. Or may become separated after we leave because these horses continue to run.

Project Inspection Log (Clan Alpine)
5/21/89

Clan Alpine HMA--Two horses were observed with collars over their ears. Both horses were observed earlier in the spring with the collars over their ears. However, because of winds, terrain and young foals, were not darted in the past. When the collars were removed, both horses had open wounds on their necks. The second horse had furisan sprayed on its neck before I arrived.

Other than the collars, there did not appear to be any problems.

Project Inspection Log (Clan Alpine)
5/22/89

Floyd More, BLM employee, saw a dead foal (Monday, May 22, 1989) a week old had died recently along the road to McCoy Mine in the Clan Alpine HMA. This area was flown May 19-20, 1989. This foal could not have been the same one that Dee Crone saw.

Project Inspection Log (Clan Alpine)
5/22/89

There were lots of very young foals. One foal was separated from its mare, the band was returned to the area where the foal was last seen. However, the foal has never been sighted again.

One collar was observed over the ears of a stallion. The stallion was put down and the collar removed without incident. Due to strong winds, only the northern part of the HMA was flown.

Project Inspection Log (Clan Alpine)
5/30/89

Wassuks: 2 collars were left over the ears of 2 black studs because each stud was in a band with small foals in steep terrain. Which would require herding for over a mile to reach suitable terrain to dart. No other problems were encountered.

Project Inspection Log (Clan Alpine)
5/31/89

Clan Alpine: Removed a radio collar from an implanted mare. The collar was digging in--wound looked bad. No other problems were encountered.

Project Inspection Log (Clan Alpine)
6/3/89

Clan Alpine: Many young foals in Antelope Valley had difficulty keeping up with mares. At 1300 hrs., U of Minn. helicopter 13 broke. End of work. Except for young foals, no other problems.

Project Inspection Log (Clan Alpine)
6/4/89

Clan Alpine: Treated mare f304's radio collar was found. The collar apparently tore off of her neck. How do we ID. her in the future?

Other than the loss of treated mares collar, no other problems were observed.

Summary of U of M monitoring for the Spring of 1989:

Five collars were removed from horses in the Clan Alpines and Wassuks. Four were removed because they were over the ears and one removed because it was digging into the neck. The collar that was digging into the neck caused serious but, in my opinion, not life-threatening damage to the neck. The would smelled quite bad from a distance of 20 feet, which was caused by infection. Tom Eagle (U of M) sprinkled furisan on the neck. Of the four collars that were removed because they were over the ears, two had cut into the neck; however, their wounds were relatively minor.

Because of low fuel in both capture and observation helicopters, one horse was left with a collar over his neck in the Clan Alpines. This collar was not a radio collar, however, the stud was with two mares that had radio collars. The next day the two mares with radio collars were located, however, the stud was not with them. A stud with similar characteristics was not seen again with a collar over his ears. Two possibilities exist: (1) the collar slipped back into a proper position, (2) the stud was never encountered again. Two horses were left in the Wassuks with collars over their ears. These horses were in very steep, rugged terrain; darting them in the area would have jeopardized their lives. Young foals in the band would have been in jeopardy if an attempt to herd the horses to safe terrain was made (see PI reports for more details). During the Fall these horses will be searched for in order to remove the collars.

In my opinion, at least five foals were likely permanently separated from their mares by the disturbance caused by reading collars from the air. At the time of year (Spring), most foals (including the five mentioned above) would die if permanently separated from their mares. I believe that the number of foals permanently separated from their mares is greater than the five I feel were separated, because many of the horses continue to run after the helicopters have left the area.

Collar 304 was found. Apparently it had fallen off of the mare which was a treated mare and can no longer be identified. We (Lahontan Area Manager, Mike Phillips and myself) would like a statement as to the long-term effect on the adoptability of these animals. The problem, as we see it, is that there are approximately 100 implanted mares in the Clan Alpines, Augusta, New Pass/Ravenswood and Desatoya HMAs. All implanted mares were released in the Clan Alpine HMA, however, some have moved into the other HMAs. At the present time, at least one mare can no longer be identified due to a loss of her collar. These animals have the potential for remaining alive for the next 25 years.

It is unrealistic to assume that a significant number of mares will not lose their collars before they die. Therefore the Bureau needs to develop a strategy as to how we should proceed with adoption of the mares since we have not been able to get a firm statement as to how long these animals may pose a hazard if they were to enter the human food chain (although an unlikely event). The number of animals in the affected area is approximately 5000.

Project Inspection Log (Clan Alpine)

11/3/89

Wassuks: one collar was observed over the ears of a horse. This collar was removed without incident. No other problems were observed. This was in part due to only 2 small foals observed during the flight. All other foals observed were large enough to keep up with their mares.

There was a problem in obtaining a observation helicopter (BLM), which did delay the start of the flight for approximately 3 hours. Approximately 4 weeks prior to this flight, Andy Anderson (Carson City Aviation Coordinator) had made arrangements through the state office to have a bell solely from high Desert Helicopters available for this flight. Evidently the the State Office had directed this helicopter to a different district.

I spoke with Roger Bryan from Battle Mountain District one week prior to our flight and he advised me that a Bell Jet Ranger has scheduled to follow the Vat Mine in Tonopah and that it would follow Vat Minn up to Fallon for the flight scheduled on 3 Nov 89. On Wednesday (1 Nov 89), I spoke with someone from Tonopah about the possibility of moving the Carson City flights forward one day. Because of prior commitments on my part and scheduling problems with the Navy, this was not possible. On Friday morning, Cliff Heavein of High Desert Helicopters advised me that someone had sent the helicopter from Elko back to Elko from Tonopah; fortunately, the State Office was able to obtain a helicopter from Sacramento, California on Friday morning.

Project Inspection Log (Clan Alpine)

4 Nov 89

Tom Eagle inspected the collared horses in the Clan Alpine HMA. No collars were observed to be causing problems for the horses. No young foals were observed. All foals observed were large enough to keep up with their mares.

Project Inspection Log (Clan Alpine)

5 Nov 89

Tom Eagle inspected the collared horses in the Clan Alpine HMA. No collars were observed to be causing problems for the horses. No young foals were observed. All foals were large enough to keep up with their mares.

Tom Eagle expressed concern about the possibility that the Navy may not let BLM fly at times during the Spring when the University of Minnesota wants to. There is generally no problem obtaining clearance from the Navy on weekends, however, it is getting increasingly difficult to obtain clearance during the week. It generally takes 3-4 days in the Spring for Tom Eagle to gather all the data in the Clan Alpines.

The restricted areas covering the Clan Alpines restrict aircraft to 500-AGL and below, the Navy jets to 1500-AGL and above. However, it is not uncommon for the Navy jets to violate their floor and come down to several hundred feet AGL. Therefore, the BLM has agreed to only fly within these restricted areas when the Navy says that it is safe to do so.

PROGRESS REPORT TO:

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

CONTRACT NUMBER USDI-AA852-CT5-29

FERTILITY CONTROL IN WILD HORSES

Donald B. Siniff
John R. Tester
Thomas C. Eagle
Robert A. Garrott

Department of Ecology and Behavioral Biology
University of Minnesota
Minneapolis, Minnesota 55455

Edward D. Plotka
Marshfield Medical Foundation
Marshfield, Wisconsin 54449

30 September 1989

(5)

INTRODUCTION

On 1 October 1985, we began our study of fertility control in wild horses under BLM Contract Number USDI-AA852-CT5-29. We began our work by development and efficacy testing of a long term contraceptive utilizing captive mares in BLM holding facilities at Lovelock, Nevada. Field studies of the effective contraceptive were then initiated using free-ranging horses at five field sites in Nevada and Oregon. To provide insight into application of fertility control to horse populations, we then began studies on population dynamics and modeling.

1.0 CAPTIVE MARE STUDIES

The primary objective of this portion of the project was to develop an effective, safe, and cost efficient method of controlling fertility in free-ranging wild horses for a period of greater than two years. Captive mare studies were started 1 October 1985 with the results of these experiments summarized in the 30 September 1988 Progress Report. These studies were successful in developing hormone implants which are economical, safe, and effective for at least 3 years. Soon after these studies had been concluded the experimental horses were moved from Lovelock, Nevada to the holding facility in Bloomfield, Nebraska. Attempts were made with BLM to establish a protocol which would allow us to continue monitoring these animals in order to determine if implant efficacy extended beyond 3 years. However, no data were obtained. In late summer 1989 the

remaining experimental mares were moved from the Bloomfield, Nebraska facility to a sanctuary in Oklahoma.

2.0 FIELD STUDIES

The objective of our field study is to test the contraceptive devices developed in the studies of captive mares on free-ranging mares in a number of herd areas. Field efforts in 1989 included monitoring mares at Stone Cabin Valley, Wassuk Mountains, and Clan Alpine Mountains. Four flights to count horses and assign foals were conducted between mid-April and early June, 1989, in each of the three study areas. Collars were examined and were removed when necessary.

Overall, foaling rate among treated mares was 86% lower than that for control mares. When the two different treatments are examined for each study area (Table 1), foaling rate varies between 3% and 16% and 95% confidence intervals appear wide. However, pooling similar treatments over all study areas (Table 2) illustrates that both treatments are effective in controlling reproduction in feral mares.

Nine collars were removed from horses because they were tight and causing some irritation or had slipped over the ears. Six of the collars removed had slipped over the ears, and only two of these indicated any injury to the skin of the horses wearing them. Of the three collars that had become tight, two were on treated mares, and one was on a young stallion. All of these collars were removed, and the tails of the treated mares were bobbed for future identification.

3.0 POPULATION DYNAMICS AND MODELING STUDIES

One objective was to investigate various demographic aspects of the feral horse populations occupying western rangelands by consolidating data routinely collected by BLM personnel for management purposes. Data bases were built which included records on 60,117 horses removed from rangelands and placed in the Adopt-A-Horse Program and data from 887 aerial censuses. These two data bases represent information collected from 103 individual horse management areas in Nevada, Oregon, Wyoming, Idaho, and Montana. Analysis of these data are complete and a number of scientific papers are currently being written. These investigations indicate that feral horse populations experience very high survival and reproduction which results in annual growth rates of 15-25%. It appears that feral horse populations are currently being maintained at levels below which density dependent mechanisms operate and are, therefore, increasing at or near their biological maximum.

To investigate the utility of using the contraceptive techniques developed by this research project, a population model was constructed using data from the demographic studies. The population was then subjected to three management scenarios, (1) a program of non-selective removals (BLM's current program), (2) a contraceptive program, and (3) a program of periodically removing young horses (the most adoptable) combined with the use of contraceptives. The simulations indicate that the contraceptive devices developed can control population growth and are, based on the data we currently have, more economical than

the current non-selective removal program. We are awaiting additional information on residence time, in BLM facilities, for captive horses.

Table 1. Foaling rates of treated and control mares, 1989.

Area/treatment	No. mares	No. foals	Foaling rate	95% CI
Clan Alpines				
EE	45	4	.09	.01-.17
PP+EE	50	3	.06	.00-.12
Control	31	14	.45	.27-.63
Stone Cabin				
EE	35	1	.03	.00-.09
PP+EE	37	6	.16	.04-.28
Wassuks				
Control	30	21	.70	.53-.86

Table 2. Pooled foaling rates for treatment and control mares, 1988 and 1989.

Treatment	No. mares	No. foals	Foaling rate	95% CI
1988				
EE	45	5	.11	.02-.20
PP+EE	43	3	.07	.00-.15
Control(a)	161	79	.49	.41-.57
1989				
EE	80	5	.06	.01-.11
PP+EE	87	9	.10	.04-.16
Control	61	35	.57	.45-.69

(a) Treated mares in Clan Alpines were included with controls in 1988 because treatments were not effective until 1989.



United States Department of the Interior

BUREAU OF LAND MANAGEMENT
WASHINGTON, D.C. 20240

IN REPLY REFER TO:
1510 (852)

OCT 26 1989

Dr. Donald B. Siniff
Department of Ecology and
Behavioral Biology
University of Minnesota
Minneapolis, Minnesota 55455

Dear Dr. Siniff:

This is to follow-up our conversation of October 24, 1989, about biopsies of implanted mares.

We have several questions about the proposed biopsies. They are:

1. Since this is an invasive procedure, is there a significant need to take biopsies, and if so, what is it?
2. What would be the methodology of taking the samples, and what would be the costs involved?
3. Since the biopsies will not be taken in the fall flights, what is the feasibility of taking samples from either the study mares at the Oklahoma sanctuary, or during the spring monitoring flights? What would be the costs associated with either of these?

Please call me at (202) 343-4843, if you have any questions about this letter.

Sincerely,

for *Sandra Berger*
Linda J. DeRamus
Contracting Officer

cc: WO-250, John Boyles
Elko DO, Les Sweeney
852rf

aspf/asrf/pending
852:LDeRamus:ss:10/26/89:x4843:ID #245K

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*File
7-11-89*

BUREAU OF LAND MANAGEMENT
CARSON CITY DIST OFFICE

JUL 10 3 44 PM '89

28 June 1989

To: Linda DeRamus, Contracting officer
From: Tom Eagle, Associate Scientist

Summary of Spring 1989 flights to assess foaling rates

We flew four sets of flights over each study area between mid-April and early June 1989. Three treated mares died over the winter and were located and examined. Only one radio-tagged animal, a control mare in the Wassuk Mountains, was not located even after repeated attempts to find her. She has left the study area or the radio-transmitter has ceased functioning. All other radio-tagged mares were located and examined.

Foaling rates among the control and treatment mares were as follows:

Clan Alpines	Controls-45%, Treatments-7%
Stone Cabin	Treatments-9%
Wassuks	Controls-70%

We removed collars from horses in each study area due to tightness or having slipped over the ears. In the Clan Alpine Mountains we removed three collars that had slipped over the ears and attempted to remove a fourth. The dart bounced out of the fourth horse when I tried to dart it on 5 May, and due to low fuel in the observation helicopter, we stopped to refuel before trying to dart it again. The horse was no longer running with the radio-tagged mare we saw on our first attempt to dart it, and we did not resight him for the duration of that flight or on the subsequent two flights. Perhaps we did see him again with the collar having slipped back over his neck like we have documented in several instances. Of the three collars removed two had caused minor cuts to the jaws of the horses; the other had no injury.

*Thin, how are
Shiny affect
the study*

One collar had become too tight on a treated mare in the Clan Alpines, and it was removed. Her tail was bobbed for future identification.

In the Wassuk Mountains a collar that had slipped over the ears was removed. The collar had caused no visible injury to the horse.

In the Stone Cabin area two collars that had slipped over the ears were removed, and neither horse showed any injury from the collars. One marker collar and one radio collar were tight and were removed. The radio collar was removed from a treated mare, and her tail was bobbed for future identification.

①

Study animals, particularly among the treated mares, generally appeared in good physical condition, having gained weight from generally fair to poor condition when they were initially

handled. Therefore, problems with large numbers of collars should not be anticipated in the future.

Considering that only minor injury to only a portion of the horses with collars slipped over the ears has been noted and that darting horses risks death or severe injury to both horses and personnel, it seems that the policy of removing all collars that have slipped over the ears of horses should be re-evaluated. We are, however, continuing to remove all of these collars as specified in the contract and as directed by the Project Inspectors.

Sample sizes in each study area have diminished since initial handling due to deaths of study animals or loss or removal of collars. Sample sizes during the spring counts were as follows:

Clan Alpines	Controls-31, Treatments-95
Stone Cabin	Treatments-75
Wassuks	Controls-30.

During the spring flights John Axtel announced that he had been appointed Project Inspector. The Principal Investigators of the research, at the University of Minnesota and at Marshfield Medical Research Foundation, have not been officially notified of that change in BLM personnel involved in the study. I have not sent a copy of this report to Les Sweeney because no research personnel have been given his address.

cc: Fred Wagner
Don Siniff
Ed Plotka
John Axtel
Tom Fogacnik

University of Minnesota Research-Dr. Fred Wagner
August 18, 1988
Presented by Wild Horse Organized Assistance
Dawn Y. Lappin

My name is Dawn Y. Lappin, Director for WHOA. WHOA and the general public are appalled by the lack of planning, communication, supervision, and caution regarding the University of Minnesota Mare Fertility Research. In a letter to the Bureau of Land Management (hereafter the BLM) the University of Minnesota Associate Scientist (herein referred to as scientist), implied the BLM, in its' preliminary investigation, attempted to lay the blame solely on the University for the deaths of 48 wild horses in the Clan Alpine Herd Management Area (hereafter referred to as the Clan Alpine HMA). Clearly he is upset that any information ertaining to the deaths will reach the eyes and ears of the public and animal welfare groups, as he states that large sections of the text of the investigative report be deleted and only anaylized by unbiased referees. He also must assume those same people would attribute fault soley on the University. Let me assure the scientist, you, and the BLM, that the federal agencies have not and will not escape the same scrutiny that is being given the University of Minnesota. The very fact that reports, draft or final, or the subsequent investigations which elicited more inconsistentices, even made the light of day speaks for the continued pressure on the agency to acknowledge and correct their portion of the blame and rectify the possibility of reoccurences.

Having addressed that issue I will proceed to address the purpose of the invitation herd today, my opinion of the Univesity of Minnesota Research. While several individuals reoccur frequently in the text, it is because it is those people who were in the field at the time of the instances; however, I consider the University of Minnesota and the chief proponents of the proposal to be equally responsible due to the lack of supervision of field personnel. The University of Minnesota proposal 1985 (hereafter referred to as the 1985 proposal) indicates the research team would be comprised of Drs. Sinoff, Testor and Plotka. Although Dr. Plotka was to supervise the implantation of fertility control devices in the mares in the field, his name is noticeably absent as to being present during the capture, and field surgery of the Augusta Mountain mares in the Clan Alpine HMA. Nor is Drs. Sinoff or Testor mentioned, whom supposedly carried out all aspects of the field studies on those particular mares. We assume L. Kuecle, although he isn't mentioned, played some role in the fitting of the tight collars, since some of them contained telemetry devices. Confident of the ability of Dr. Peck to perform surgery, we do question whether the laws of the State of Nevada allow for the abrogation of this surgery to another.

The deaths of 48 horses in the Clan Alpine HMA resulted in an investigation, both from BLM, as well as from numerous others. WHOA objected strenuously to the inclusion of the researcher and

8

Page two

the BLM employee being made a part of the investigating team, investigating themselves, both of which had altered research parameters and captured horses outside the Clan Alpine HMA. The BLM employee, reacting to pressure from the subcontractor about the difficulty (which has been a continuous problem), left the Clan Alpine HMA and evaluated horses in the Augusta Mountain HMA. Supposedly he spotted 3-5 collared horses in the Augusta that could have only been collared in Clan Alpine, at the Hole-in-the-Wall Spring. From that evidence he concluded the two populations moved back and forth. Furthermore he alleges 4 gaps in the fence separating the two herd areas, with wellmarked trails. However, investigations not only by BLM, but others as well ascertained there were no gaps in the fence, as alleged, and no repairs had been made in the otherwise continuous fence. The ONLY area where wild horses could have migrated was at the end of the fence, and I repeat could have, not did. If indeed those horses constantly went around that fence to migrate then wouldn't those same horses brought from the Augustas once again go around the end of the fence to the habitat and waters they would have known would be there? The investigations clearly shows the BLM employee lied in the investigative report regarding the gaps in the fence. Based on those inconsistencies and lies it is entirely possible that there were no collared horses at Hole-in-the-Wall spring either, and the decision to go north into another herd area was based on the fact that it was known that insufficient horses remained in Clan Alpine previous to the capture, or for a manner of expediency. My rationale for the former conclusion is as follows. Professor Testor wrote BLM in 1/86 stating "The two areas would be available this summer where sufficient numbers occur (100 mares between 4-15 requires at least 400 horses) are the Black Rock-Warm Springs Canyon area and the Clan Alpine area. These were the most satisfactory choices to all concerned but it would be necessary to plan and coordinate our research and BLM gatherings in these areas." Furthermore Testor agreed in another letter of 1/86, that Sand Springs would be dropped due to the fact sufficient numbers of wild horses would be available in the Clan Alpine HMA for not only the fertility study, but the control areas as well. Subsequently, BLM reduced the Clan Alpine herd by approximately 50% in October of 1986. The Helicopter Round Up Services was the contractor on that reduction. So all three participants, the researcher, the BLM employee and the helicopter contractor knew before the field study even began that insufficient horses were available in Clan Alpine. Please look at the Table below that dates the occurrences.

TABLE

Testor letters regarding sufficient horses---1/86
Distance dispute with helicopter contractor---7/86
BLM reduction of populations in Clan Alpine---10/86
Research capture and treatment in Clan Alpine---8/87

During the month of August, when the Helicopter Round up Services was capturing wild horses in Gerlach, a dispute arose

Page three

over the contractor running horses too far. Dozens of colts in varying stages of hoof separation, hooves worn to the quick, too lame to even walk. His operation was shut down during an investigation and subsequent directions were to limit the distance wild horses were brought to 5 miles. The personnel from the University of Minnesota were also advised at this time to limit the distance. The BLM employee, an employee of the Carson City District, which has the responsibility of managing the Palomino Wild Horse Holding Facility, where the lame colts were being kept also knew of the limitation of distance. So in August of 1986, all three participants, the researcher, the subcontractor for helicopters, and the BLM employee know that the October 1986 capture has reduced the horse population to 50%, leaving approximately 798 horses in the Clan Alpine, requiring almost a 100% removal of the the Clan Alpine horses to obtain the necessary numbers for research; they also knew of the distance restriction. The Sand Springs area had been dropped from consideration. (Testors calculation of requiring approximately 400 horses to obtain 100 test animals) Using the same ratio as Testor, it then would require the capture of 200 horses to obtain the necessary 50 animals for the control group. The sum of both which is 600. So rather than reaccessing the combination of the fertility study area and the control area, or revisiting the use of Sand Springs, the participants opted to vacate the parameters of the research proposal and use the Augusta Mountain herd in the Clan Alpine research study. But in order to use those animals the previous instruction of distance had to be ignored and was. It is my experienced opinion that all three participants were in collusion, the lies in the investigation, the researchers chastisement to BLM, were in laymen's language, an attempt to cover ones fanny. These types of actions indicate the sacrifice of basic research principals for the purpose of expediency.

Had the horses from the Augustas not died, and the investigations notuncovered the lies, the general public would have never known that the Augusta horses had become a part of the Clan Alpine research study. For any research institute or its' personnel to admit to the running of poor conditioned horses in over 90 degrees and estimated 15 to 20 miles speaks clearly about the insensitivity of the participants. Not only is it clearly in-humane, but violates numerous policies, and State and Federal laws. The fact that no one has ever complained doesn't mean these attitudes have not occurred elsewhere, they just weren't caught. The research scientists questions the ability of DR. Peck to access the stress of the horses during their attempt to return to their range and water is especially insensitive. Several other veterinarians have expressed much the same conclusion as Dr. Peck, including the vertinarian in Susanville, who also received some of the crippled colts, but the sheriff and BL, personnel as well. I must presume the scientist believes that to state an opinion based on years of experience, rather than education, is somehow not professional. The scientists' potential for a Ph.D does not necessarily make him an expert.

Page four

The scientist would have BLM silence all questions and critiques of the research project. I dare say the public's trust of a researchers conclusions will be based on how sensitive he is to the animals he is researching.

The researcher was warned that collars had been fitted too tightly in the fall of 1986. I had attended a meeting of BLM personnel in Stone Cabin, ranchers whose complaint was the fitting of the collars. But the refitting of some of those horses did not occur until well into 1988. The suffering, maiming, and deaths of horses by the researcher have been sluffed off and attributed to normal research losses---baloney! He knew insufficient horses were in Clan Alpine, he knew the restrictions on distance, he knew early on about the tight fitting collars, he knew the restriction on combining areas, and no one will ever convince me otherwise.

Of critical concern is the researchers attempt to keep quiet the missing or misplaced animals, implanted or control, of the penned mares in Lovelock. It was my understanding of the research proposal that penned mares data would be used to compare those mares in the field studies, i.e., hormonal dosages, weights, parentage, etc. Are the missing horses mixed in the general population at Lovelock, or were they a part of the fee waived horses that were shipped to Canada for slaughter, or are they in some unsuspecting adopters yard, with the potential for one reason or another, have the potential of being sold. How will the researchers ascertain whether animals implanted with steroids have not entered the food chain. Has the FDA been advised of the possibility of the steroid implanted mares reaching the food chain. How does the disappearance of these animals used to determine the results in the research, affect the data being collected? The conclusions reached in the research are dependant upon the data collected from all the animals, how then does the missing animals skew the conclusions?

To catch up to what we know so far, we have 1) insufficient horses in Clan Alpine HMA BEFORE the field studies began, those numbers had nothing to do with not having helicopters to adequately census, but due to the fact that BLM had captured 50% of the population the previous October, 2) vacated parameters of the research proposal by using animals outside the study area, 3) total disregard for the instructions on the maximum distance animals would be brought, 4) lies in the investigation pertaining to the above, 5) missing, misplaced or unlocatable steroid implanted mares in Lovelock, 6) imbedded collars and the unnecessary delay in refitting, 7) in-humane treatment of animals, and 8) dead horses---still the research continues....

The research project used helicopters without benefit of public hearings in violation of law. No environmental impact was analyzed to access the impact of the research proposal on the population. No communication with anyone other than a substitute

Page five

BLM employee, whether the COR approved of the change in research areas. The foregoing attests to the lack of supervision, planning, coordination, communication, and sensitivity, and opens up yet another entire set of questions.

1) Why were stallions vasectomized when this portion of the research has been completed?

2) How do you separate the affects of the stress of the collars imbedded 2-3 inches into the neck muscle tissue from the affects of the hormonal implants?

3) If a mare aborts due to the stress of repeated captures, imbedded collars, or collars inhibiting sight or hearing; will the absence of a colt be recorded as a successful hormonal implant?

4) How can visually or hearing impaired animals retain their social structure in the band, and what will the affect of the displacement have on the conclusions of the research?

5) How do you know whether the lack of reproduction in the mare was attributable to hormones or the fact the stallion had a collar over his eyes?

6) To what degree does the stress from repeated captures or imbedded collars prevent the animal from reproducing?

7) How is it that the research will allow capture around the implanted mares in the Augusta Mountain HMA, but not allow for the reduction of horses in Stone Cabin? Is this a double standard?

8) Why will the reduction in the Augusta be permitted when it violates the parameters of the research proposal?

9) When studying a methodology from animals' natural state you attempt to alter that natural state as little as possible; if you run horses too far, if you take them from their previous habitat, or have repetitive captures, or improperly fitted collars, you create even more of an unnatural state. How will you evaluate the insensitivity to the methodology?

10) How can you validate or trust the researchers conclusions on the project if the researcher is insensitive to the needless stress or suffering of the animals they are researching?

11) How will you be able to monitor those animals from which the collar was imbedded and removed?

12) Will you use a magnet as was previously access to locate the steroid rods on ALL wild horses that will be removed

from the study areas?

13) If not, how will you find the implanted mares whose collars have been removed in order to collect data?

14) What happened to the money saved by dropping Sand Springs as a control area and combining the fertility study with the control study?

15) How, when the research is based on a certain sample size, do you compare the results when significant numbers of animals are missing, misplaced, or unlocatable?

16) How do you evaluate the effectiveness of the fertility control animals when so many are missing?

17) If 48 dead horses represent a mere 5% death loss from the Clan Alpine, what does the 101 animals represent? And is that reasonable considering that 35 more animals are to be sacrificed for necropsy purposes?

18) How many penned, implanted mares died, were any of them the result of ringworm treatment?

19) Has anyone who worked on this research project published any papers pertaining to this research?

20) Was anyone on the NAS committee, who voted in favor of the research proposal, ultimately awarded the contract?

21) Did anyone who made the proposal work on the project?

22) Did anyone on the NAS committee receive subcontracts?

23) Did either of the principal investigators have any background in field surgery or the manipulation of horses?

24) Did the Associate Scientist have any background in field surgery?

25) Did any of the research proposals suggest any method other than hands-on, field surgery, or the use of steroid hormones?

26) Has the researchers submitted, as indicated in the 1985 proposal, any of the 1/86, 3/86, 9/86, 9/87, 10/87, 3/88, or 9/88 progress reports to the BLM?

In conclusion the public is generally aware of the multiple deaths associated with this research project and the potential affects of all of the above will have on the scientific validity of the research. Those incidents not currently known by the public will soon become public. The results of the research will

be skewed and therefore a waste of taxpayer dollars. And we definitely question who will bear the costs of recapture to refit collars. It is my opinion, based on the foregoing, the research should be terminated immediately.

Exhibit 2

Charles Houston
June 30, 1988
June 30, 1988

Charles Houston, Special Agent
Office of the Inspector General
U. S. Department of the Interior
18th & C Street NW
Washington, D. C. 20240

Dear Mr. Houston,

Enclosed is the information that you requested. I have also enclosed a copy of the 1986 CFR's pertaining to wild horses. The prohibited acts are very specific and they do not exempt either BLM employees or contracted researchers.

Yesterday, I was shown photographs of the "gaps" in the fence which you will read about in the report. The "gaps" are non-existent. The photos show NO holes in the fence. The only way that horses could have gone from one herd area to the other is all the way around the west end of the fence. It now becomes obvious that the BLM employee, Phillip G. Anderson, lied when he said there were horse trails going through the fence. It means that they opened a gate in the fence, pushed the horses through, and closed it so the horses would be stuck in the Clan Alpine herd area.

The complaints that I have with the whole fiasco are very specific. They are:

- 1). Failure to prepare an Environmental Assessment (EA) as required by the National Environmental Protection Act (NEPA). The Act and the Guidelines from the Council on Environmental Quality require an assessment for actions that may cause public controversy or result in animal mortality. That is just for starters. The actions may also have caused impacts to cultural resources, etc.
- 2). Failure to hold a helicopter hearing as required by CFR - 4740.1(b).
- 3). The report will also show that the sub-contractors, Catoor and Hicks, the researchers, Dr. Donald Siniff, Dr. John R. Tester, Dr. Edward D. Plotka, and Tom Eagle and Phillip G. (Andy) Anderson are all guilty of violating CFR 4770.1 subparts (a), (f) and (j).

I am sure that you can read between the lines of the report. They do an excellent job of glossing over all of the mistakes that were made. The veterinarians report is very interesting. It helps to show that the horses suffered terrible deaths.

9

Charles Houston
June 30, 1988
Page 2

The other points that we discussed have to do with the terms of the research contract itself. The selection of the herd areas to use in the study was done after much deliberation. It is my understanding that to change herd areas would require a contract modification which could only come from Washington with the authorization of the CO (Contracting Officer). Therefore, we have a BLM employee (Andy Anderson) in the field permitting contract changes without authorization.

This same employee is guilty of allowing the horses to be harrassed by running them three times farther that allowed by state policy. Note: I have been out there where the captures took place and it is wide open where the horses were gathered. In this locale, you could easily observe the distance the horses were being run from the ground.

The sub-contractor, who performed the actual capture, is notorious for causing sore feet, barbed wire cuts and other injuries in wild horses. He subscribes to the "how many horses per hour" philosophy. The bigger the number, no matter what the animals condition, the bigger his ego gets.

I hope this information helps. To me, what happened to the horses was criminal. I only hope your investigation reaches the same conclusion.

If I can provide any other information please feel free to contact me. Thank you for your time and interest.

Sincerely,

TERRI JAY

Enclosures

Exhibit 3

RICHARD H. BRYAN
Governor

STATE OF NEVADA

EXECUTIVE DIRECTOR

Terr Jay

(702)885-5589

Testimony to the NAB W. H. Committee
August 18, 1988
Page 2



COMMISSIONERS

Ralph Jones, Chairman
1201 South Commerce
Las Vegas, Nevada 89102

Deloyd Satterthwaite
Spanish Ranch
Tuscarora, Nevada 89834

Dawn Lappin
15640 Sylvester Road
Reno, Nevada 89511

searching for a way lower than the tall hair still along
the fence in all areas. COMMISSION FOR THE PRESERVATION OF WILD HORSES
familiar turf. TESTIMONY PRESENTED TO

**COMMISSION FOR THE PRESERVATION OF WILD HORSES
TESTIMONY PRESENTED TO**

I came away from the Commission with a sense of relief
and confidence. THE NATIONAL ACADEMY OF SCIENCE
hoped to become a part of the Commission's work.
well as by SUBCOMMITTEE ON WILD HORSE AND BURRO RESEARCH
personnel.

THE NATIONAL ACADEMY OF SCIENCE

SUBCOMMITTEE ON WILD HORSE AND BURRO RESEARCH

August 18, 1988

Gentlemen:

I have been requested to come before you today and provide input
pertaining to the University of Minnesota wild horse birth
control experiment.

The entire experiment and its validity have come under scrutiny
due to the manner in which the experiment has been carried out.
Not only do I question the necessity of the entire project, but I
firmly object to the methodology that has led to the needless
destruction of over 100 horses.

I think Commissioner Lappin raised serious questions regarding
the initial contract award to the University of Minnesota. Nancy
Whitaker from API has detailed concerns regarding the scientific
validity of the experiment. I would like to express concern over
the legal aspects that have surfaced during the last few months.

I realize that the overall responsibility for wild horses lies
with the BLM, but the Commission also has a mandated
responsibility to insure the protection, preservation and
management of the wild horses.

The state statutes, which you have in this packet, give the
Commission the ability to enter into cooperative agreements with
the federal government to coordinate efforts to apprehend and
prosecute violators of federal and state wild horse laws. Since
the inception of this commission in 1985, the commission has
offered assistance in investigations and rewards for prosecution
whenever possible.

This spring, I took a trip out to the Clan Alpine herd area. What
I saw and smelled was disgusting: dead horses in various stages
of decay, some not even touched by scavengers; horses that died
of thirst within view of a windmill which was not even half a
mile away - the only thing that prevented them from finding the
water was their lack of knowledge of the area; carcasses in a
ravine, piled up on each other - they were too weak to keep from
falling over the edge; deep worn paths against the fence from

10

Testimony to the NAS W. H. & B. Subcommittee
August 18, 1988
Page 2

searching for a way home; mane and tail hair still dangling from the fence in all areas, evidence of the struggle to get back to familiar turf.

I came away from that trip angry. I was angry because the death and suffering could have been prevented. The only reason it happened was because of a callous disregard of the horses' welfare by not only the researchers, but also by some Bureau personnel.

Since my trip to the Clan Alpines, several things have become evident. First, the investigative report is not totally accurate. There were no holes in the fence and no evidence of horse travel between the two herd areas. The personnel in the field took the word of a capture contractor (who has been reprimanded several times for driving horses too far and too fast) about the availability of wild horses.

When you are out there at the fence, it becomes obvious why he fabricated a story about how he couldn't find enough horses in the Clan Alpines. (There are supposed to be 1400 horses in the Clan Alpines). If you are standing at the fence that divides the two herd areas, you can see that the Augusta herd area is relatively flat with no trees. The Clan Alpines are hills and gullies and mountain peaks with dense stands of pinion and juniper. Where would you choose to gather horses?

No one took into consideration the high temperature, the drought conditions or the scarcity of water. No one seemed to think that the research contract, which mandated a SPECIFIC herd area, would be violated by sneaking horses out of one herd area into another. No one made sure the capture contractor didn't exceed the 5 mile distance limit on gathering horses. (He drove them 15 to 20 miles). And no one thought about whether or not the horses would adjust to a new home in a debilitated condition.

I'm sure that none of those involved gave any thought to the consequences of their actions, either. The problem is that they violated federal laws and regulations and state laws. The laws are on the books to protect wild horses from either malicious or negligent acts. In my lay opinion, the evidence (much of it is contained in the investigative report), suggests both.

Nothing in any of the laws or regulations exempts researchers or BLM'ers from abiding by these laws and regulations. Even the research contract specifies HOW MANY horses can be humanely euthanized. The state law (NRS. 504.490) stipulates: "Any person, NOT AUTHORIZED TO DO SO, who: (3) Harasses a wild horse or kills a wild horse; is guilty of a gross misdemeanor." The minute the

1193

Testimony to the NAS W. H. & B. Subcommittee
August 18, 1988
Page 3

field personnel violated the contract by going into an unauthorized herd area, they violated the state statute. We will leave it up to the courts to deliberate the point.

The federal regulations (copy enclosed), also contain "Prohibited Acts." They are CFR 4770.1 (a) Maliciously or negligently injuring or harrassing a wild horse or burro; (c) Destroying a wild horse or burro without authorization from the authorized officer except as an act of mercy; (f) Treating a wild horse or burro inhumanely; and (j) Violating an order, term, or conditon established by the authorized officer under this part. Violations of the "Prohibited Acts" carry criminal penalties.

There have been other violations as well. PRIA (The Public Rangelands Improvement Act) calls for a public hearing to be held whenever helicopters are to be used in the management/capture of wild horses. This was never done.

NEPA (The National Environmental Protection Act) was also violated in that an Environmental Assessment or an Environmental Impact Statement was never prepared. If an EAR had been prepared, would it have addressed the concerns of treated horses getting into the human food chain via fee-waiver adoptions? (I'm sure you are aware that several treated horses have gotten "lost" in the Lovelock corral.) Or, how do the chemicals used in the horses affect the wildlife that consume them? Or, the importance of determining the impacts of stress, harrassment and death in wild horses? (Death tends to have a rather severe impact.)

I don't know if this body has the ability to end the research or exert pressure to end the study. What I do know is that our pleas to BLM in Washington, D.C. and the Governor's office have fallen on deaf ears. The Wild Horse Coalition, representing over 2.5 MILLION members has requested an end to the study, yet it goes on; horses continue to suffer maggot infestations, too-tight collars, abortions due to harrassment and death.

I urge you to do whatever you can to end the research and the continuing abuses to the wild horses. All of the collars must be removed, and the affected horses treated. I promise you that I will continue to do all that I can to see that those responsible for the harrassment, inhumane treatment and death of the wild horses are prosecuted to the fullest extent of the law.

Respectfully submitted,


TERRI JAY
Executive Director

NEVADA HUMANE SOCIETY

Exhibit 4



3 February 1988

Robert Burford
Director
Bureau of Land Management
1800 C Street, N.W.
Washington, D.C.
20240

Dear Mr. Burford,

Due to the recent events regarding the University of Minnesota fertility study and the facts which have pointed to the gross negligence and incompetence demonstrated by both the Bureau of Land Management and the University of Minnesota personnel, the following organizations concerned with the welfare of the wild horses, Nevada Humane Society, Humane Society of Southern Nevada, Wild Horse Organized Assistance, Nevada Commission for the Preservation of Wild Horses, Fund for Animals and the American Horse Protection Association, demand that the U.S. Department of the Interior, Bureau of Land Management, voluntarily comply with the following conditions:

1. The Fertility study currently being conducted by the University of Minnesota be terminated.
2. All monies granted to the University of Minnesota be returned and held in trust until such time that other more humane and more feasible fertility control methods can be evaluated and implemented.
3. All collared horses be gathered at the expense of the University of Minnesota. The contractor must be acceptable to the above mentioned organizations.
4. Collars are to be removed from all horses. Those requiring intensive veterinary care shall receive it at the expense of the University of Minnesota. Uncollared corralled mares included in the study shall be evaluated by a veterinarian to determine the most appropriate course of action; service veterinarian shall not be under contract to Bureau of Land Management.
5. Termination of the employment of the Bureau of Land Management Project Inspector on-site September 1, 1987 in the Clan Alpine and Augusta herd areas. The decisions made by this BLM representative, in violation of State Policy, ultimately were responsible for the deaths of forty-eight wild horses in the Clan Alpine herd area.

NEVADA HUMANE SOCIETY



Robert Burford
3 February 1988
Page 2

6. Any future researchers shall be required to comply with all Federal and State laws, regulations, procedures and policies when conducting research within Nevada.

Respectfully Submitted,

Mark S. McGuire

Mark S. McGuire
Executive Director
Nevada Humane Society

cc: Dart Anthony, Chairman
Humane Society of Southern Nevada

Dawn Lappin, Director
Wild Horse Organized Assistance

Terri Jay, Executive Director
Nevada Commission for the Preservation of Wild Horses

Pam Wilmore, Nevada Representative
Fund for Animals

Russell Gaspar, General Counsel
American Horse Protection Association

President Ronald Reagan

Secretary of the Interior Donald Hodel

BLM Nevada State Director Edward Spang

MSM:tr



Exhibit 5

NEVADA FARM BUREAU FEDERATION
NEVADA FARM BUREAU SERVICE COMPANY

1300 Marletta Way • Sparks • Nevada • 89431 • (702) 358-FARM
Call Toll Free In Nevada (800) 992-1106

August 18, 1988

National Academy of Sciences
Wild Horse Research Subcommittee

Dear Committee Members:

As farmers and ranchers in Nevada, we feel that the method of wild horse research conducted by the University of Minnesota has caused unnecessary suffering and death to a number of wild horses.

As professionals in animal husbandry, we feel that this research has been unproductive and detrimental to the solution of wild horse management on our public rangelands. To continue with such shoddy and inconclusive research only tends to magnify the problem of wild horse management in Nevada and does nothing to solve the problem.

We demand the termination of the research being conducted by the University of Minnesota immediately. Nevada Farm Bureau suggests that a better and more humane method of research be conducted by a western university that has both knowledge of wild horses and public rangelands.

Thank you for considering our position in this matter.

Sincerely,

David H. Fulstone II
David H. Fulstone II
President

12



Exhibit 6

REPLY REFER TO:

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
WASHINGTON, D.C. 20240

September 23, 1987

Dr. Edward Plotka
Marshfield Research Foundation
510 North St. Joseph Ave.
Marshfield WI 54449-1830

Dear Dr. Plotka:

Thanks for your letter dated September 18, 1987 detailing your plan for sacrifice and necropsy of six study mares as part of the ongoing fertility control research contracted through the University of Minnesota. As we discussed on the phone last week, the contract modification approved on May 4, 1987 authorizes such work on up to 35 mares over the life of the contract, the timing and siting of which are at your discretion. Our concern is that we be kept aware of your plans so that field personnel can respond to public concerns that might be expressed.

Please keep us informed as you arrange with the facility contractor a suitable place to perform the necropsies. We would prefer that it be out of sight of casual visitors to the facility to the extent possible. I am forwarding your letter to those listed below for their information.

Sincerely,

Richard H. Stark

Contracting Officer's Representative

cc: State Director, Nevada (930)
District Manager, Carson City District, Nevada
Don Siniff, University of Minnesota
Tom Eagle, University of Minnesota
Western Horse Services, Lovelock Nevada
Project Inspector, Lovelock Maintenance Facility
Linda DeRamus, Contracting Officer (Research)
Irene Clapp, Contracting Officer (Facility)

13

Plotka 510 North St. Joseph Avenue
Marshfield, WI 54449-1830
715-387-9177

Edward D. Plotka, Ph.D.
Senior Research Physiologist



September 18, 1987

Mr. Dick Stark
Division of Wild Horses and Burros
Bureau of Land Management
18th and C Streets NW, Room 2444
Washington, D.C. 20240

Dear Dick:

As I mentioned to you over the phone, we need to evaluate the status of the implants on six implanted mares to check for deleterious effects of implants. This will require euthanasia and complete necropsy of these horses. The horses will be euthanized using T-61, the same chemical that is used to euthanize horses for medical reasons. I would like to perform these necropsies on October 7 and 8, 1987, if possible.

Necropsy of these horses will be quite thorough. That means that we will have to cut open the head, chest and abdomen. We will need to weigh all endocrine glands and collect portions of several organs and bone.

We want to specifically check for conditions around the implant that may cause discomfort to the animal, and for tissue reactions that may cause loss of the implants or prevent the implants from being effective. Thus, we will have to examine the area around the implants for necrosis or other adverse tissue reaction and for formation of fibrous tissue. This will include taking biopsies for histological examination.

Since contraceptive hormones have been known to cause the growth of tumors and/or suppress bone marrow, we will have to open and examine the neck, chest, abdomen and internal organs for the presence of tumors. We will also remove a portion of the ribs to obtain some bone marrow. Finally, we will need to remove the pituitary gland from the head to check it for cellular changes consistent with suppression of hormone secretion. During this process, we intend to weigh all the endocrine glands and take a small portion for histological examination. We will also need to collect portions of the other internal organs such as the liver and uterus to look for cellular changes that may indicate the start of tumors, fibrous masses or other adverse reactions to the implants.

UNITED STATES DEPARTMENT OF THE INTERIOR

When we have finished with each animal, the carcass, internal organs and head will be separate and have to be disposed of. I will be in contact with Marty Morris and Frank Rutherford next week to discuss where and how we can perform this task most expediently.

The specific horses we need to examine are as follows:

<u>BIM number</u>	<u>BIM Tag No.</u>	<u>U of Minn Tag No.</u>
81499521	9521	94
78003134	3134	96
81500979	0979	172
79502688	2688	175
78497144	7144	179
76497420	7420	237

I believe that these horses will answer our current questions. We will need to examine several more horses from the effective treatments toward the end of the study to determine if there are any long term deleterious effects. That can't be done, however, until we determine which treatments are effective and for how long they are effective. If you have any questions or suggestions relative to the necropsies, please let me know.

On another subject, I called Tom Eagle after speaking with you. He informed me that he has spoken with Elmer Wall and with Frank Rutherford of the Nevada Nile Ranch. It is my understanding that Frank told Tom that he would move the horses we want from those that foaled back into our bleeding pens. Frank also said he would look for the horses that we have identified as missing and put those back into the bleeding pens.

For your records, I have enclosed several copies of reprints from the first paper published as a result of this project.

Sincerely,

Edward D. Plotka, Ph.D.
Senior Research Physiologist

and endocrinologist

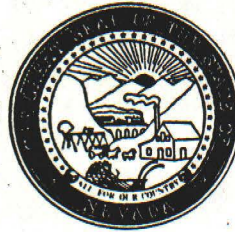
never located

- cc: Don Siniff
- John Tester
- Tom Eagle

Exhibit

KEVIN L. PASQUALE
DISTRICT ATTORNEY

PAUL DRAKULICH, DEPUTY
ROBERT V. BOGAN, DEPUTY



OFFICE OF THE DISTRICT ATTORNEY
OF CHURCHILL COUNTY
180 WEST FIRST STREET
FALLON, NEVADA 89406
(702) 423-6561

August 25, 1988

Ms. Terry Jay
Executive Director
Commission for the Protection
of Wild Horses
Stewart Facility
Capitol Complex
Carson City, Nevada 89710

Re: Wild horses/University of Minnesota

Dear Ms. Jay:

I have just reviewed the report prepared by Investigator Mike Richards of the Churchill County Sheriff's Department regarding your complaint of possible violations of N.R.S. 504.490, wherein you allege that the University of Minnesota has unlawfully harassed and killed wild horses in the Clan Alpine Mountain Range in Churchill County.

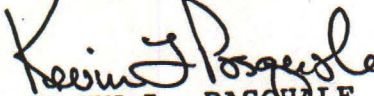
A successful prosecution of a violation of N.R.S. 504.290 would include, among other things, proof beyond a reasonable doubt that the harm causing actions of the University of Minnesota were not authorized and were done in concert with a general criminal intent. Based upon my review of the police reports prepared with this investigation, it is my conclusion that neither of these requirements can be met. Further, there may be a question as to whether the federal government would be the more appropriate prosecutorial authority in this case. Therefore, this office will decline prosecution at this time.

14

Ms. Terry Jay
Executive Director
Commission for the Protection
of Wild Horses
August 25, 1988
Page Two

I know my decision must disappoint you, and I will not be
offended should you desire to have the Attorney General's Office
review this case to determine if I have erred in not prosecuting.
If I can be of further service to you in the future, do not
hesitate to contact me.

Sincerely,


KEVIN L. PASQUALE

KLP:bh

cc: Mr. Brian Hutchins, Chief Criminal,
Deputy Attorney General
Mr. Bill Lawry, Churchill County Sheriff



Terri Jay
625 Fairview Drive, Suite 111
Carson City, Nevada 89701
(702) 885-5121

COMMISSIONERS

Ralph Jones, *Chairman*
1201 South Commerce
Las Vegas, Nevada 89102

Deloyd Satterthwaite
Spanish Ranch
Tuscarora, Nevada 89834

Dawn Lappin
15640 Sylvester Road
Reno, Nevada 89511

COMMISSION FOR THE
PRESERVATION OF WILD HORSES

September 2, 1988

Kevin L. Pasquale, District Attorney
Office of the District Attorney
of Churchill County
180 West First Street
Fallon, Nevada 89406

Dear Kevin,

Thank you for your prompt response regarding the deaths of the wild horses at the hands of the University of Minnesota field researchers.

Since we last spoke, new information has come to light that may change your decision on prosecution. I have discussed the new developments with Brian Hutchins and he felt the new information might make a difference in your decision.

I have enclosed Dawn Lappin's testimony which clearly shows several things:

1. ALL participants were aware that there would NOT be enough horses available in the Clan Alpine herd area for the sample size necessary to obtain the right number of mares of the right age. They all knew this BEFORE they ever went into the field.
2. The only reason that the capture sub-contractor was available to do this gather, is that HE WAS SHUT-DOWN BY THE BLM in the Gerlach area for running horses too hard and too fast. The veterinary reports are attached and all are regarding horses that were captured by Catoor and Hicks. The distance he ran the horses to cause the serious death and injury reported WAS 20 MILES, the same distance HE KNEW HE WOULD HAVE TO RUN HORSES IN THE AUGUSTA HERD AREA IN ORDER TO GET THEM IN THE TRAP IN THE CLAN ALPINES!
3. BLM personnel, U. of M. personnel, and the gather sub-contractor were all aware of the distance limitation of a maximum of 5 miles, as it was agreed to in the pre-capture meeting. They were all aware of WHY Catoor and Hicks were shut down in Gerlach also.

Kevin L. Pasquale
September 2, 1988
Page 2



4. All participants are very familiar with government contracts; the BLM employee knows that contract stipulations must be followed to the letter and ANY changes must be authorized IN WRITING. (The instructions regarding changes are contained in ALL contracts). The researcher also knew that the choice of which herd areas to use for the study HAD to be chosen ahead of time and the contract AMENDED to show the new herd area, as this had already occurred once before. The helicopter contractor is one of the few individuals that gets the awards for capture contracts for the BLM. These contracts specify in great detail all aspects of a removal, even down to the exact location of a trap site. So the contractor knew ahead of time the specific herd area and ONLY THAT HERD AREA that horses could be brought from.

I can dig up other documentation to verify all of the above facts, including names of other people that can help with testimony. I know that you're not happy about having to look at this case, but if I've given you enough information to show criminal intent, and the fact that they all knew what they were authorized to do or not do, I will be very disappointed if you still choose not to prosecute.

In my lay opinion, they all knew the distance limitation, the specific contract stipulations, that there were not enough horses available in the Clan Alpines before they ever went into the field, and they were all aware of why the sub-contractor was suddenly available.

I have also enclosed my copy of the five-part series that Steve Wilson produced for your review. Parts four and five pertain to the experiment. I hope it helps.

Please let me know if this information changes your decision. If there is anything else I can do to help, don't hesitate to call.

Thank you for your attention to this matter.

Sincerely,

TERRI JAY
Executive Director

Enclosures

Exhibit 8

TOM COLVIN
Post Office Box 1047
Tonopah, NV 89049

1986 SEP 11 11:13

September 3, 1986

Mr. Robert Burford
Director, BLM
1800 C Street, NW
Washington, DC 20240

Dear Mr. Burford:

I am a livestock operator. I have grazing rights in the Wagon Johnnie and Stone Cabin Allotment, Tonopah Resource Area, Battle Mountain District, Bureau of Land Management.

Over the last seven years I have participated in a cooperative monitoring plan with the BLM. I submitted a Stewardship Grazing Program for my Wagon Johnnie Allotment and am developing a Grazing Management Plan for the Stone Cabin Allotment. I have worked closely with the local CRMP groups and the Wild Horse Groups. In 1982 I, along with the other range users in the Stone Cabin Allotment, agreed to a voluntary 17% reduction in our livestock preference in order to negotiate a reduction in the wild horse herds within the allotment. The BLM agreed to reduce numbers to 575 head, make periodic gathers and monitor the vegetative conditions.

In the last few weeks I have been working closely with the BLM in an effort to develop additional water for wild horses, livestock and wildlife within the Stone Cabin Allotment. I had tentatively agreed to quitclaim half of my certificated Italian Springs water rights to the BLM to allow development of Italian Springs Pipeline Extension.

During the period of August 18-29, 1986 the University of Minnesota and others unknown to me gathered several hundred head of wild horses in the Stone Cabin Allotment. I understand the purpose of the gather was to temporarily sterilize a selected number of mares within the herd. I was never notified the gather was to take place and only happened upon it by chance.

2-1

15

Mr. Robert Burford
September 3, 1986

I felt the horses which were gathered were mishandled and poorly treated. I do not feel the authors of the 1971 Wild Horse and Burro Act envisioned or would condone the kind of intensive management which I witnessed.

What I find most disturbing is that the BLM reportedly has agreed to a 3-year moratorium on wild horse gathers within the Stone Cabin Allotment without notifying me or soliciting my input. I have acted in good faith over the last 20 years in my relationship with the BLM. I have attempted to properly manage the range resource. I have negotiated with the BLM, CRMP and Horse Groups in an attempt to insure proper resource management. The BLM assured me the wild horses would be periodically gathered and the herd managed at 575 head until agreed upon otherwise. This no longer seems to be the case.

In light of this recent development, I am seriously considering withdrawing my tentative offer to transfer to BLM a portion of my Italian Springs certified water rights and stopping work on my grazing management plan preparation for the Stone Cabin Allotment until BLM can demonstrate that they will honor their commitments, especially concerning wild horses.

I am terribly disappointed that the BLM has chosen to ignore the good relationship which I thought we had developed.

Sincerely,


TOM COLVIN

cc: Terry Plummer, District Manager, Battle Mountain BLM
Les Monroe, Area Manager, Tonopah BLM
Dawn Lappin, Wild Horse Organization of America
The Honorable Paul Laxalt, U.S. Senate
The Honorable Chic Hecht, U.S. Senate
The Honorable Barbara Vucanovich, U.S. Congress

DRAFT

(12/4/87)

DRAFT

Exhibit 9

**INVESTIGATION REPORT
INTO THE
DEATHS OF WILD HORSES
IN THE
CLAN ALPINE HERD MANAGEMENT AREA**

INTRODUCTION

The purpose of this report is to present findings and conclusions regarding investigations into the cause of death of 48 wild horses in the North end of the Clan Alpine Herd Management Area (HMA) of the Carson City District. The death of a portion of these wild horses was discovered initially on 17 September 1987. Further field review revealed additional dead horses and the full field investigation into the cause of death was concluded on 30 Oct. 1987. Members of the field investigation team included the following:

Andy Anderson, Carson City District Office

Len Sims, Nevada State Office

Milt Frei, Nevada State Office

Jerry Peck, Carson-Tahoe Veterinary Hospital

Tom Eagle, University of Minnesota

Tim Reuwsaat, Carson City District Office

BACKGROUND INFORMATION

In Fiscal Year 1985, as a part of the Appropriation Act for the Bureau of Land Management, Congress directed the BLM to expend one million dollars in the research of wild horses on public lands. Pursuant to that Congressional

16

direction, the BLM, in cooperation with the National Academy of Sciences, contracted with the University of Minnesota to undertake a scientific investigation into the area of fertility control in wild horse populations.

As a part of this study, BLM representatives from the Washington Office, Nevada State Office and several Nevada District Offices met with the University of Minnesota research personnel on numerous occasions beginning in the Spring of 1986 to select wild horse herds upon which to conduct the research and to agree upon other terms and conditions of the research. Some of the criteria and conditions which were understood, included the following:

1. The Contracting Officer's Representative (COR) for the research contract would be located in the Washington Office, Division of Wild Horses and Burros of BLM and a project inspector at the state or district level was not provided for.
2. In order to support the contract, BLM would make wild horse herds available for conducting the research and would not conduct any wild horse removals in those areas for three years. The areas selected were as follows: Flannigan Herd Management Area, Nevada, Wassuk Herd Management Area, Nevada, Sand Spring Herd Management Area, Nevada, Clan Alpine Herd Management Area, Nevada and Beatty's Butte Herd Management Area, Oregon. (Note: The Sand Spring HMA was subsequently rejected because, based upon BLM data, it was concluded by the researchers that the Clan Alpine HMA contained sufficient wild horses to be used as a control area as well as an actual fertility study area.)

3. The University of Minnesota would work closely with BLM and advise BLM whenever horses were to be captured for research purposes.
4. No capture plan or environmental assessment would be prepared.

During September and October of 1986, 797 wild horses were removed from the Clan Alpine Herd Management Area (HMA) followed by a post gather census on November 17 & 18, 1986 in which 798 horses were counted in the Clan Alpine HMA.

In mid August 1987, the University of Minnesota contacted the Carson City BLM office and said the University intended to capture and attach radio telemetry devices to wild horses in the Clan Alpine HMA, beginning on 24 Aug. On 21 Aug., the Carson City BLM conducted a meeting with representatives from the University of Minnesota to inform them that a district representative would be present at the capture site at all times and to identify any restrictions which would be placed upon the research/capture effort. The University of Minnesota personnel were informed that any wild horses captured by them would not be run any further than 5 miles, all wild horses would be herded by the helicopter in a manner that bands would remain together and foals would remain with their mothers.

It was BLM's intent to utilize an observation helicopter to monitor gathering operations full time. However, insufficient lead time was allowed by the University, and BLM was unable to obtain contracted helicopter for more than three (3) hours on August 29 and three (3) hours on the morning of August 31.

To complete the experiment concerning wild horse fertility control in the Clan Alpine Herd Management Area, 150 mares between 3 and 12 years old had to be implanted with silicone capsules. Of these 150 mares, 100 were to receive capsules impregnated with hormones (estrogen or progesterone) and the remaining 50 were to receive plain (control) silicone capsules.

Capture and treatments began 24 August 1987 and continued through 3 September 1987. During that period, 493 horses were captured and handled (205 males, 288 females). Of these horses, 301 were marked with numbered collars, 149 of which were equipped with radio transmitters and were attached to the implanted mares. The other 152 collars were attached to males and to females too old for inclusion among experimental animals. One hundred ninety-two horses were not collared because they were less than 3 years old and considered too young to be fitted with permanent collars.

A veterinarian was present only on August 25, 26, and 27.

The following table depicts a summary of the University of Minnesota's wild horse captures and trap locations in the Clan Alpine study area:

<u>LOCATION</u>	<u>START DATE</u>	<u>END DATE</u>	<u>NO. ANIMALS CAPTURED</u>	<u>RATE</u>
Shoshone Meadows	8/24/87	8/26/87	165	55/DAY
War Canyon	8/28/87	8/30/87	125	41/DAY
Horse Creek	8/31/87	9/1/87	70	35/DAY
Shoshone Meadows	9/2/87	9/3/87	133	86 47/DAY

Starting the afternoon of 31 August 1987, after spending the morning hours moving the trap to Horse Creek, 70 horses were caught in the Clan Alpine HMA and processed. Approximately one half of these were caught on 31 Aug. and one half were caught on 1 Sept. At that time the gathering sub-contractor stated he was having difficulty locating unmarked horses. He said some horses were present but were widely scattered and ran immediately when the helicopter was in the general area. Neither the BLM nor the University of Minnesota personnel were able to verify these statements because an observation helicopter was not available on September 1st.

On 1 September, the representative from BLM drove to the Hole-in-the-Wall spring, north of the boundary fence between the Augusta and Clan Alpine HMAs. Several bands of horses were seen watering, and 3-5 collared horses were present. These marked horses could have come only from south of the fence in the Clan Alpine HMA, having been marked during the first 3 days of the capture effort. The horses at the spring were in very poor condition and flow from the spring was low.

Upon inspection of the fence separating the two allotments, four (4) large (20-40 foot) gaps were found. Two (2) gaps were on the section line between Sections 7 and 18 and two were on the section line between Sections 9 and 16, all in T. 23 N., R. 28 E. There was a horse trail going through one of the gaps (the most Easterly gap between Sections 9 and 16) to a spring on the

south side of the fence. The trail to the spring was well travelled from north to south of the fence. A similar trail occurred in one other location (the most Easterly gap between Sections 7 and 18) indicating regular movement of horses between the two HMAs.

After discussing the lack of available horses in the Clan Alpines and the evidence suggesting regular movement between the two HMAs, BIM and University of Minnesota personnel decided the best alternative would be to move back to the north end of the Clan Alpine HMA and bring horses from the Augusta HMA through the gaps in the fence to the formerly used trap site in Shoshone Meadow. It appeared to those individuals that such a decision would have limited affect on either the welfare of the horses, which appeared to cross the fence regularly, or on the study being conducted by the University of Minnesota. Accordingly, the trap was moved back to the Shoshone Meadows location during the afternoon of 1 Sept.

On 2 and 3 September 1987, a total of 133 horses were captured from the Augusta Mountains HMA and brought through an opening in the fence separating that HMA from the Clan Alpine HMA, to the trap located in the northern part of the Clan Alpine HMA (86 on 2 Sep. and 47 on 3 Sep.) to complete treatment of mares for fertility control. All of the horses were taken from the area between Hole-in-the-Wall spring and the fence between the two HMAs (see map). Thus, the maximum distance horses were moved was approximately 15 to 20 miles to the trap site. The path to the trap site was relatively flat with the

exception of one ridge, approximately 600 feet high, between the horses' original position and the trap (Map 1). The weather was hot and abnormally dry and the physical condition of the horses was relatively poor. Lengthy drought conditions prevailed, resulting in significantly limited forage and water. Air temperatures were in the 90°+ range. Considering both the condition of the horses and the severe environmental factors, the horses could be easily stressed by a long or fast run, by separation from water or by intensive handling.

Of the 133 horses captured, 75 were tagged with numbered collars. Of the 75 tagged animals, silicone rubber capsules were implanted into 42 mares between 3 and 12 years old, and these 42 equipped with radio collars. The additional 33 marked horses were males or females too old to include in the fertility experiment. The remaining 58 animals were not marked.

Eighty-one of the 86 horses captured on 2 Sept. were released together at approximately 7:30 that evening following appropriate experimental treatments. These animals were provided free access to water at the trap. The 5 horses (3 young females and 2 young males) retained overnight in the corral were provided hay and water. These 5 horses were held overnight because there was not enough time remaining in the day to process them with the others. The 5 were released together on the morning of 3 Sept. after handling. The 47 horses captured on 3 Sept. were kept together until treatments were complete and all could be released at once on the same day.

DISCOVERY

On 17 September 1987, during a routine aerial census of the Augusta Mountain Herd Management Area (which includes the Hole-in-the-Wall allotment north of the Clan Alpine Herd Management Area), three dead horses were sighted along the fence near the cattleguard in T. 23 N., R. 39 E., Sec. 13. Later that afternoon, an additional five carcasses were sighted from the helicopter at T. 23 N., R. 38 E., Sec. 13. cursory examinations of the carcasses, which were bloated, revealed no direct evidence of the cause of death, such as bullet wounds. However, the aggregation of the carcasses and their proximity to the fence, suggested a possibility the animals were shot.

On 18 September the Lahontan Resource Area Manager was briefed on the discovery of the dead animals. Also, the University of Minnesota was notified and a message was left on the Nevada State Office law enforcement staff's telephone recorder that a suspected shooting of wild horses had been located in the Clan Alpine HMA.

On 25 Sept. the NSO law enforcement staff began investigating the possibility of violations of the Wild Horse and Burro Act. On 26 Sept. they visited the Clan Alpine area in an attempt to locate witnesses or evidence and on 2 Oct. they checked the carcasses for bullet wounds. It appeared from that investigation that one animal might have had a wound about mid-section on the left side, but no bullets were recovered. All carcasses were badly decomposed.

On 8 October research personnel from the University of Minnesota drove to the research area to inspect the previously located horse carcasses. During that visit, 5 additional carcasses were discovered while walking the fenceline.

These animals were scattered westerly along the fenceline within 3 miles of the cattleguard located in Section 12, T. 23 N., R. 39 E. Each animal showed no obvious sign of cause of death, but like the 8 carcasses found earlier, were grouped together. Marker collars on several of the dead horses identified them as part of the University's research project on fertility control in wild horses. All of the marked horses had been captured on 2 or 3 September 1987 as part of groups brought across the fence separating the Augusta Mountain and Clan Alpine HMAs. On 19 Oct. 1987, the University of Minnesota notified the Carson City BLM Office of this discovery.

On 13 Oct. the Carson City District notified NSO law enforcement that the University of Minnesota had visited the area and located 5 more dead horses. These carcasses were located approximately halfway between the two groups of carcasses discovered on 17 Sept. At that same time, law enforcement personnel were informed that on 3 Sept. a yearling colt was captured which was dragging approximately 10 feet of rope and another foal was captured the same day which had a fresh (unrecorded) brand estimated to be approximately 2 weeks old.

On 18 Oct. the NSO law enforcement staff checked the area of 13 horses with a metal detector in an attempt to locate bullets in the carcasses but no evidence of shooting could be found.

Following these discoveries, University researchers chartered a helicopter on 19 October to locate and assess the status of all horses radio-tagged on 2 and 3 Sept. This search revealed additional dead horses and brought the total

number of deaths recorded to 40. Included in these were two radio-tagged mares located by telemetry approximately one-half mile south of the trap site. The University of Minnesota notified the Carson City District Office's Wild Horse Specialist on or about 21 Oct. 1987.

On 24 Oct. law enforcement personnel contacted ranchers in the Dixie Valley area but no information of value to the investigation was obtained. On 27 Oct. arrangements were made for a veterinarian and personnel from the Carson City District Office to assist in the investigation as it now appeared that the horses did not die as a result of being shot.

FORMAL INVESTIGATION

On 28-30 October 1987 an investigation team composed of a veterinarian and BLM personnel from law enforcement and management divisions, searched the entire fenceline between the two allotments and examined the carcasses located there. In addition, a thorough search of areas north and south of the fence was conducted. A total of 46 dead horses was located, all of which were proximate to the fence. The two mares located south of the trap site found by University of Minnesota personnel through radio telemetry were the only horses that were not included in the search by the investigation team. Thus, a total of 48 dead horses was discovered.



Examination of carcasses by BLM's law enforcement agent on 30 Oct., produced no evidence of shooting. Thus, no criminal activity was indicated in the deaths of the wild horses.

The 48 dead horses included 28 collared and 20 unmarked horses. Age and sex of the unmarked horses were not determined. Among the 28 collared horses were 8 males and 20 females, 16 of which had been treated with implants and fitted with radio collars.

VETERINARIAN'S STATEMENT - CAUSE OF DEATH

The 46 dead horses were found along the south side of the fenceline between the Clan Alpine and Hole-in-the-Wall management areas. When I first viewed the dead animals, they had been dead approximately 6-8 weeks and the carcasses were in advanced decomposition. Because of this condition, no laboratory tests (i.e., tissue samples and blood samples) could be used. All the dead horses were found in lateral recumbency without any signs of struggle before death. They were found in a few groups of 2 or 3 or as single horses with the exception of one large group of 22 horses. No sex or age group seems to predominate. Many were collared in the study but about 40% were not marked.

Various causes of death (i.e., gunshot, poisoning, or toxic plants) were ruled out by physical examination of the carcasses and by finding no other horses or any type of animal affected in the same area.

In my best professional opinion, the cause of death was dehydration coupled with exhaustion and hypothermia. From the history of the capture and release of the horses, it seems likely that they tried at great effort to return to the north side of the fence. Even though they were given water at the trap site before being released, the intense physical effort of trying to return to their home range along with an already quite poor body condition, the high environmental temperature at the time, and the lack of water in the area of the fenceline, these horses became dehydrated to the point of exhaustion. The horses then collapsed or stayed with the collapsed horses until they too collapsed from the stress of dehydration and hypothermia.

Dehydration is a very rapidly debilitating condition. Once this condition is present, reversal would require intravenous electrolyte solutions, rest, and shade to cool the animals. Therefore, even supplying water orally to these horses probably would not correct the electrolyte imbalance already present.

signed: Gerald R. Peck, DVM

CONTRIBUTING ADMINISTRATIVE FACTORS

1. Although sanctioned by a BLM employee, the University of Minnesota abrogated their contract agreement by going outside of the Clan Alpine HMA. This action was not consistent with earlier commitments or the

standing policy in Nevada that horses will not be driven from one HMA to another. Because a gather was planned for FY88 in the Augusta Mt. HMA, it was specifically excluded from the research.

The procedures, understandings, and agreements under which the University of Minnesota's research was to be conducted was consistent with the integrity of the herd management areas and would not adversely impact the established well-being of horses studied.

2. The overall development and administration of the research contract with the University of Minnesota was deficient in that no environmental assessment was prepared on the original research effort. This assessment, if completed, would have resulted in the development of such things as gathering plans and individual environmental assessments for each capture effort as well as for all other phases or specific aspects of the research contract.

3. No written documents (i.e., gather plan, E.A.) were developed specifically for or prior to this gathering. This process would have documented the gathering area boundary, distance animals were to be run and other parameters under which the gather would be conducted.

4. No on-site project inspector was officially appointed by the Authorized Officer (Washington Office), therefore prohibiting clear lines of communication and delegation of authority.

5. No written guidance or log was maintained to provide continuity when BLM on-site personnel were changed.

6. An observation helicopter to monitor operation of the capture helicopter, was employed for only 2½ days of the 5 day capture effort and not on the day that the horses suffering mortality were gathered.

7. Bureau personnel, in trying to respond to the subcontractor's concern for lack of horses and the need of the University to trap an adequate number of horses for the experiment, made decisions based on inadequate information and without fully identifying and analyzing the contingencies critical to the welfare of the horses.
8. The lack of data about the Clan Alpine HMA on September 1 was a result of not having helicopter time to fully census the gathering areas. No further attempt was made to locate horses in other portions of the Clan Alpine HMA by BLM or University of Minnesota personnel.
9. Herding horses a distance of more than five (5) miles was not consistent with earlier commitments. This is particularly significant in light of the high temperatures and known poor conditions of the horses.
10. There was a limited exchange of information between the parties involved in the entire research project.
11. There was no immediate followup after handling the animals and disrupting their normal routines.
12. BLM accepted the contractor's concerns regarding scarcity of wild horses by immediately looking for alternative areas without confirming actual conditions, without fully assessing conditions of alternative areas and without reviewing the terms of the research project.

RECOMMENDATIONS

The following recommendations are presented with the intention of improving BLM's administration of the Wild Horse and Burro Act and to assure that similar occurrences do not materialize in the future:

1. In all instances, regardless of circumstances, BLM should assure that a wild horse or burro capture/removal plan and associated Environmental Assessment, are prepared prior to the capture of wild horses and burros. It has been Nevada BLM policy that wild horse and burro removal plans contain maps of the capture area and that capture efforts do not extend beyond those capture area boundaries regardless of any unanticipated circumstances. This policy should be put in written form and include all captures, regardless of purpose.

2. Whenever contracts are awarded which in any way affect the welfare of one or more wild horses or burros, BLM should designate an on site project inspector who has clear lines of authority and responsibility as well as the ability to communicate on a moment's notice with management and the Contracting Officer, to assure that any contractual problems which may affect the animals or their habitat can be resolved with minimal delay. In the event that such contracts are administered out of the Washington Office, a local project inspector from the district having jurisdiction must be appointed.

3. Whenever helicopters are utilized to move horses and burros for any purpose, and a BLM employee is not present in the contract aircraft, it is Nevada BLM policy that direct visual monitoring of the operation of that aircraft be assured. It has been the policy in Nevada since August of 1985, that such monitoring be provided for Nevada BLM wild horse and burro gathers. Although an observation helicopter was present for two half-days, gathering operations occurred on five separate days under critical environmental and animal conditions. Observations were not required for

this research project but it is now evident that a research gather is no different than a removal gather. In both cases, a subcontractor is herding horses without professional supervision unless observed.

4. Whenever the capture of wild horses and burros is being conducted by persons other than actual BLM employees (e.g., Contractors, Researchers etc.), Nevada BLM must remain responsible for maintaining and protecting the health and welfare of the animals.

5. Set up communication procedures that provide a clear course of action when contracting problems involving conditions beyond the Project Inspector's authority, particularly when it involves the safety and welfare of wild horses and burros under BLM protection.

6. Whenever wild horses and burros are captured and released upon the public lands for any purpose, Nevada BLM should adopt a policy which provides for follow up of the effect of the release on the animals^{1/}.

1/ For example, a previous release of wild horses into an area they were not accustomed to in the Caliente area was successful because prior to release of the animals, BLM accustomed the animals to the area by holding them in pens at a water source they would be using in the future as part of their habitat. When released, these animals adapted quite adequately. They adopted the new areas as their home range and have remained there. This example, when compared to the Clan Alpine experience, points out the fact that when animals are not familiar with critical components of their habitat, disastrous results can occur.

7. Whenever wild horses or burros are captured for any purpose in Nevada, a pre-capture evaluation of animal condition, prevailing temperatures, drought conditions, physical terrain of gather area, potential trap locations in relation to animal distribution and other similar factors must be provided. Such analysis should be portrayed on a supplement to a removal or gather plan which serves as the vehicle for assuring that such analysis is completed and if conditions are marginal, ensure appropriate veterinarian expertise is present during gathering operations.

8. Wild horse gathers for management and research purposes where horses will be returned to the range after processing should be gathered only under conditions favorable to the horses' physical welfare.

9. Take immediate action on officially assigning an on-the-ground project inspector for each district, where research activities are taking place, for the duration of the contract.

10. As soon as possible, set up a meeting with the University of Minnesota, CO, COR, and PIs to coordinate and clarify contract stipulations and requirements both as they will govern field operations and research activities at the Lovelock Holding Facility.



ANIMAL PROTECTION INSTITUTE OF AMERICA *Exhibit 10*

2831 Frullridge Road, P.O. Box 22505, Sacramento, CA 95822 (916) 731-5521

June 2, 1988

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In Memoriam
VELMA JOHNSTON
"Wild Horse Anne"

HARRY DEARINGER

MRS FRANK V BRACH

CHARLOTTE LB PARKS

CLAUDE

Countess of Kinnoull

Frank Press
President
National Academy of Sciences
2101 Constitution Avenue
Washington, D.C. 20418

Re: University of
Minnesota Wild Horse
Studies

Dear President Press:

The attached field trip report explains in some detail our concerns with the Wild Horse Fertility Studies being conducted by the University of Minnesota. API is a national humane education and advocacy public interest group with over 170,000 members throughout the nation.

Our criticisms are specifically addressed to the portion of the study that is the field testing of the fertility implants on wild, free-roaming mares. Our investigations of the study indicate an alarming number of wild horse injuries and deaths associated with this research. These appear to be the result of a callous disregard for the health and well-being of these protected animals by the researcher. We are raised a number of questions on the validity of the research methodology itself.

According to your response to an earlier inquiry we made to you (dated March 3, 1986--copy attached), The NAS grant committee is following the progress of the studies..., we would appreciate a copy of NAS reports on this phase of the studies. In the same letter it is suggested that a computer model of population and cost simulation on fecundity and morbidity rates be the topic of another study funded by NAS.

We would appreciate your attention into seeking a confirmation of the statistical validity of the study as well as the validity of its scientific merits. We believe our concerns and criticisms are well founded

continued . . .

17

and the study should be halted immediately regardless of the amount of money already poured into it.

We would like to suggest that the NAS grant committee carefully review the Phase II reference report compared with the final report to Congress from the original NAS studies. What is desperately needed is not how to limit wild horse populations but what is the impact of wild horses on the habitat particularly the hydrologic system and riparian areas. This point was made in strong language from the NAS field investigation team, watered down considerably by the authors of the final report.

Because of the lack of data on the impact of wild horses on the hydrologic system (and an abundance of data suggesting cattle are extremely destructive) it was assumed by the authors of the final report that the impact of horses should be considered equivalent. This assumption was the opposite of all the information contained in the Phase II reference volume with regard to wild horse grazing habits and patterns. It is contrary to the problems that exist within grazing allotments; these typically list uneven cattle distribution as the major cause of damage. In the majority of cases, range data support congregation of cattle near water sources and season of usage as causes. The lack of data on the impact of wild horses allows the data to be misread and the solution to include the reduction of wild horses rather than remedy the problem.

"Overpopulation" of horses is a term that does not meet the careful language with which the NAS field team addressed the question of what constitutes excess animals or the statutory constraints and restrictions of the 1971 Act (as amended). The final NAS report was in fact a biased summary of the NAS phase II field study.

Our concern goes beyond wild horses to the protection and preservation of the biological diversity of the public lands.

The Bureau of Land Management provides wildlife habitat for a multitude of species and the majority of it is being demolished by cattle which do congregate near water: trampling riparian habitat, compacting the soil and breaking down stream banks directly contributing to soil erosion and the destruction of fisheries as well as the depletion of the forage resource and devastation of habitat.

President Frank Press

3

June 2, 1988

We urge you to investigate the quality of the research being conducted by the University of Minnesota before more horses are lost (we have just discovered that the researcher did not report three dead mares, and that maggots under the radio collars have become an additional problem). We urge you to exercise whatever powers are within your authority to bring it to an immediate halt.

Sincerely,

Nancy Whitaker
Nancy Whitaker
Program Assistant

**FIELD TRIP REPORT
May 28, 1988**

TO RENO--NEVADA STATE BLM

**by
Nancy Whitaker**

API staff members, Bob Hillman and Nancy Whitaker, met with Ed Spang, the Nevada State BLM Director, on Friday May 28, 1988, regarding the University of Minnesota's fertility implant studies on wild horses. The purpose of the meeting was to register API's outrage over the number of ongoing deaths and injuries that continue; to list criticisms that challenge the validity of the study; and to clarify the contract authority of the BLM to intervene on behalf of horse to end the study. Time allowing, the purpose of the trip also included asking the Director for a clarification of how livestock preference will fit into upcoming grazing adjustments when range monitoring data is evaluated and further wild horse reductions will result.

API raised several criticisms on the validity of the research with which Mr. Spang fully concurred. In fact, Spang added more criticisms to the list. When Spang was informed that API had been asked to report the meeting to both U.S. Senator Reid (Nevada) and Congressman Vento (Chairman of the House Subcommittee on Appropriations), Mr. Spang willingly agreed that his concurrence with the criticisms be made known. Spang stated, for the record, that his own staff had raised similar criticisms as to the validity of the research and the shoddy methodology of

the study and data collection. Spang had further criticisms of the contract and had ordered the full investigation and reconstruction of events when the 48 horses died last September in the Clan Alpine study area of the research project. As a result of these investigations Nevada State BLM then demanded a modification of the contract that included transferring supervisory authority from the Washington, D.C. office to the Nevada BLM. Those changes were still being reviewed and were due to be finalized in mid-June. Because the studies continue and injuries continue with growing criticism, he stated that he will now insist that the University of Minnesota respond in writing with regard to the impact on the study of every change he has demanded and whether the contract is still valid under them.

While Spang would not comment on exact numbers of horses that have been eliminated from the study due to deaths, injuries, and loss of collars, it was clear that the statistical validity of the remaining numbers had been raised inside BLM. Spang agreed that it was a critical question that needed to be raised. Another criticism from his staff was the failure of the University to address the disposal of horses, from both the field and pen studies and the uncertainty of adverse effects should these horses end up auctioned and used for human consumption. His criticism raised the question of possible genetic mutation in future generations of wild, free-roaming horses. Another concern of the BLM staff, which he added to API's list, was that of leppe

(e.g. orphaned) foals and the failure of the University to take this into account.

API's criticisms included the following (see attachment for full explanation): 1) statistical values, 2) data collection methodology of monitoring, 3) observing for wet mares by helicopter, 4) abortions in the field resulting from harassment, 5) stallions rejection if collar interferes, 5) loose collars interfering with communication within bands, 6) loose collars interfering with grooming within bands, and 7) the high death and injury rate.

The most important question API raised was whether BLM would ever use fertility implant rather than selective removal as a management option to skew the population dynamic. Mr. Spang was reluctant to throw out the possibility of an implant. The question was then put in terms of the mandate for minimum management activity and cost effectiveness and the fact that control by implant would require trained personnel, drug procurement costs in addition to roundups whereas selective removal would be only the cost of the roundup. Spang replied that if there were a reliable and usable implant, BLM could not rule it out as an option in circumstances where it might be useful and appropriate.

When asked if the technical authority of the Contract Officer's Representative (COR) allowed him to draw a line between harassment, which the 1971 Act forbids, and scientific

disturbance of the subject animals to end the study, Mr. Spang replied that the line between the two would be difficult to define. However, he said that he has defaulted contracts in the past to protect wild horses and chances were he would do so in the future if it needed doing.

It was clear from the meeting that there is as much outrage and criticism going on in side the BLM over the validity of the data and the shoddy methodology, as there is outside.

The second part of the meeting centered on the range monitoring evaluations and resulting grazing adjustments which are due over the next several months. Suffice to say, that in the course of the conversation (which was technical and specific to one allotment review as an example), API stated that wild horse proponents needed Herd Management Plans written which would include management objectives for wild horses, biotic needs, grazing habits and patterns that would automatically be part of the interpretation of the monitoring data for the area. In response to the suggestion that preference will become equivalent to optimum numbers for wildlife and AML for wild horses and adjustments will be determined by the data, API 's reply was that wild horses would survive the data if it were accurately interpreted, if it were used as a tool for remedial action, and if the bottom line for BLM were preserving biological diversity and protecting the hydrologic system and not producing forage for livestock. When Mr. Spang stated that the decision to reduce to AML has already been made and wild horse proponents should accept

that as a fact, API responded to it saying the criteria for AML has never been set and that which exists has never been met; the criteria for determining excess has not met, and the statutory restrictions on the decision to remove horses is that it be determined for each given area not Bureauwide on the basis of available funding. Despite the conflicting opinions being expressed, the meeting was friendly and cordial--even pleasant.

API CRITICISM'S OF THE UNIVERSITY OF MINNESOTA**FERTILITY IMPLANTS FIELD STUDIES ON WILD HORSE MARES**

1) Death, injury and loss of radio collars have eliminated an estimated one-half of the control animals which destroys the statistical validity of the research. It raises the question of whether a control group exists anymore for the Clan Alpine study area.

2) The purpose of the study is to test for an effective fertility inhibitor on mares. Neither the protocol or the contract describes the monitoring method. The method actually involves observing subject animals at given times to check on foaling and/or pregnancy of subject and control animals. To do this requires reading 3 inch lettering on the radio collar with the naked eye from a helicopter to identify the subject animals. In order to accomplish this feat the band is herded up a hillside to put the helicopter at eye level some 25 feet off the horses. Panic, stress and duress are what allow successful herding by helicopter.

Panic, stress and duress are known to be fertility inhibitors in and of themselves. There is nothing in the protocol related to this negative variable.

There is nothing in the contract on monitoring methods and procedures that would draw the line between whether this activity is scientific disturbance and harassment.

There is nothing in the protocol to indicate how the researchers account for abortions in the field. The on-site researcher indicated that the study is premised on the assumption there are no abortions in the field. He confirms this as fact by aerial searching for aborted fetuses, if he sees none, none exist.

3) Successful observation during the data collection includes identifying wet mares and matching up foals. The typical initial reaction of horses to the helicopter is to scatter. It is not known how the researchers identify wet mares and their foals from a helicopter. It is known that identifying a wet mare on the ground is difficult--in fact, API staff had to get on their hands and knees and look up under the animals at a capture site to accurately identify the wet mares.

4) The stallions pre-copulation arousal activity involves nuzzling, nestling and nibbling the mare's neck. If he rejects her because of the collar, her failure to conceive will be read

-2-

as implant success. This variable is not addressed in the protocol.

5) The study protocol promises to deliver information on band structure, social integrity and other data aside from the fertility inhibiting implant.

a. There are many, many animals with too loose collars which ride up over the forehead and catch on the throat latch. While the collars do not appear to seriously impede eating or drinking and apparently do not interfere with breathing in helicopter herding (all of which is open to question), it does impede and restrict ear movement which is a vital non-vocal method of communication within bands.

b. There is nothing in the protocol to suggest that interference by the loose collar will impede or negatively affect grooming activity which is a vital bonding activity within bands.

c. The same criticisms applies to the presence of the implanted rod with regard to grooming and any other social activity.

Exhibit 11

PROGRESS REPORT TO:

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

CONTRACT NUMBER USDI-AA852-CT5-29

FERTILITY CONTROL IN WILD HORSES

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16

INTRODUCTION

On 1 October 1985, we began our study of fertility control in wild horses under BLM Contract Number USDI-AA852-CT5-29. Currently, our study focuses on (1) captive horses in holding facilities at Lovelock, Nevada and (2) free-ranging horses at 3 field sites. This report summarizes work that has been accomplished since the project began.

1.0 CAPTIVE FEMALE STUDIES

At the BLM holding facility in Lovelock, Nevada, 180 captive mares were implanted with silastic fertility control devices containing different levels of estradiol and progesterone to determine appropriate levels and possible contraindications. Six groups of 30 mares were implanted and a seventh group of 30 was held as a non-implanted control. The groups were as follows:

- Group 1 - Estradiol only
- Group 2 - Low Progesterone plus high estradiol
- Group 3 - Progesterone plus estradiol
- Group 4 - Progesterone plus low estradiol
- Group 5 - Progesterone only
- Group 6 - Implanted control
- Group 7 - Non-implanted control

The mares were implanted during the middle of November. Five animals from each group have been weighed and bled every two weeks since that time. Complete blood counts were made and hormone levels measured in each blood sample.

Nine animals of the 40 being monitored every 2 weeks have lost at least one of their implants, for a loss rate of 22.5%. Although some

abcessed

animals developed transient infections at the implant site, none of the animals showed elevated white blood cell counts indicative of generalized infection. Body weights of the animals remained constant over a 14 week observation period.

abcessed
Implant loss was higher for animals that had not been bled routinely. The overall loss rates were 27%, 10%, 33%, 66%, 27%, and 27% for groups 1 through 6, respectively. We do not know the causes for the high variation among the different groups, but it may be related to density in the pens and crowding during feeding. The loss rates by pen appeared to be positively correlated with pen densities; 22.5%, 26%, 32%, and 44% losses occurred in the pens from least to greatest density, respectively. We will be testing intraperitoneal implants as a potential solution to the problem of implant loss.

Among blood parameters (Table 1), slight but statistically significant changes occurred in hemoglobin levels, red cell counts, and hematocrit levels. White cell counts tended to decrease during the same period, but not significantly.

Estradiol levels fluctuated over the 14 weeks with levels in the treated groups being higher than in the non-treated groups with the exception of an increase in group 7 at week 10. This exception was due to a high level in one animal, possibly exhibiting ovarian activity in preparation for estrus (Table 2). Progesterone levels increased significantly for the first 4 weeks and then gradually declined (Table 2).

All animals are currently being tested for behavioral exhibition of estrus. The laboratory results will be confirmed by these observations. After discussing our procedures for estrus detection with personnel from

the Nevada Nile Ranch, we believed that the procedures outlined in the proposal would not work. Intensive handling of the mares likely would produce too much stress for them to exhibit estrous behaviors. We decided, therefore, to separate a group of 5 mares and allow them to run in an alley adjacent to a pen of stallions. After the mares settle down, observations for estrous behaviors will begin. In preliminary trials in late February mares settled down within 10 minutes, and some mares exhibited estrous behaviors.

2.0 FIELD STUDIES

2.1 Selection of study areas.

At an early meeting of research personnel and BLM staff in Lovelock, Nevada, during October 1985, potential study sites were suggested by district staff. Of these, the Flanigan herd area in the Carson City district was selected to be one study area. Other selections were delayed until we could inspect the areas and could obtain the necessary approval from district managers.

Following the meeting in Lovelock, we met with horse specialists and other staff from the Carson City, Winnemucca, and Battle Mountain Districts in Nevada and from the Lakeview and Vale Districts in Oregon. We drove to or flew over various potential sites recommended by district staff. Approval for use of many sites was not granted due to management conflicts; when there were sufficient horses in an area to meet sample size requirements, district managers were reluctant to delay herd reductions for the 3 year term of the study.

In a meeting on January 17, 1986 with BLM personnel from Washington, D.C., from various districts in Nevada and from the Nevada state office, several options for selection of study areas were discussed. Because we could not find acceptable study areas to begin the mare treatments prior to the 1986 foaling season, we agreed that the best solution was to delay mare treatments until July 1986, when herd reduction gathering was scheduled. However, after this January 17 meeting it became apparent that another serious problem existed, centered on the genetic studies to determine parentage. That is, if we capture horses after a herd reduction gathering, the structure of many bands is likely to be altered, and such alteration will make determination of parentage within bands (i.e., contribution of the dominant stallion) impossible. This problem was resolved at a meeting March 24, 1986 in Reno, Nevada. At this meeting it was agreed that we should gather prior to BLM or on areas undisturbed since December 1984 and not to be gathered for at least 3 years. It was decided that the remaining three areas would be Clan Alpine for one mare treatment area, Stone Cabin for the other mare treatment area, and Reveille for the other mare control area. The areas can still be divided into relatively flat and mountainous, with the hope of including extremes that influence the horses' social system. The summary for areas selected is:

<u>Treatment</u>	<u>Mountainous</u>	<u>Flat</u>
Stallion	Flanigan	Beaty's Butte
Mare	Clan Alpine	Stone Cabin
Control	Wassuk Mts.	Reveille

Treatments are completed on the two stallion areas and on the Wassuk Mountains control area. We will complete the other areas beginning around August 15, 1986, and continuing into the fall. On the Clan Alpine

area we will gather before BLM begins their reduction program; sometime after September 1, 1986. It was agreed that we should start working on the southeastern portion of the area and work northward along this eastern edge. If an insufficient number of animals are found in this area we will complete the sample in the southwestern corner of the area. During the BLM gathering, animals with collars or marks that indicate they are part of our experimental groups, will be released. The Stone Cabin and Reveille areas are not scheduled for gathering for the next three years. Thus, no conflict in objectives should occur in these areas for the duration of the study. We will work in these areas beginning in September, 1986.

2.2 Stallion areas.

Vasectomies of dominant stallions have been completed in both study areas. A total of 184 horses were captured in the Flanigan area from 30 bands. Twenty dominant stallions were vasectomized; 5 dominant stallions were drugged, marked with radio collars, and released with their bands; and all horses in 5 bachelor bands were marked with number collars. With the exception of a few bands occupying the north end of the study area, all horses were judged to be in very poor condition. One stallion, a 17-year old, apparently reacted to the drugging procedure and died. Another stallion in the band was vasectomized, as we assumed that this stallion would become dominant.

In the Beaty's Butte area, we vasectomized 21 stallions from a total of 148 horses captured. One 2-year old was mis-identified as the dominant stallion and sterilized. When we detected our mistake, we vasectomized the correct stallion in that band also. We tagged 19

distinct bands, including 2 bachelor groups and 2 groups from which the dominant stallion apparently escaped. Late in the afternoon of 5 February, the pilot brought in a group of 32 animals from the northern part of the study area, 15-20 miles away. He noted that there were 6 bands included in the group. We allowed the group to remain in our holding facility overnight anticipating the dominant stallions would isolate their bands from other horses. When we arrived the following morning, 6 groups of horses were apparent, including 5 bands with dominant stallions and another larger group with no apparent dominant. We identified the 5 dominant stallions and sterilized them. After all surgeries were complete and all other horses were marked, we released the whole group as a unit and assumed the bands would reorganize during their return trip.

Two horses developed lameness following the surgery. Their symptoms indicated radial nerve damage, which usually is a temporary condition. In mild cases, horses can accommodate this damage. One, after holding it overnight along with his band, showed signs of improvement and was released. The other, which was the first stallion treated, showed no apparent improvement after 3 days and did not react to visual stimulus; it was euthanized.

2.3 Mare Control areas.

We captured a total of 132 horses in the Wassuk Mountains and implanted control capsules in 40 mares. Because this sample is 10 short of our required sample size, we plan to implant control capsules in 10 mares in the Clan Alpine Mountains, which will be the mountainous mare treatment area. The other mare control area (Reveille) will be completed this fall.

2.4 Blood samples.

Blood was collected from all animals captured. Complete blood counts have already been made on these samples and the data are being analyzed.

The samples will also be used for serum chemistry, hormone analyses and genetic studies.

2.5 Mare treatment areas.

We will begin the capture effort in the mare areas in late summer 1986. Now that the conflict between the herd reduction effort and determination of parentage has been resolved, we do not anticipate further problems regarding the study sites.

3.0 GENERAL ASPECTS OF THE STUDY

The sex/age structure of horses within the herd areas we have completed indicate that the Beaty's Butte herd is the most productive (Tables 3, 4, and 5). In Beaty's Butte, the number of foals we handled (these were nearly a year old) was 66% of the numbers of mares 3 years and older, and the number of yearlings was 58% of the mares 4 years and older. In the Flanigan area, the proportions for foals and yearlings were 45% and 25%, respectively; in the Wassuk Mountains, the proportions were 38% and 20%. We expected poor reproduction and juvenile survival in the Flanigan area because most of the horses captured there were in very poor condition. However, the general condition of the horses in the Wassuk area was fair to good. We have heard unconfirmed reports of regular poaching in the Wassuk area, and young horses are the easiest to catch. Such illegal captures could result in the age structure we observed in the Wassuk herd.

TABLE 1. Blood counts before and 6 and 14 weeks after implantation of hormone-containing silastic rods.

Group	Hemoglobin			Hematocrit		
	Pre	Wk 6	Wk 14	Pre	Wk 6	Wk 14
1	16.0 ± 1.0	17.1 ± 0.4	17.1 ± 0.9	47.0 ± 1.8	48.2 ± 0.8	50.2 ± 1.6
2	16.1 ± 0.6	17.5 ± 0.4	16.6 ± 0.6	46.6 ± 1.3	50.1 ± 1.0	48.6 ± 1.3
3	14.0 ± 0.7	16.2 ± 0.6	15.8 ± 0.4	43.1 ± 1.9	46.2 ± 1.5	44.9 ± 1.7
4	15.1 ± 0.4	16.2 ± 0.6	16.0 ± 0.4	42.9 ± 1.3	45.2 ± 1.6	45.2 ± 2.8
5	16.1 ± 0.4	16.6 ± 0.6	16.6 ± 0.4	47.7 ± 1.5	47.3 ± 1.2	47.5 ± 1.0
6	15.3 ± 0.5	16.5 ± 0.6	16.8 ± 0.6	47.0 ± 3.0	47.5 ± 2.1	47.3 ± 2.8
7	15.6 ± 0.3	16.0 ± 0.5	16.0 ± 0.6	46.6 ± 0.9	45.5 ± 1.0	45.6 ± 1.7

Group	Red Cell Count			White Cell Count		
	Pre	Wk 6	Wk 14	Pre	Wk 6	Wk 14
1	9.5 ± 0.5	9.7 ± 0.2	10.3 ± 0.4	7.8 ± 1.0	7.4 ± 0.2	6.2 ± 0.5
2	9.4 ± 0.4	10.2 ± 0.3	10.2 ± 0.4	7.9 ± 0.7	9.4 ± 0.7	7.7 ± 0.7
3	8.7 ± 0.5	9.7 ± 0.4	9.4 ± 0.6	6.0 ± 0.4	7.7 ± 0.8	7.0 ± 0.9
4	8.5 ± 0.3	8.5 ± 0.6	9.5 ± 0.2	8.0 ± 1.2	8.6 ± 0.8	6.2 ± 1.4
5	9.8 ± 0.4	10.2 ± 0.2	10.4 ± 0.1	8.5 ± 0.9	9.1 ± 1.2	7.9 ± 0.9
6	9.6 ± 0.2	8.7 ± 0.6	10.4 ± 0.5	8.4 ± 0.4	8.3 ± 0.7	8.0 ± 0.6
7	9.1 ± 0.2	9.2 ± 0.3	9.6 ± 0.3	7.5 ± 1.2	9.1 ± 1.5	8.5 ± 1.3

TABLE 2. Age and sex structure of horses entered in the Florida study

TABLE 2. Estradiol and progesterone levels before and after implantation of hormone-containing silastic rods.

Group	Estradiol		
	Pre	Wk 4	Wk 10
1	13.5 ± 1.4	6.8 ± 0.4	8.9 ± 0.8
2	10.3 ± 1.7	9.9 ± 1.3	7.0 ± 0.5
3	11.8 ± 0	7.3 ± 1.1	4.2 ± 1.1
4	28.2 ± 9.1	11.1 ± 3.1	14.1 ± 8.4
5	7.5 ± 1.0	6.4 ± 0.4	3.9 ± 1.2
6	5.6 ± 0.6	5.7 ± 0.2	5.2 ± 1.1
7	8.2 ± 1.3	7.6 ± 1.6	12.7 ± 6.8

Group	Progesterone			
	Pre	Wk 4	Wk 10	Wk 12
1	0.8 ± 0.3	0.4 ± 0.1	0.1 ± 0	0.1 ± 0
2	0.3 ± 0.04	0.7 ± 0.08	0.3 ± 0.01	0.4 ± 0.03
3	0.3 ± 0.06	0.8 ± 0.2	0.4 ± 0.1	0.5 ± 0.1
4	0.1 ± 0.04	0.7 ± 0.2	0.4 ± 0.05	0.6 ± 0.1
5	0.2 ± 0.05	1.5 ± 0.2	0.6 ± 0.05	1.0 ± 0.1
6	0.4 ± 0.1	0.3 ± 0.07	0.1 ± 0	0.1 ± 0.04
7	0.1 ± 0	0.1 ± 0.04	0.1 ± 0	0.1 ± 0.02

TABLE 3. Age and sex structure of horses captured in the Flanigan study area.

AGE	SEX		TOTAL
	M	F	
0	10	20	30
1	4	10	14
2	7	4	11
3	11	11	22
4	7	11	18
5	8	8	16
6	4	12	16
7	11	4	15
8	3	2	5
10	1	0	1
11	4	6	10
12	2	1	3
13	0	1	1
14	0	3	3
15	1	2	3
16	0	3	3
17	2	0	2
18	1	0	1
19	3	2	5
20	2	0	2
21	1	0	1
25	2	0	2
TOTAL	84	100	184

TABLE 4. Age and sex structure of horses captured in the Wassuk Mountains study area.

AGE	SEX		TOTAL
	M	F	
0	5	9	14
1	4	4	8
2	5	7	12
3	8	9	17
4	1	2	3
5	5	3	8
6	1	2	3
7	3	5	8
8	1	7	8
9	3	4	7
10	3	2	5
11	3	1	4
12	5	2	7
13	2	2	4
14	2	2	4
15	4	3	7
17	1	1	2
18	3	1	4
20	1	1	2
22	1	0	1
25	3	0	3
27	0	1	1
TOTAL	64	68	132

TABLE 5. Age and sex structure of horses captured in the Beaty's Butte study area.

AGE	SEX		TOTAL
	M	F	
0	12	15	27
1	8	15	23
2	18	6	24
3	1	1	2
4	3	10	13
5	6	6	12
6	1	5	6
7	6	8	14
8	2	7	9
10	1	1	2
11	3	0	3
14	1	0	1
15	0	1	1
16	1	1	2
17	2	1	3
19	1	0	1
20	2	0	2
22	2	0	2
25	1	0	1
TOTAL	71	77	148

Exhibit 12

PROGRESS REPORT TO:

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

CONTRACT NUMBER USDI-AA852-CT5-29

FERTILITY CONTROL IN WILD HORSES

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31 March 1987

19

INTRODUCTION

On 1 October 1985, we began our study of fertility control in wild horses under BLM Contract Number USDI-AA852-CT5-29. Currently, our study focuses on (1) captive horses in holding facilities at Lovelock, Nevada and (2) free-ranging horses at 4 field sites. This report summarizes work that has been accomplished since the project began.

1.0 CAPTIVE FEMALE STUDIES

The primary objective of this portion of the project was to develop an effective, safe and cost efficient method of controlling fertility in wild horses for a period of greater than 2 years. The project started October 1, 1985. This portion of the report will summarize the status of the development of fertility control in females only.

SUMMARY OF THE FIRST SIX MONTHS:

Silastic rods of different sizes and containing various amounts of estradiol and/or progesterone were constructed and incubated in vitro and their release rates measured. Based on the results of these incubations a series of implants were prepared to be implanted into mares at the Lovelock facility.

Five hormone treated groups and 1 control group containing 30 anestrus mares each were implanted with silastic rods during mid-November 1985. The number of silastic rods for the hormone treated groups varied but each rod contained either 4 grams of estradiol-17B or progesterone. Thus, the different levels of hormone were achieved by varying the number of implants placed in an animal. All implants were placed in the neck of the horse either subcutaneously or between muscle layers deeper in the neck. The treatment groups are depicted in Table 1. See Appendix B for an explanation of the treatment codes given in Table 1.

Estradiol and progesterone levels were followed in five animals from each group through March 20, 1986. Serum progesterone levels rose during the first 2 to 4 weeks after implanting, levelled off for 2 weeks and then gradually declined. Levels of serum progesterone and estradiol were correlated with the number of implants placed in each group. However, only the group that received 6 progesterone rods per animal maintained levels of 1 ng/ml. This level was about half the level that was felt necessary to block ovulation and/or conception. Serum estradiol levels in the group implanted with the highest estradiol were only elevated by 2-4 pg/ml over the other groups. This level was also considered inadequate to effect contraception.

In early March, it was discovered that the implants in the non-handled animals were being lost at a much higher rate than those in the animals being handled on a regular basis. All animals were then bled and the implants palpated. Fifty-three animals had lost implants. There was no apparent relation between hormone level and implant loss. Thus, it was not felt that the loss of implants was due to the presence of hormone in the implant. Bacterial cultures of the affected animals revealed a beta-hemolytic streptococcus infection. This is common to the skin of horses and may be related to the close contact of animals in the confined quarters of the Lovelock holding facility. None of the infected animals had sustained elevated white blood cell counts. Thus, the infection appeared to be local. After loss of the implants, all areas healed.

All animals were palpated for ovarian activity by a veterinarian during mid-April. Follicular activity was noted in some animals from all groups.

PROGRESS THROUGH MARCH, 1987:

ORIGINAL IMPLANT GROUPS:

Mares retaining implants were tested for estrus twice a week from mid-April through July. Animals exhibiting estrus were bled 10 days after the last day of heat to determine if ovulation had occurred. A progesterone level of greater than 3.0 ng/ml indicated that ovulation had occurred. The numbers of mares exhibiting estrus and/or ovulation is depicted in Table 1.

Table 1. Exhibition of estrus and ovulation in implanted mares at the Lovelock facility through August 1, 1986.

Group	Estrous behavior				Ovulation			
	showing	tested	% ¹	P ²	showing	tested	%	P
CI	22	25	88	--	20	25	80	--
E	10	23	43	.001	21	22	95	NS
P	15	20	75	NS	14	20	70	NS
HP+E	9	18	50	.007	9	18	50	.03
P+HE	13	26	50	.003	20	26	77	NS
HP+LE	7	10	70	NS	6	10	60	NS

¹Number of animals showing divided by the total number of animals tested in that group.

²Significance of chi-square test vs CI

During mid-July, a stallion was placed in with the mares retaining implants from groups E, P, HP+E, P+HE and HP+LE. On September 10 and 12, these mares were palpated for pregnancy status. Blood samples were also collected for progesterone assay. Results of the pregnancy tests by rectal palpation suggested that only a few of the treated horses were pregnant as compared with most of the untreated horses. Results of progesterone assays from those same horses collected at 2 week intervals, however, suggested a higher number of pregnant animals in the treatment groups (Table 2).

Table 2. Pregnancy assessment in originally implanted mares based on progesterone levels above 3.0 ng/ml in 2 consecutive samples collected 2 weeks apart.

Group	# pregnant	# open	%	P1
no trt ²	8	16	33	---
E	17	5	77	.003
P	17	1	94	.0001
HP+E	13	3	81	.003
P+HE	21	5	81	.0007

¹Significance level for chi-square analysis vs CI group.

²Theoretical estimate based on the length of the estrous cycle.

The reason for the discrepancy between the palpation data and the hormone data was assumed to be due to the early stage of pregnancy of the mares at the time of palpation. From these data, however, it was concluded that the original treatments were not effective as contraceptives in feral mares.

NEW TREATMENTS:

Based on the March observations that hormone levels in the treated animals were not being maintained at expected levels and that some animals from all groups were exhibiting estrus, it was decided to try: 1) to achieve higher levels of hormones in treated animals, 2) different forms of the hormones to increase the biological potency, and 3) incorporating a co-polymer with the silastic and hormone to increase the release rate of the hormone.

In vitro studies were conducted with varying concentrations

and sizes of implants with and without co-polymer to demonstrate that both progesterone and estradiol release could be increased by increasing the surface area of the implants and adding varying amounts of the co-polymer glycerol to the silastic-hormone mixture. Increased in vitro release rates were accomplished by adding up to 30% glycerol but not by increasing the concentration of hormone in the implant (Table 3).

Table 3. Effect of Size, Hormone Concentration and Glycerol Content on the Release of Progesterone and Estradiol from Homogenous Silastic Rods.

Hormone Size* (grams) (cc)	Whole implants				Quartered implants						
					w/o Glycerol			w/Glycerol			
	P4		E2		P4		E2	P4		E2	
	(ug/hr)		(ug/hr)		(ug/hr)		(ug/hr)	(ug/hr)		(ug/hr)	
	X	S.E.	X	S.E.	X	S.E.	X	X	S.E.	X	S.E.
1 3	91 ± 2		4.6 ± .3							20.9 ± .5	
1 6	117 ± 4		5.1 ± .1							28.1 ± .7	
2 6	119 ± 2		10.9 ± 1.4							30.1 ± 1.6	
1 12	156 ± 2		6.3 ± .2		160 ± 2			255 ± 2		51.4 ± 3.2	
2 12	171 ± 6		8.3 ± .1		153 ± 2	25.8		226 ± 4		51.3 ± 1.9	
4 12	158 ± 1		12.0 ± .6		155 ± 4	43.2		189 ± 4		66.3 ± 2.6	
6 12					160 ± 4			191 ± 4			

*A 3 cc implant has a length of 5.5 cm, radius of 0.45 cm and surface area of 16.8 cm². A 6 cc implant is 5.5 cm long, with a radius of 0.62 cm and surface area of 23.8 cm². A 12 cc implant is 6.5 cm long, has a radius of 0.75 cm and a surface area of 34.2 cm². The surface area of a quartered 12 cc implant is 73.2 cm².

On the basis of the above studies, six new treatment groups were established. Table 4 presents a summary of the new treatments with the details of each treatment explained in Appendix B.

Since all animals except the NORGEST animals in the groups listed in Table 4 were implanted with the same amount of progesterone, the efficacy of the place of administration and co-polymer was assessed by measuring the serum levels of

progesterone. All of these treatment groups were implanted with 12 cc size silastic rods. Ten animals were implanted with small rods (3 cc size) containing the highly potent hormone (d-norgestrel) because that hormone has been extremely effective as a contraceptive in humans for as long as 6 years.

Table 4. Treatments added to the Feral Horse antifertility project and expected estradiol and progesterone levels to be attained.

Group*	Hormones Implanted	Total # Implants	Progesterone	Estradiol
PP + HE	P4 + E2	12	1.2 ng/ml	29 pg/ml
PP + HE-G	P4 + E2	12	2.0 ng/ml	80 pg/ml
PP + E (IP)	P4 + E2	9	1.2 ng/ml	14 pg/ml
PP + EB	P4 + E2B	9	1.2 ng/ml	90 pg/ml
PP + EE2	P4 + EE2	10	1.2 ng/ml	3 pg/ml
PP + EE2ME	P4 + EE2ME	10	1.2 ng/ml	3 pg/ml
NORGEST	LEVONORGESTREL	5	0.1 ng/ml	3 pg/ml

*Each group contains a minimum of 10 animals made up from animals that had lost or walled-off previous implants and animals from the CNI group. Five animals from each group except the PP+E(IP) and the NORGEST groups received implants subcutaneously in the flank and five animals received implants deep intramuscularly. The PP+E(IP) animals had implants placed intraperitoneally and the all ten animals in the NORGEST group received implants intramuscularly.

Animals were implanted with the new treatments in April. The implants were placed in three different sites, intramuscularly in the rump, subcutaneously in the flank and intraperitoneally.

All animals in the new treatment groups were tested for exhibition of estrous behavior twice a week and blood samples were collected every two weeks for progesterone and estradiol assay.

Comparison of progesterone levels from animals receiving implants intraperitoneally, intramuscularly or subcutaneously are presented in Table 5. Analysis of variance revealed that there were no significant differences between the three sites of implantation.

Table 5. Progesterone levels (ng/ml) in horses at 12 and 20 weeks after implantation at 3 sites.

site	N	weeks after implantation		
		12	20	30
s.c.	21	1.5 ± 0.5	1.3 ± .06	1.2 ± 0.1
i.m.	17	1.6 ± 0.2	1.4 ± .07	1.1 ± 0.04
i.p.	15	1.6 ± 0.2	1.4 ± .08	1.2 ± 0.1

Progesterone levels in animals implanted with glycerol containing implants were 1.6 ± 0.2 and 1.1 ± 0.12 for 12, 20, and 30 weeks post implantation, respectively.

Serum estradiol levels at 12 weeks post implanting were related to the amount implanted (Table 6). However, serum levels of the hormones were not enhanced by implanting conjugated hormones or having a copolymer with the hormone in the implant.

Table 6. Estradiol levels at 12 weeks after implanting with estradiol, estradiol with glycerol and estradiol benzoate.

Group	PP+E	PP+EB	PP+HE	PP+HEG
Amt implanted	12g	12g	24g	24g
Serum E2 level	17 ± 2	13 ± 1	43 ± 9	35 ± 6
	----N.S.----		----N.S.----	
	-----P < .0001-----			

The hormone levels presented in Tables 5 and 6 were taken from animals that retained implants. As with the first groups implanted, a significant number of the animals in the newly implanted groups lost implants (Table 7) from subcutaneous or intramuscular sites. In addition, several animals that had implants placed intraperitoneally demonstrated low levels of progesterone, indicating that progesterone was not getting into the circulation. Three of these animals showed evidence of ovulation and one was palpated as being pregnant.

Table 7. Status of implants in the second group of implanted mares.

Site implanted	# with low progesterone	# with normal progesterone
subcutaneous	11	14
intramuscular	7	15
intraperitoneal	4	11

Progesterone levels in the NORGEST group indicated that seven of the ten animals were exhibiting normal ovulation and luteal phase levels of progesterone. In the other groups, none of the animals receiving implants intramuscularly or subcutaneously and retaining the implants exhibited estrus and only one has shown evidence of ovulation. Three of the animals that received intraperitoneal implants, however, appear to have ovulated. The condition of the implants needs to be determined in these animals.

About half of the animals that have lost implants appear to have retained the estrogen containing implants and have not ovulated. (The estrogen containing implants were put in first and deepest.) This suggests that an appropriate amount of ethinylestradiol without progesterone may effect contraception. The possible use of ethinylestradiol alone is interesting because of the advantage of being able to use fewer implants and the possibility of remote delivery of implants.

During January, 1987, fifty additional mares received intraperitoneal implants. Two groups of ten pregnant mares were implanted to determine the effects of high levels of progesterone plus ethinylestradiol or ethinylestradiol alone on pregnancy and parturition. In addition, three groups of mares were implanted with lower levels of ethinylestradiol to determine the minimum dose that will effect contraception.

From the above data, we can conclude:

- 1) High levels of estradiol or ethinylestradiol with high levels of progesterone appear effective in blocking estrous and ovulation through at least one breeding season.
- 2) Route of administration has no effect on the ultimate serum level of hormone achieved and consequently effectiveness of the implant.
- 3) Loss of implants from subcutaneous or intramuscular placement is still a major problem that may be alleviated by placing the implants intraperitoneally.

GENERAL CONDITION:

During the course of the studies, control animals were bled at regular intervals. Complete blood counts were conducted on all samples. Analysis of these data showed a significant increase in hemoglobin, hematocrit and red blood cell levels over the year. Hemoglobin levels increased from 15.3 ± 0.2 g/dl in November, 1985 to 18.3 ± 0.3 g/dl in October, 1986. During the same time period hematocrit increased from 44.9 ± 0.9 to 53.0 ± 0.6 vol % and red blood cell count increased from 9.3 ± 0.2 to $10.5 \pm 0.1 \times 10^9$ /ml. This would suggest a general improvement in condition of these animals over the year in captivity. This conclusion is further supported by the fact that 14 of the 22 control animals were still exhibiting evidence of ovulation during October, 1986, when no ovarian activity was noted by palpation during September, 1985. White blood cell counts were in the normal range for horses ($8.3 \pm 0.3 \times 10^3$ /ml) and did not change significantly over the year (Table 8).

Table 8. Changes in blood hematology in control feral horses from 4 through 17 months in captivity.

Month	Hgb (g/l)		Hct (vol%)		RBC ($\times 10^6$)		WBC ($\times 10^3$)		N
	X	SE	X	SE	X	SE	X	SE	
Nov. '85	15.3	.2	44.9	.9	9.3	.2	8.3	.3	25
Dec. '85	16.4	.5	47.9	2.6	9.5	.2	8.1	.9	5
Jan. '86	17.7	.5	51.2	2.8	10.2	.3	9.1	1.0	5
Feb. '86	17.3	1.0	46.7	2.4	10.1	.2	7.8	.3	4
Mar. '86	17.4	.2	48.4	.7	9.8	.2	8.9	.4	25
Apr. '86	17.8	.2	52.0	1.2	10.1	.2	8.5	.4	24
May '86	17.9	.2	52.2	.8	10.8	.2	9.5	1.1	16
June '86	17.0	.2	50.4	1.0	10.5	.2	8.7	.5	15
July '86	17.0	.5	49.7	1.6	10.1	.3	7.7	.6	13
Aug. '86	17.3	.7	53.5	2.6	10.5	.4	7.3	.5	3
Sept. '86	18.8	.2	52.9	.6	10.5	.1	7.4	.3	23
Oct. '86	18.3	.3	53.0	.6	10.5	.1	8.4	.4	27
Nov. '86	18.0	.3	48.8	.8	10.3	.2	7.4	.5	20
Signif.	P <0.001		P <0.001		P <0.001		P = 0.20		

Similar increases over time occurred in all treated groups. Thus, we conclude that the general health of the horses has improved while the horses have been maintained in captivity. In addition, body weight, although quite variable, increased over time in captivity lending further support to the conclusion that the condition of the animals was improving.

2.0 FIELD STUDIES

2.1 Stallion Areas.

Aerial surveys of both stallion study areas, Flanigan and Beatys Butte, were conducted three times each in spring and summer 1986. Reduction in reproduction due to vasectomies was not expected in 1986 because we performed the surgeries after the breeding season for the 1986 foal crop had occurred. Counts of foals/100 adults in Flanigan were low, averaging 11.7, and were slightly higher in the Beatys Butte study area (17.7).

Counts for 1987 are scheduled to begin in May 1987, and will include four surveys of each area. These counts should indicate effectiveness of vasectomizing dominant stallions as a fertility control technique in the two areas. However, with such low foal production in 1986 in both areas, effects may be difficult to detect. Comparing the structure of bands and the ability of vasectomized stallions to maintain bands will be deferred until additional flights and ground observations are made.

We observed bands from the ground in both areas in summer 1986 to assess the status of the stallions that were vasectomized. Ground observations in the Flanigan area are currently in progress for spring 1987.

2.2 Mare Control Areas.

We conducted three aerial surveys in the Wassuk Mountains for foal production in 1986 and found an average of 17.0 foals/100 adults. Skeletons of two mares treated with control implants were found, but the cause of death could not be determined.

At the December 9, 1986 meeting in Reno, Nevada, we discussed combining the final control area with the mare treatment scheduled for fall 1987 in the Clan Alpine Mountains. This capture should begin as scheduled, and will be the final capture effort for the study.

2.3 Mare Treatment Areas.

We caught and handled a total of 367 horses in Stone Cabin Valley during August, 1986. One hundred one were healthy mares between 3 and 12 years old (or were pregnant or lactating two-year olds) and were treated with hormone-impregnated implants. These treatments occurred after the 1986 breeding season, thus the 1987 foal crop should not be affected by these treatments. Aerial surveys of the Stone Cabin herd are scheduled to begin in May, 1987.

The final treatment area, Clan Alpine Mountains, is scheduled for completion in October, 1987. One hundred mares will be treated with the most effective treatments we are currently testing in the holding facility in Lovelock, Nevada, and 50 mares will be given sham implants as controls.

2.4 Herd Condition as Indicated by Blood Parameters

Analysis of the complete blood counts of the horses in Flanigan, Wassuk, and Beatys Butte areas showed significant differences in hemoglobin and hematocrit levels among areas. These data suggested that the horses in the Flanigan area were in the poorest condition and the horses in the Wassuk area were in the best condition. The data also suggested that the youngest animals of both sexes in the Flanigan area were in the poorest condition. That is, males and females under 2 years of age had the lowest hemoglobin and hematocrit levels.

The interpretation of condition among the three areas was further supported by the incidence of ovarian function in the females in the three areas. Serum progesterone levels above 2 ng/ml indicate an active corpus luteum. Since during December, January and February, horses are normally anestrous, and would have a serum progesterone level less than 1 ng/ml, a serum progesterone level above 2 ng/ml should indicate that the animal is pregnant.

Progesterone was measured in the serum from all females gathered in the Flanigan, Wassuk and Beatys Butte areas. Significant differences were noted in the numbers of animals with progesterone levels above 2 ng/ml (Table 9). Since a high percentage of adult females should get pregnant if they are in adequate condition, the lower percentage of pregnant adults in the Flanigan area would support their being in poorer condition.

Table 9. Percentage of animals with serum progesterone levels above 2 ng/ml as a function of age in three feral horse containment areas.

AREA	AGE		
	< 2	2 - 3	> 3
FLANIGAN	.03 (30) ¹	.07 (15)	.62 (53)
WASSUK	.09 (11)	.62 (13)	.92 (37)
BEATYS BUTTE	.20 (24)	.57 (7)	.83 (41)

¹The number of observations is contained in parentheses.

In conclusion, it would appear that:

- 1) High levels of synthetic and natural estradiol along with high levels of progesterone are effective in blocking estrous and ovulation in feral mares for a period of at least 7 months and show strong promise for being effective for several years;
- 2) Intraperitoneal placement of implants appears to be most efficacious.
- 3) General condition of horses kept in the long-term holding facility at Lovelock improves over the first eighteen months in captivity as reflected by increased hematological parameters;
- 4) General condition of free-ranging horses varies with area and is reflected by changes in hematological parameters and the incidence of ovarian function.

Although the new implants seem to effect contraception in horses, we still have to determine the side effects of these doses of estrogens and progesterone as well as the effects on the outcome of pregnancy. Preliminary data from the analysis of 21 blood chemistry parameters indicate that during the first 6 months of treatment with the high dose hormones no significant differences from controls could be detected. The next 6 months is crucial for determining the longevity of the contraceptive effect of the implants.

2.5 Development of a Data Base for Modeling Population Dynamics

Bureau of Land Management personnel throughout the West census individual feral horse herds on a regular basis. These data, combined with information collected on captured horses at Palomino Valley, present a unique opportunity to investigate population dynamics of feral horses across a wide geographic and ecological range. Such a data base would prove invaluable in modelling populations and the probable consequences of alternative management strategies, such as contraceptive implants, on the growth rate of horse herds.

The data needed to conduct such a study are currently in district office files and need to be consolidated into a centralized data base. The feasibility of building such a data base was explored in late March by visiting the Carson City and Winnemucca district offices to examine files on individual horse herds. Both Tim Reuwsaat in Carson City and Dick Wheeler in Winnemucca were enthusiastic and supportive of the idea and felt that such a data base would aid in management of horse populations. We were also encouraged by the quantity and quality of the data that has been collected on many of the horse herds and believe a concerted effort to consolidate the data is worthwhile.

We have begun the task of tabulating census histories for 38 herds in the Carson City and Winnemucca districts. In addition we are also entering the information from Palomino Valley on approximately 15,000 animals that were removed from herds in these two districts. During the next 3-6 months we intend to visit district offices in Oregon, Wyoming, and Nevada to gather additional data. We hope to have the data base completed and begin preliminary analysis by the end of 1987.

2.6 Potential Efforts of Reproductive Inhibition

A simulation model of reproductive inhibition as a means of controlling feral horse populations has been prepared and run under a variety of conditions. Results from these simulations are presented in Appendix A.

A PRELIMINARY INVESTIGATION OF THE POTENTIAL EFFECTS OF REPRODUCTIVE INHIBITION AS A MEANS OF CONTROLLING FERAL HORSE POPULATIONS

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Abstract - A series of deterministic Leslie matrix models were used to simulate feral horse populations with varying annual growth rates. Populations were subjected to fecundity control through the use of mare contraceptive implants with life spans of 3, 5, and 10 years. Contraceptive programs can substantially reduce population growth rates, but it may be unrealistic to expect adequate control in populations with annual growth rates of 15% or more without a concurrent removal program. Management programs must be developed for individual feral horse populations based on annual growth rates because there is no single treatment program that is well suited to all populations. Any attempt to implement a generalized contraceptive program for all populations may result in inadequate control in some populations while precipitous declines occur in others.

Feral horse populations on arid western rangelands have expanded dramatically since they were protected by federal law in 1971 (Boyles 1986). The Bureau of Land Management, which is the primary government agency involved in feral horse management, would like to reduce current horse populations and maintain them at lower levels in order to better balance use of range resources. At present, the only technique available for controlling feral horse populations is to periodically gather animals from herd management units and place them in captivity. The horses cannot be destroyed so if they are not claimed through the "Adopt-A-Horse" program the animals are maintained in captivity for the rest of their lives. This management strategy has resulted in the removal of over 60,000 animals from western rangelands with at least 10,000 horses currently being maintained in captivity at BLM facilities (Boyles 1986). An alternative strategy currently under investigation is controlling fertility of free-ranging mares using contraceptive implants (National Research Council 1980). If implants prove to be feasible there is a need to explore how to deploy implants to best achieve the goals of population management. The objective of this exercise was to experiment with simple population models to explore the impacts of various treatment levels (percent mares implanted) on feral horse population dynamics and interpret these results with respect to possible management programs.

METHODS

Deterministic Leslie matrix models for the female segment of the population were built on a LOTUS spreadsheet using 20 age classes. These models are similar to those constructed by Eberhardt (1982). The population at $t=0$ was 100 (5 animals in each age class), and annual survival of foals during their first year of life was held constant at 0.80. Adult survival and fecundity of mature mares (>2 years-old) were the same for all age classes and varied to obtain populations with annual rates of increase of approximately 0.20, 0.15, 0.10, and 0.05 (Table 1). The annual rate of increase for each population was calculated by running the initial model for 40 years to assure the age structure and annual rate of increase had stabilized. The population at $t=40$ was then divided by the population at $t=39$ to obtain lambda, the annual population growth rate. The proportion of animals in each age class at $t=40$ was calculated by dividing the number of animals in each age class by the total population. These proportions were then used to duplicate the age structure for a population of 300 which was used as the standard initial population for all treatment simulations. For all models used in this study I assumed a closed population, no density dependent effects, and a 1:1 sex ratio at birth.

Table 1. Parameter values used to simulate 4 populations with different annual growth rates.

Lambda	Juvenile survival	Adult survival	Fecundity
1.20	0.80	0.99	0.80
1.15	0.80	0.97	0.65
1.10	0.80	0.92	0.65
1.05	0.80	0.91	0.50

A sensitivity analysis was performed on the basic population model in order to gain some understanding for the relative contribution of each of the parameters in regulating lambda. The analysis was conducted using initial parameter values for a population with an annual growth rate of 15% (Table 1) which is thought to be representative of typical feral horse populations (Wolfe 1986). The sensitivity of lambda to changes in the values of each of the parameters was accomplished by holding 2 parameters constant while changing the third parameter by increments of 0.01 until a change of 0.18 was realized. Lambda was calculated as described above and subtracted from 1.15 to obtain the change in lambda

caused by progressively larger changes in the parameter. The same procedure was used for all 3 parameters.

Since it is uncertain at present how long implants will remain effective, 3 treatment models simulating implant life spans of 3, 5, and 10 years were constructed. For each of the 3 treatment models, simulations were run for each population with 10 treatment levels which varied from 10 to 100%, in 10% increments. Each treatment was simulated for 50 years. To determine the impact of treatments on population growth a logarithmic transformation of the number of animals in the population during each year of the simulation was plotted. An estimate of lambda for the 50 year treatment was obtained from a regression line fitted to these data. A simulation with no treatment was also performed to provide a control for comparing treatment effects. For all treatment models I assumed that mares were implanted at intervals equal to the implant life span throughout the simulation. In addition, I assumed that treatments were spread proportionately over all age classes and mares pregnant at the time they were implanted successfully produced a foal the following year.

RESULTS AND DISCUSSION

Model Sensitivity

Figure 1 presents the results of the sensitivity analysis for the general horse population model. Lambda is most sensitive to changes in adult survival with a 1% change in survival producing roughly an equivalent change in lambda. In contrast, a 1% change in fecundity results in only a 0.5% change in lambda. Juvenile survival has the least impact on lambda with a 1% change resulting in approximately a 0.2% change in lambda.

These data suggest that the most expeditious way to control growth of feral horse herds is to reduce adult survival. BLM's current "Adopt-A-Horse" program, which involves removing animals from the wild and offering them to private citizens for adoption, effectively reduces survival of both adults and juveniles since the animals are removed from the population. However, the adoption fees paid for horses cover only a small fraction of the program costs. From the program's inception in 1973 to 1985 approximately \$75 million (1985\$) has been spent with the average cost per horse exceeding \$800 (Godfrey and Lawson 1986). Because the removal program exceeds the adoption rate the majority of the expenditures are for maintenance of captive horses. If unwanted animals could be sold soon after capture, program costs would decrease substantially (Godfrey and Lawson 1986), however, under the current BLM policy, animals not adopted are held in captivity. Management strategies designed to reduce adult survival will, therefore, remain costly.

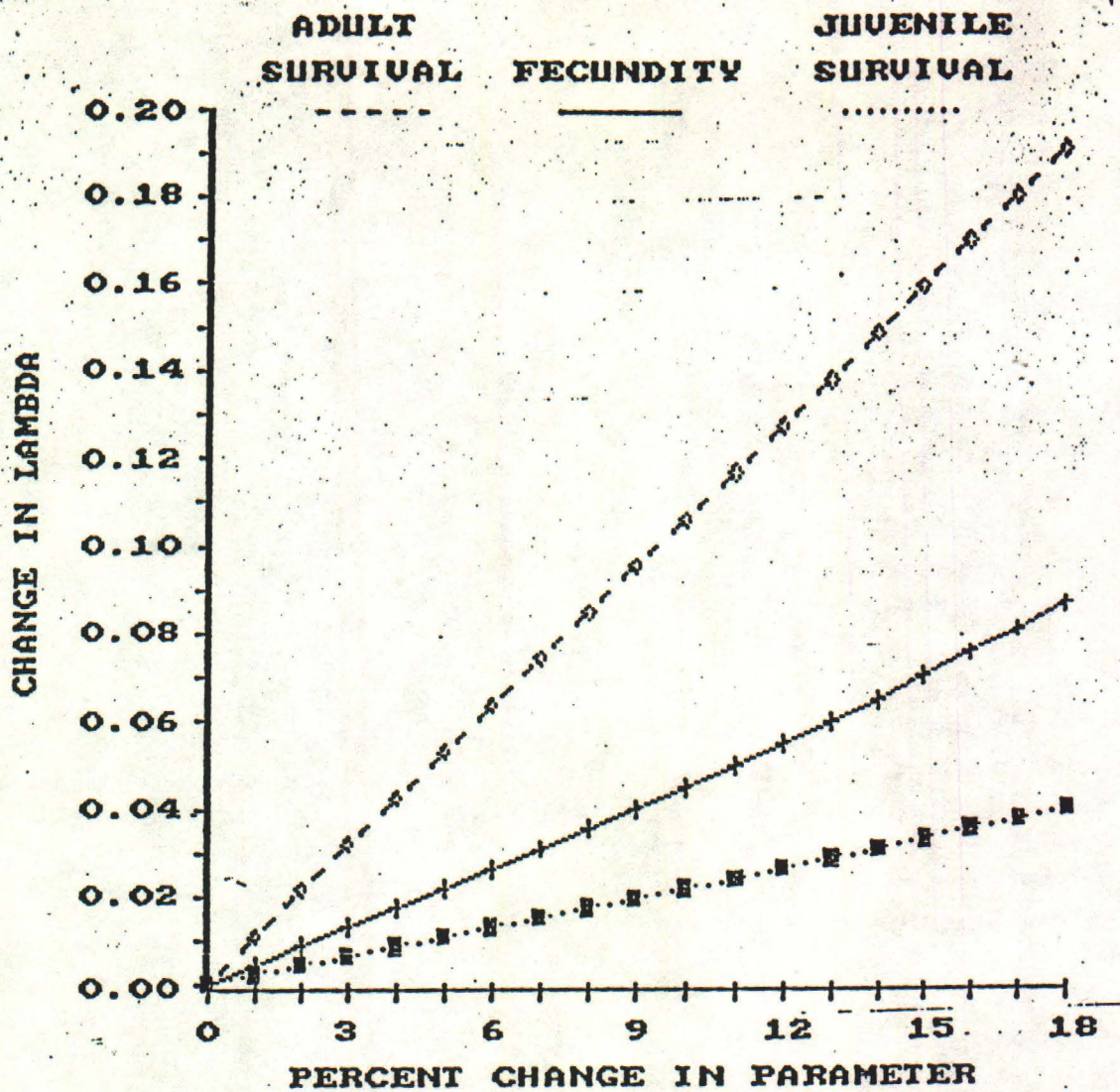


Figure 1. The sensitivity of lambda in the basic feral horse population model to changes in adult survival, fecundity, and juvenile survival.

Fecundity control appears to be the only possible alternative which holds promise for reducing growth rates of feral horse populations. However, since population growth is less sensitive to changes in reproduction, reduction in fecundity rates will have to be twice that of adult survival rates to affect the same reduction in population growth. Exploring the feasibility of using contraceptive implants to adequately reduce reproduction in feral herds is the subject of the remainder of this report.

Treatment Levels and Effectiveness

In order to evaluate the effectiveness of contraceptive implants as a tool for managing feral horse populations it is necessary to define management objectives more precisely. I will assume that the primary goal for managing feral horse populations will be to maintain each horse population below some "appropriate herd size" established by BLM based on locally developed land use plans (Boyles 1986). Gathering and handling horses is expensive, hence, the most desirable management strategy would minimize the need for horse round-ups. This could be accomplished by reducing present populations below the maximum acceptable level through removal programs and then implanting mares to reduce fecundity rates which, in turn, would reduce annual recruitment. The optimal management strategy would be to reduce annual recruitment to a level approaching annual attrition. This would result in populations with very slow annual growth rates, extending the time period required for the populations to attain the maximum acceptable level which would again require a round-up and removal program. The effectiveness of various implant treatments will, therefore, be evaluated based on the assumption that treatments must reduce the population growth rate to near zero, i.e., λ 1.00. In actual practice, however, it would be wise to allow modest growth, perhaps 1-2%, to compensate for the uncertainties of population data and modeling. This would also give populations some resiliency in the event that a natural decrease occurs in one or more of the population parameters due to some chance event in nature. If population growth was reduced to zero and such a change occurred the population could experience a rapid decline that could not be reversed until the current implants were expired.

The effects of various treatment levels on population growth are summarized in figure 2 with the actual performance of the populations over the 50 year simulations illustrated in figures 3-5. Four general conclusions can be drawn from these data. First, there is an inverse relationship between the proportion of mares treated and λ , i.e., the more mares treated in the population the more λ is reduced. This conclusion should be intuitively obvious for if fewer mares are giving birth and all other factors remain equal, population growth must be suppressed. Second, the higher the initial population growth rate the larger the proportion of mares that must be treated to reduce λ to zero. This is apparent because of the similarity of the slopes of the lines for each population within each implant life span treatment (figure 2). Third, λ can be reduced to 1.00 or less in nearly all populations if a large enough proportion of the mares can be treated.

Fourth, the longer the implant life span the less effect a given treatment level has on decreasing population growth. This is evident because the slopes of lines in figure 2,

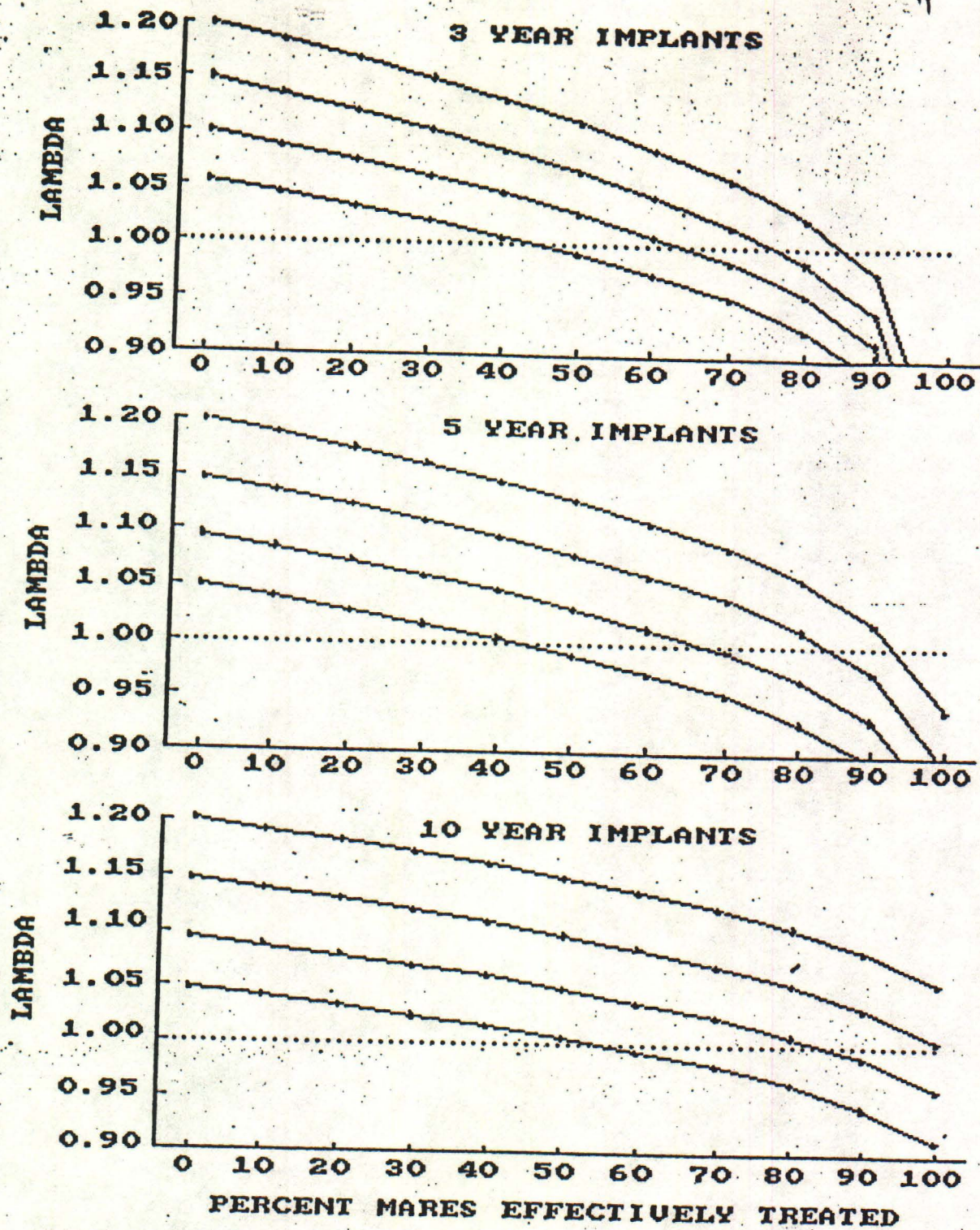


Figure 2. The changes in population growth that can be expected by treating varying proportions of mares with contraceptive implants. Three implant life spans and four population growth rates ranging from 5-20% were simulated.

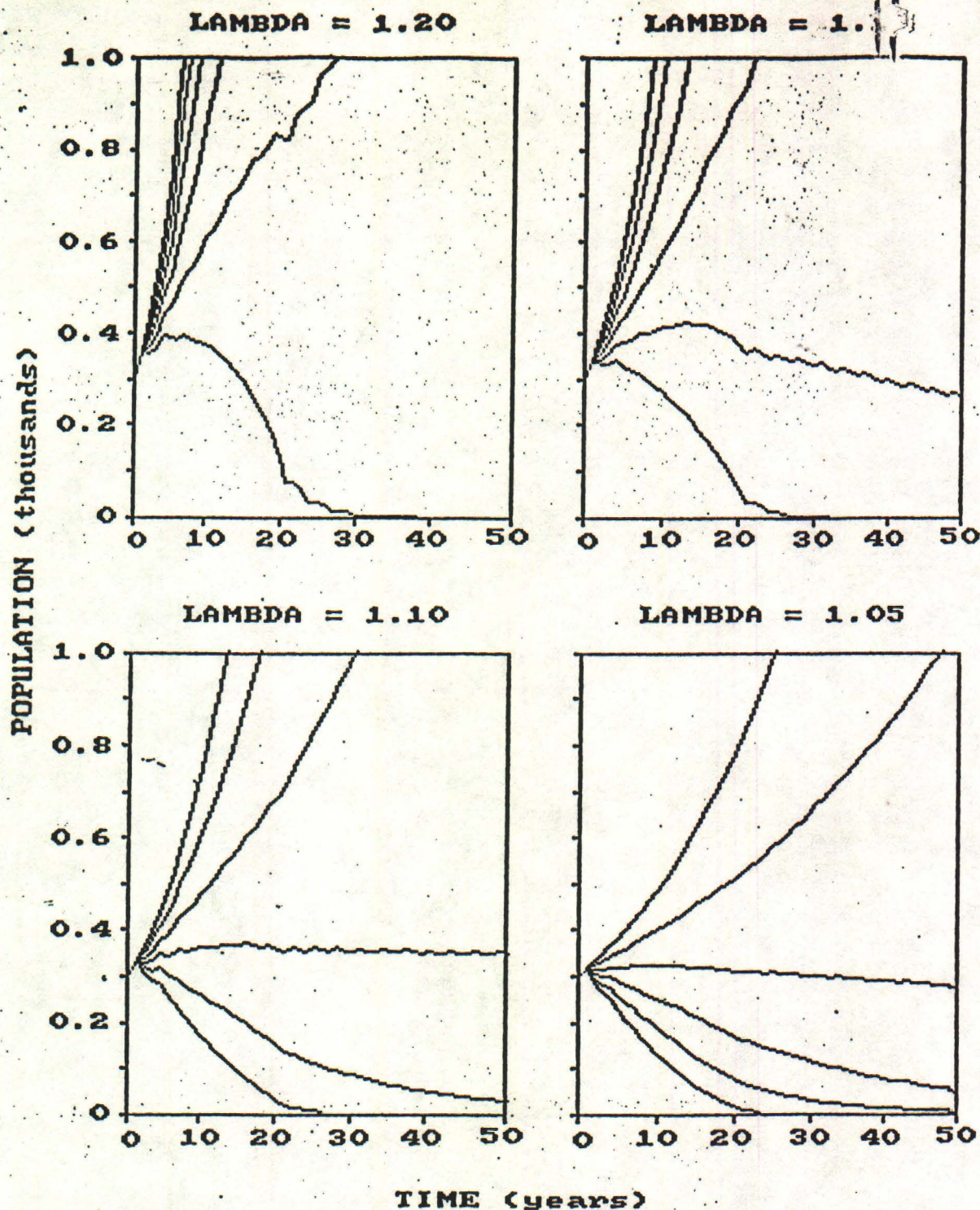


Figure 3. The simulated growth of feral horse populations with varying proportions of the mares treated with contraceptive implants that are effective for 3 years. Four populations were simulated with initial annual growth rates varying from 5-20%. The top line in each graph represents population growth with no treatment. Each line thereafter illustrates population growth when 20, 40, 60, 80, and 100% of the mares are treated.

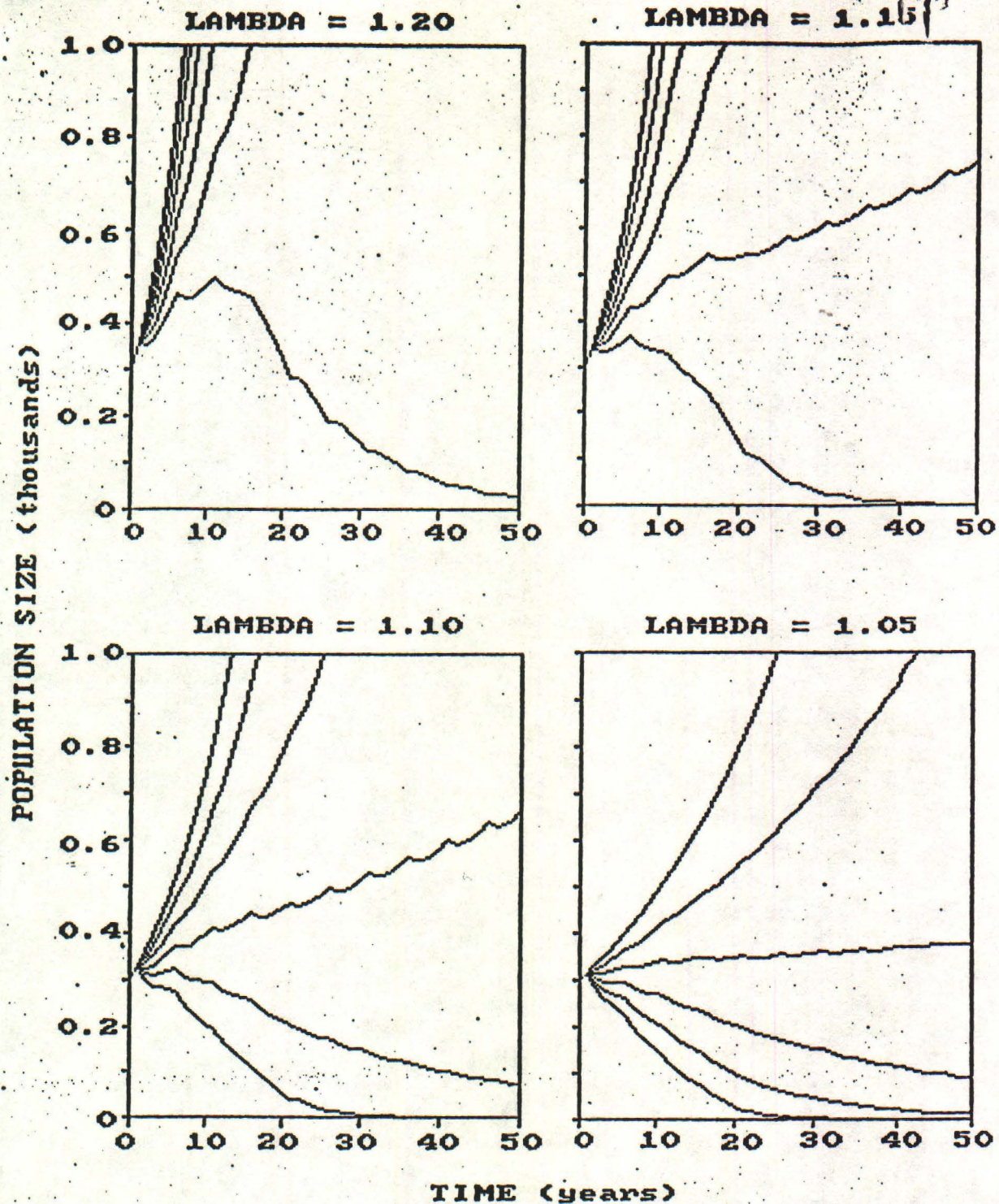


Figure 4. The simulated growth of feral horse populations with varying proportions of the mares treated with contraceptive implants that are effective for 5 years. Four populations were simulated with initial annual growth rates varying from 5-20%. The top line in each graph represents population growth with no treatment. Each line thereafter illustrates population growth when 20, 40, 60, 80, and 100% of the mares are treated.

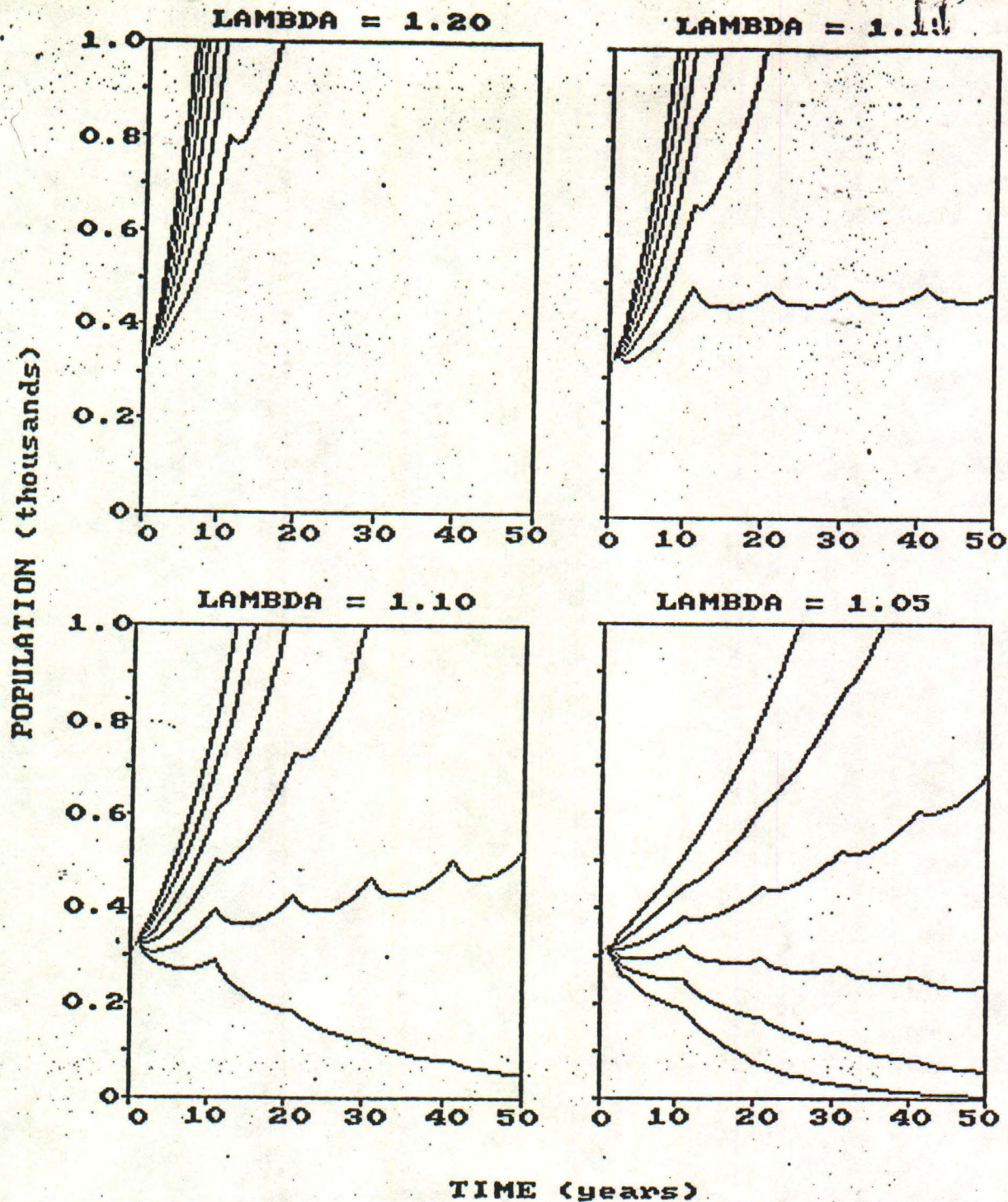


Figure 5. The simulated growth of feral horse populations with varying proportions of the mares treated with contraceptive implants that are effective for 10 years. Four populations were simulated with initial annual growth rates varying from 5-20%. The top line in each graph represents population growth with no treatment. Each line thereafter illustrates population growth when 20, 40, 60, 80, and 100% of the mares are treated.

which represent changes in lambda for a given population, flatten as implant life span increases. The cause for this decrease in effectiveness is due to the length of time between treatments. For example, if all mares in a population are gathered at time t and treated with 3 year implants, then the only animals reproducing in the population until t+3, when the treatment will be repeated, are those mares born at t+1, t+2, and t+3. If 10 year implants were used then 10 years of mare recruitment occurs before animals are again gathered and treated, hence, a larger proportion of the population will be reproductively active. These recruitment cycles which correspond to treatment intervals are masked in populations which are growing or declining rapidly, but are readily seen in those populations with a growth rate near zero (Fig. 3-5).

Management Implications

Reviewing the results of these simulations one can see that, in general, a large proportion of the mares must be treated in most populations in order to reduce lambda to 1.00. Although simulations included treatments in which 100% of the mares were "effectively" implanted, this would be impossible to achieve in the field. In order to realize a 100% treatment every free-ranging mare in the population would need to be captured. Even with the very best helicopter coverage it is doubtful that this could be done as most horse populations occupy large areas with a variety of terrain and, in some areas, pinyon-juniper woodland. Preliminary results from the implant research being conducted on captive horses also indicates that the implants fail to block conception in some treated mares. The actual success rate is still uncertain, however, it appears that a reasonable range will be 75-85% (Edward Plotka, pers. comm.). So we are confronted with an important question - what is the maximum effective treatment that can be expected in the field?

Using the range of implant success rates provided by Plotka and an estimated maximum gathering efficiency of 85-95% then the maximum effective treatment that can be expected in the field is between 64% (85×75) and 81% (95×85). These estimates have important consequences with respect to the ability of the various implant programs to control population growth. For example, ten year implant programs could only be effective (i.e., reducing lambda to 1.0) for populations with initial annual growth rates of 9% or less. A five year implant program may be able to control populations with initial growth rates of up to 14%, while 3 year programs may be effective on populations with maximum annual growth rates of 17% (Table 2).

Table 2. The estimated changes in lambda that can be expected in free-ranging feral horse populations subjected to a variety of contraceptive implant programs.

Implant life span (years)	Proportion of mares effectively treated		
	0.60	0.70	0.80
3	-0.11	-0.14	-0.17
5	-0.09	-0.12	-0.14
10	-0.06	-0.07	-0.09

It is interesting to note that Eberhardt et al. (1982) estimated annual growth rates of 0.20 for two feral horse populations in Oregon and several studies suggest that typical growth rates are between 0.15 and 0.20 (Berger 1986, Boyles 1986, Wolfe 1986). If this is indeed true then it is evident from the simulations presented in this report that it may be unrealistic to expect contraceptive implants to adequately control many feral horse populations (Table 2). Therefore, it is reasonable to assume that removal programs will still be necessary for controlling many horse herds. However, implant programs could still be of benefit by reducing the number of removals to a minimum. For example, suppose management guidelines for a particular feral horse population dictates that when the population doubled 50% of the animals would be removed in order to maintain the population within some appropriate level. If the population were growing at an annual rate of 0.20 it would take 4 years to double. In contrast, an implant program at 5 year intervals with 80% of the mares treated would result in a 9 year doubling time (Fig. 4). A similar program at 3 year intervals would slow population growth to the point where removal programs would only be needed every 13 years (Fig. 3).

These simulations illustrate two important points that should be kept in mind when formulating management plans for feral horse populations. First, management programs must be developed for individual feral horse populations because there is no single treatment program that is best suited to all populations. Second, in order to manage feral horses on an individual population level it is imperative to have relatively accurate information on annual growth rates. If populations are not managed on an individual basis based on their annual growth rate the manager runs the risk of applying treatments that prove to be inadequate for some populations, allowing continued growth, while the same treatment may be too severe for another population, resulting in a precipitous decline in the population.

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Appendix B

New Treatments

<u>Code</u>	<u>Explanation</u>
PP + HE	Six implants each with 6 grams of progesterone and 6 implants each with 4 grams estradiol.
PP + HE-G	Six implants each with 6 grams of progesterone and 6 implants each with 4 grams of estradiol with glycerol as a co-polymer.
PP + E (IP)	Six implants each with 6 grams of progesterone and 3 implants each with 4 grams of estradiol.
PP + EB	Six implants each with 6 grams of progesterone and 3 implants each with 4 grams of estradiol benzoate.
PP + EE2	Six implants each with 6 grams of progesterone and 4 implants each with 2 grams of ethinylestradiol.
PP + EE2ME	Six implants with 6 grams each of progesterone and 4 implants each with 2 grams ethinylestradiol methylether.

Original Implant Group

CI	Control with two implants in each animal with no hormone.
E	Two implants each with 4 grams of estradiol.
P	Six implants each with 4 grams of progesterone.
HP + E	Three implants each with 4 grams of progesterone, and 1 implant with 4 grams of estradiol.
P + HE	Two implants each with 4 grams of progesterone and 2 implants each with 4 grams of estradiol.
HP + LE	Three implants each with 4 grams of progesterone and 1 implant with 2 grams of estradiol.
NORGEST	Five implants, 3 cc in size, each containing 200 mg of d-norgestrel.

Exhibit 13

ABSTRACT

On 1 October 1985, we began our study of fertility control in wild horses under contract USDI-AA852-CT5-29. Our study focuses on the use of chemical fertility control agents in wild horses.

PROGRESS REPORT TO:

**UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT**

CONTRACT NUMBER USDI-AA852-CT5-29

FERTILITY CONTROL IN WILD HORSES

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20

INTRODUCTION

On 1 October 1985, we began our study of fertility control in wild horses under BLM Contract Number USDI-AA852-CT5-29. Currently, our study focuses on (1) captive horses in holding facilities at Lovelock, Nevada and (2) free-ranging horses at 5 field sites.

1.0 CAPTIVE FEMALE STUDIES

The primary objective of this portion of the project was to develop an effective, safe and cost efficient method of controlling fertility in wild horses for a period of greater than 2 years. The project started October 1, 1985.

SUMMARY OF THE FIRST EIGHTEEN MONTHS:

Silastic rods of different sizes and containing various amounts of estradiol and/or progesterone were constructed and incubated in vitro and their release rates measured. Based on the results of these incubations a series of implants were prepared to be placed in mares at the Lovelock facility.

Five hormone treated groups and 1 control group containing 30 anestrus mares each were implanted with silastic rods during mid-November 1985. Each rod contained either 4 grams of estradiol-17 β or progesterone. The different levels of hormone were achieved by varying the number of implants placed in an animal. All implants were placed in the neck of the horse either subcutaneously or between muscle layers deeper in the neck. The treatment groups, amount of hormone and number of implants are

4" x 1/2"

maintained at pre-implantation levels and these animals are depicted in Table 1.

groups were exhibiting estrus, six new treatment groups established based on findings from these new treatment groups.

Table 1: Original implant groups in the horse fertility control study.

Group	# of Implants	Amount of Hormone (grams)	
		Estradiol	Progesterone
Control (CI)	2	---	---
Estradiol (E)	2	8	---
Progesterone (P)	6	---	24
High(H)P+E	4	4	12
P+HE	4	8	8
HP+Low(L)E	4	2	12

Serum estradiol and progesterone levels were followed in 5 animals from each group for 21 weeks following implantation and animals were observed for signs of estrus behavior twice a week from April through August, 1986. A stallion was placed with the treated mares in August and the mares were palpated to determine pregnancy in April, 1987.

Results of these original experiments are summarized as follows:

- (1) Although the two groups receiving 8 grams of estradiol-17 β (E and P+HE) were effective in blocking external signs of behavioral estrus, none of the treatments was effective in blocking ovulation and pregnancy.
- (2) Loss of implants occurred in about 30% of the animals. This loss appeared to be caused by the development of a local infection at the implant site.

Based on observations in March 1986 demonstrating that hormone levels in the above treated animals were not being

maintained at predicted levels and that some animals from all groups were exhibiting estrus, six new treatment groups were established based on in vitro studies. These new treatment groups are summarized in Table 2.

(4) Loss of implants from subcutaneous or intramuscular sites

Table 2: Second generation implants: Number of implants and type and amount of hormone implanted.

Group ¹	# of Implants	Hormones Implanted	Amount of Hormone (grams)	
			Estrogen	Progestin
PP+HE	12	P4 + E2 ²	24	36
PP+HEG ³	12	P4 + E2	24	36
PP+E(IP)	9	P4 + E2	12	36
PP+EB	9	P4 + EB	12	36
PP+EE2	10	P4 + EE2	8	36
PP+EE2ME	10	P4 + EE2ME	8	36
NORGEST	5	levonorgestrel	--	1

- ¹ Each group contained a minimum of 10 animals. Five animals from each group except the PP+E(IP) and the NORGEST groups received implants subcutaneously in the flank and five animals received implants deep intramuscularly. The PP+E(IP) animals had implants placed intraperitoneally and all ten animals in the NORGEST group received implants intramuscularly in the rump
- ² Abbreviations for the hormones are: Progesterone = P4; Estradiol-17 β = E2; Estradiol benzoate = EB; Ethinylestradiol = EE2; Mestranol + EE2ME
- ³ Group PP+HEG had glycerol incorporated in the implants as a copolymer

Results from the second group of implants can be summarized as follows:

- (1) High levels of estradiol (E2) or ethinylestradiol (EE2) with high levels of progesterone (PP) were effective in blocking ovulation through 1 full breeding season.
- (2) Route of administration had no effect on the ultimate serum concentration of hormone achieved and

consequently effectiveness of the implant.

(3) Implants placed either subcutaneously or intramuscularly were lost at a similar rate as the first group of implants.

(4) Loss of implants from subcutaneous or intramuscular placement was still a major problem that may be alleviated by placing implants intraperitoneally.

During January, 1987, fifty additional mares received intraperitoneal implants. Two groups of ten pregnant mares were implanted to determine the effects of high levels of progesterone plus ethinylestradiol or ethinylestradiol alone on pregnancy and parturition. In addition, three groups of mares were implanted with lower levels of ethinylestradiol to determine the minimum dose that will effect contraception. The groups are outlined in Table 3.

Table 3: Description of implant groups instituted in January, 1987.

Group ¹	# of Implants	Hormones Implanted	Amount of Hormone (grams)	
			Estrogen	Progestin
PP+EE2PG	10	P4 + EE2 ²	8	36
EE2PG	4	EE2	8	--
1.5-EE2	1	EE2	1.5	--
3.0-EE2	2	EE2	3	--
8.0-EE2	4	EE2	8	--

¹ Each group contained 10 animals. All implants placed intraperitoneally

² Abbreviations for the hormones are: Progesterone = P4; Ethinylestradiol = EE2; PG = pregnant mares

RESULTS OVER THE LAST 6 MONTHS:

All animals included in the groups described in Tables 2 and 3 were bled every other week during the months of April through August, once in mid-September and twice in October. A progesterone level of 3.0 ng/ml or greater was used to indicate that ovulation had occurred. Animals in all groups showed evidence of ovulation (Table 4). However, significantly fewer animals in groups PP+HEG and PP+EE2 showed evidence of ovulation. Pregnant animals implanted with either ethinylestradiol (EE2PG) or progesterone plus ethinylestradiol (PP+EE2PG) delivered live foals. Thus, no adverse effects of implanting these hormones during pregnancy were noted.

Table 4. Exhibition of ovulation in implanted feral mares during the second breeding season after implantation.

Group	Ovulation			
	showing	tested	$\frac{\#1}{\text{total}}$	P ²
CI	16	16	100	--
PP+E	10	10	100	NS
PP+EB	5	8	62	.03
PP+HE	4	6	67	NS
PP+HE-G	2	7	29	.0006
PP+EE2	3	8	38	.001
PP+EE2ME	5	7	71	NS
NORGEST	9	9	100	NS

¹ Number of animals showing a serum progesterone concentration above 3.0 ng/ml divided by the total number of animals in that group.

² Significance of Fisher's exact P test vs CI

Several horses have been lost from each of the groups. A few horses have died from injuries during the handling process, 1 foundered badly and had to be euthanized and 1 ruptured a bowel and died of peritonitis. Other horses have been lost from our experimental pens. Presumably, they jumped fences, or were misplaced in the wrong pens. Personnel at the facility are trying to recover these animals for us. Thus, although 10 horses were implanted in each group, long term follow up is available for fewer animals.

Results of the progesterone assays on serum from the open mares implanted in January, 1987 (Table 3) indicated that lowering the amount of ethinylestradiol implanted will not provide effective contraception (Table 5).

Table 5. Exhibition of ovulation in mares implanted during January, 1987.

Group	Ovulation		%
	showing	tested	
1.5-EE2	5	8	62
3.0-EE2	5	9	56
8.0-EE2	2	9	22

Six mares that had received implants intramuscularly or subcutaneously were euthanized eighteen months after the implants were inserted. Tissues were taken for histological examination.

Grossly, no evidence of adverse effects resulting from the hormones was apparent. In all animals, however, the implants were surrounded with scar tissue. This raises the possibility that the circulation around the implants is becoming increasingly compromised and thereby reducing the effectiveness of the implants. The cause of the scarring and/or procedure for preventing it must be determined.

From the above data, it appears that:

- 1) Implants containing high levels of progesterone with high levels of ethinylestradiol (PP+EE2) or high levels of progesterone with high levels of estradiol-17 β that contains glycerol as a co-solvent, effectively block ovulation for 2 breeding seasons in greater than 60% of mares.
- 2) Implants containing 8 grams of ethinylestradiol without progesterone (8.0-EE2) are capable of blocking ovulation for at least one breeding season.
- 3) Implants containing ethinylestradiol with or without progesterone when implanted during mid-pregnancy do not prevent the successful completion of pregnancy.
- 4) Scarring around the implants may be a significant problem that could reduce longevity and effectiveness of the implants.

1.1 STUDIES COMPLETED

Two pens of mares subjected to the earliest treatments were removed from the study due to failure of the first treatments, attached to horses. Including 5 mares, 2 were still attached to horses. In addition, 2 horses were found dead.

and these mares were returned to the general horse population at the Lovelock facility. The question as to whether these horses are safe for adoption following treatment with estrogens and progesterone needs further consideration.

2.0 FIELD STUDIES

2.1 STALLION AREAS

Four aerial surveys of the Beaty's Butte area were conducted in mid-May, early June, mid-June, and mid-July. In the Flanigan area only 3 surveys were conducted because continuing high winds in mid-July caused flight cancellation. Results from these flights are in Table 6.

Table 6: Results from survey flights over male areas in 1987.

	<u>May</u>	<u>Early June</u>	<u>Mid-June</u>	<u>Mid-July</u>
Flanigan				
Adults	263	229	210	---
Foals	40	35	28	---
Beaty's Butte				
Adults	217	199	213	215
Foals	24	28	29	35

Loss of collars, particularly radio collars, has become a problem in the stallion areas. In Flanigan, of 30 radios attached to horses, including 5 re-collars, 9 are still functioning properly, 15 have been removed by horses, 2 transmitters have been torn off collars, 2 horses were found dead

in 1987, and 2 have apparently left the study area or the radioce stopped functioning. In Beaty's Butte 12 transmitters are still functioning properly, 4 have been removed by horses, 3 transmitters have been torn off collars, and 1 horse has been found dead. Of the 12 collars still functioning properly, 8 were replaced in 1987 because the original radio collar was severely damaged, and would have likely soon stopped functioning or fallen off the horse.

Most of the collars (or transmitter cases) recovered from the ground in both areas show signs of being bitten. Numerous scratches too deep to have occurred by rubbing on trees or being made by small carnivores (i.e. coyotes) are present on the collars or transmitters. Apparently these collars or transmitters are being removed or damaged severely during fights between stallions.

Ground observations were carried out in the Flanigan herd area from April through October, 1987. In addition to data on individual identities of all horses sighted, behavior data were recorded on nutritional intake and socio-sexual interactions in and between bands which were located.

Two and one-half weeks were spent in the Beaty's Butte herd area, in July and October, concentrating only on locating and identifying vasectomized stallions, and noting their relative dominance within bands and whether foals were present.

Flanigan

Of 12 vasectomized stallions identified, one was a bachelor,

ten were dominant band stallions and one had alternated dominance at least twice since May 1986 with a non-vasectomized stallion. That band had foals this year, presumably sired by the intact stallion during his dominance tenure. In the ten bands where stallions were dominant, only one had a foal. In the band containing a foal, the dominant stallion died at surgery and the subordinate stallion was vasectomized. Since the mares currently with that stallion are not the same mares that were in the band at the time of surgery, it is possible that the mare that foaled this year was acquired after breeding last year. It is also possible that the stallion was unable to successfully guard his mares. The round-up may have caused instability in the bands and influenced this situation.

Only one of the ten dominant stallions still had the same band as at the time of round-up. The others had lost or gained at least some band members. It is presently unclear whether this apparent instability is a natural occurrence, an artificial result of our round-up, or the result of the BLM round-up three months earlier.

Of approximately ten bands with non-vasectomized dominant stallions, all had foals. Two non-vasectomized stallions which were bachelors at round-up, each had acquired one mare and had no foals this season.

Beaty's Butte

Of the eight vasectomized stallions identified, five were dominant stallions with no foals. One was a subordinate stallion

in a band with another vasectomized stallion and two were bachelors. Of 18 bands with non-vasectomized stallions, 16 had foals.

2.2 MARE AREAS

Aerial surveys of the Wassuk Mountains and Stone Cabin Valley were conducted during the same time periods as in the stallion areas (Table 7). The low proportion of foals in the final survey in the Wassuk Mountains is noteworthy, suggesting the loss of approximately half of the year's foal crop from 16 June to 15 July 1987.

From fly-overs?

Table 7: Results from survey flights over mare areas in 1987.

	<u>May</u>	<u>Early June</u>	<u>Mid-June</u>	<u>Mid-July</u>
Wassuks				
Adults	138	160	145	153
Foals	19	25	20	12
Stone Cabin				
Adults	490	464	531	487
Foals	87	72	89	79

In contrast to the stallion areas, retention of radio collars in the mare areas was good. In the Wassuks, 7 transmitters were removed from dead horses. Three of the dead mares were located in summer 1986 during aerial surveys, and 4 were located in the 1987 flights. In Stone Cabin Valley, 99 transmitters were functioning properly and 2 mares were found dead in May, 1987. During the summer of 1987, following our

surveys, 2 additional mares died and their collars were turned into the BLM office in Tonopah, which in turned notified the University of Minnesota.

We completed the treatment of mares with control and hormone implants during late August and early September 1987. A total of 493 horses were captured and handled in the Clan Alpine mountains from 24 August through 3 September. Included among these were 100 receiving hormone-impregnated implants and 49 receiving control implants. One hundred fifty-two horses were marked with numbered collars, and 192 were not marked, primarily because they were less than 3 years old and considered too young to receive a permanent collar.

Of the 49 control mares, 27, which were taken from the herd area immediately north of the Clan Alpine mountains, have been discovered dead along with 21 other horses that were either unmarked or wearing marker collars. A complete investigation into the deaths of these horses has been conducted by BLM's Nevada State Office, and the report of this investigation is currently being prepared.

3.0 PUBLICATIONS

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Garrott, R.A. In press. A computer simulation study of the effects of reproductive suppression on feral horse populations. In Seal, U.S. (editor), Fertility control in wildlife.

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SUBMITTED

Plotka, E.D., T.C. Eagle, D.N. Vevea, A.L. Koller, D.B. Siniff, J.R. Tester, and U.S. Seal. Effects of hormone implants on estrus and ovulation in feral mares. Submitted to J. Wildlife Diseases.

Exhibit 14

PROGRESS REPORT TO:

**UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT**

CONTRACT NUMBER USDI-AA852-CT5-29

FERTILITY CONTROL IN WILD HORSES

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31 March 1988

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21

INTRODUCTION

On 1 October 1985, we began our study of fertility control in wild horses under BLM Contract Number USDI-AA852-CT5-29. Currently, our study focuses on (1) captive mares in holding facilities at Lovelock, Nevada and (2) free-ranging horses at 5 field sites.

1.0 CAPTIVE MARE STUDIES

The primary objective of this portion of the project was to develop an effective, safe and cost efficient method of controlling fertility in wild horses for a period of greater than 2 years. The project started October 1, 1985.

Data from all mare experimental groups were summarized in the 30 September 1987 Progress Report and are not repeated here. Collection of blood from mares in the current experimental groups continued throughout the present reporting period. For clarity and continuity, the following conclusions are repeated from the 30 September 1987 Progress Report:

- 1) Implants containing high levels of progesterone with high levels of ethinylestradiol (PP+EE2) or high levels of progesterone with high levels of estradiol-17B that contains glycerol as a co-solvent, effectively block ovulation for 2 breeding seasons in greater than 60% of mares.
- 2) Implants containing 8 grams of ethinylestradiol without progesterone (8.0-EE2) are capable of blocking ovulation for

- at least one breeding season.
- 3) Implants containing ethinylestradiol with or without progesterone when implanted during mid-pregnancy do not prevent the successful completion of pregnancy.
 - 4) Scarring around the implants may be a significant problem that could reduce longevity and effectiveness of the implants.

2.0 FIELD STUDIES

ADMINISTRATIVE AND COLLAR ADJUSTMENT

Following the incidents surrounding the deaths shortly after the gathering in the Clan Alpine HMA in September 1987, meetings were conducted with BLM personnel on the federal, state, and district level. In January 1988, BLM staff from the Carson City and Battle Mountain Districts observed marked horses in the Flanigan, Wassuk Mountain, Clan Alpine and Stone Cabin study areas to assess the reported finding that some of the collars were too tight and causing injury to the necks of study mares. From these observations, 11 potential problems were identified.

After these findings and collar corrections, a meeting between BLM and University personnel was held in Washington, D.C. on 24 February 1988 to discuss possible changes in the research protocol because of these problems. The changes discussed at the February meeting are still being formulated within BLM, but some interim measures have been taken. Notably, BLM has been making use of an observation helicopter during most of our research flights. Additional collar corrections were made in March.

2

Table 1 indicates the number of horses immobilized for collar adjustment and the adjustments that were made during these flights. Additional collar adjustments will be made and/or collars will be removed as necessary during our continuing census flights in May and June, 1988.

We collected and processed blood from all of the horses immobilized to adjust collars. No elevated white cell counts were noted, indicating that any infections were localized. Assays for progesterone in the serum samples of the 11 treated mares indicated that none were pregnant; thus providing preliminary indication that the fertility control treatments are successful.

due to stress from fly-overs?!

STALLION AREAS

In January 1988 horses in the Flanigan study area were observed from the ground for one week. The purpose of these observations was to identify band structure during the anestrus period. Previous observations from the ground have been confined to the spring and summer when barren mares should be cycling. During spring and summer band structure appears stable, but stability of bands during the anestrus period (late fall and winter) has not been determined.

Several collared horses have been sighted in the Hart Mountain Wildlife Refuge in Oregon. These horses were collared in the Beaty Butte HMA in February 1986. One collared horse (#641) was captured during the reduction of the horse herd on the refuge. That horse was a mare estimated to be 8 years old at the

time of capture. Three other horses were marked in the band of which she was a member. Two (638 and 639) were adult mares and one was a 7 year old stallion (originally tagged 736, but changed in 1987 to 719). Four other horses too young for marking were also in that band. The band was captured south of the trap site.

Since capture, none of the mares have been sighted; however, the stallion was observed on the 3 flights in 1986 and on 2 of 4 flights in 1987. Four of the 5 relocations of stallion 719 were in the southeastern portion of the study area (near Actey or Hawksie Walksie cow camps), and the fifth observation was in the southwest portion of the study area (on the flats north of Sagehen Butte). This information suggests that the movement of horses between the Beaty Butte HMA and the Hart Mountain Refuge was not between the refuge and the northern part of the study area, but from the south end of the study area.

MARE AREAS

In October 1987 we flew in the northern part of the Clan Alpine HMA to determine the status of horses brought into that HMA from the Augusta Mountain HMA by locating collared individuals, particularly those with radio collars. Thirty six mares with radio tags had not been observed in field checks in September and early October 1987. Of those 36 horses, 33 were located (14 were dead along the fence and 19 were alive). Seventeen of the 19 living radio-collared mares remained in the northern part of the Clan Alpine HMA, and 2 were seen north of the fence in the Augusta Mountain HMA. Signals from the 3 mares

not seen were coming from north of the fence, but excessive radio interference developed in the afternoon, and we were unable to precisely locate the 3 mares. It was assumed that these 3 mares were alive and had returned to the Augusta Mountain HMA.

3.0 DATA BASE AND POPULATION MODELLING

Construction of a data base containing census and gathering records for individual horse herds throughout the western states has continued during the past six months. All available data from gathering activities in Nevada, Oregon, and Wyoming through the summer of 1987 have been obtained from the appropriate BLM offices and entered into a data base. Information is stored as individual horse records and includes data on sex, age, herd origin, and date removed. The data base contains over 60,000 records including 33,437 records from Nevada, 17,316 from Wyoming, and 9,446 from Oregon. Data from approximately 650 censuses involving 62 herds in Nevada and 22 herds in Oregon have also been compiled. Preliminary analysis of the gathering and census data have provided us with enough insights into the population dynamics of feral horses to begin building population models which will be used to simulate various management strategies for controlling populations.

TABLE 1. Summary of Horse Collar Adjustments as of 22 April 1988

Tight Collars

<u>Area</u>	<u># Darted</u>	<u># Removed</u>	<u># Adjusted or left</u>
Stone Cabin (1987)	7	1*	6
Stone Cabin (1988)	12	8	4**
Clan Alpine (1988)	3	1	2

* Collar put back on in two weeks

** One of these mares died when drug was reversed (animal 25 years old and in very poor condition)

Collars over-the-face

<u>Area</u>	<u># Darted</u>	<u># Slight Injury</u>	<u># No Injury</u>	<u># Removed</u>	<u># Adjusted</u>
Clan Alpine	3	2	1	1*	2
Flanigan	10	1	9	8	2
Wassuk	4	3	1	4	0
Stone Cabin	1	1	0	1	0

*Died when immobilized (fell over a cliff)

Exhibit 15

INTRODUCTION

On 1 September 1985, we began our study of fertility
wild horses under BLM Contract Number USDI-AA852-CT5-29.

PROGRESS REPORT TO:

UNITED STATES DEPARTMENT OF THE INTERIOR
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FERTILITY CONTROL IN WILD HORSES

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30 November 1988

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Rohlfen,
Sweeney 11/29/88
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INTRODUCTION

On 1 October 1985, we began our study of fertility control in wild horses under BLM Contract Number USDI-AA852-CT5-29. The study was divided into two general aspects (1) development and efficacy testing of a long term contraceptive utilizing captive mares in BLM holding facilities at Lovelock, Nevada and (2) field studies of an effective contraceptive using free-ranging horses at 5 field sites in Nevada and Oregon.

1.0 CAPTIVE MARE STUDIES

The primary objective of this portion of the project was to develop an effective, safe and cost efficient method of controlling fertility in free-ranging wild horses for a period of greater than 2 years. The project started 1 October 1985.

Data from all mare experimental groups were summarized in the 30 September 1987 Progress Report and will not be repeated here. The following conclusions, however, are presented for clarity and continuity:

- (1) Implants containing 36 grams of progesterone with 8 grams of ethinylestradiol (PP+EE2) or implants containing 36 grams of progesterone with 8 grams of estradiol-17 β with glycerol as a co-solvent, effectively block ovulation for 2 breeding seasons in greater than 50% of mares.

(2) Implants containing 8 grams of ethinylestradiol without progesterone (8.0-EE2) are capable of blocking ovulation for at least one breeding season.

(3) Implants containing 8 grams of ethinylestradiol with or without 36 grams of progesterone when implanted during mid-pregnancy do not prevent the successful completion of pregnancy.

(4) Scarring around the implants may be a significant problem that could reduce longevity and effectiveness of the implants.

(5) Route of administration has no effect on the level of hormone achieved in the serum and consequently on the effectiveness of the implant.

As mentioned in the 31 March 1987 Progress Report, 9 experimental (6 groups implanted in April 1986 and 3 groups implanted in January 1987) and 1 control group were continued to be bled at bimonthly intervals. Collection of blood from mares in these experimental groups continued through 4 August 1988. On 1 May 1988, a stallion was placed in with all experimental and control mares. The results of these studies are summarized in Table 1. The data in Table 1 shows that pregnancy was blocked in greater than 70% of animals in two experimental groups (PP+EE2 and PP+HE-G) through the peak of the breeding season of year 3 and an additional four experimental groups showed greater than 70%

TABLE 1
EFFICACY OF CONTRACEPTIVE IMPLANTS IN CAPTIVE FERAL MARES AS OF 8/31/88

TREATMENT GROUP	NO. IMPLANTED	NO. REMAINING*	YEAR 2			YEAR 3*		
			NO. OVULATING (%)	NO. PREGNANT (%)	PERCENT EFFICACY OF CONTRACEPTION	NO. OVULATING (%)	NO. PREGNANT (%)	PERCENT EFFICACY OF CONTRACEPTION
1.5-EE2	10	8	7(88)	1(12)	88	--	--	--
3-EE2	10	8	6(75)	1(12)	88	--	--	--
8-EE2	20	18	5(28)	0(0)	100	--	--	--
PP1EE2	10	8	3(38)	NT ¹	62 ¹	6(75)	2(25) ¹¹	75
	10	9	0(0)	0(0)	100	--	--	--
PP1E	15	9	10(100)	NT	0	9(100)	6(67)	33
PP1EB	10	8	5(62)	NT	38	8(100)	4(50)	50
PP1E	9	4	4(67)	NT	33	4(100)	3(75)	25
PP1E C	10	7	2(29)	NT	71	6(86)	2(29) ¹¹	71
PP1EHE	10	7	5(71)	NT	71	7(100)	4(57) ¹¹	43
CI	30	17	19(100)	3/3(100) ^o	0	17(100)	14(82)	--

*As of August 1, 1988.

¹Not tested (% efficacy is based on ovulation only)

¹¹These animals received subcutaneous or intramuscular implants. We need to verify that the implants are still present in the horses that got pregnant.

^o3 control (CI) mares were bred.

contraceptive efficacy through the peak of the second breeding season. The data in Table 1 also show that ethinylestradiol at 1.5 grams and 3.0 grams block pregnancy without blocking ovulation whereas 8.0 grams of ethinylestradiol with or without 36 grams of progesterone block ovulation as well as pregnancy. The data also suggest that 36 grams of progesterone with 8 grams of estradiol-17 β and glycerol blocks ovulation during year 2 but allows ovulation while blocking pregnancy in the third year. Serum concentrations of estradiol-17 β averaged 2 to 3 fold higher in the PP+EE-G group than concentrations in control animals 28 months after the implants were put in.

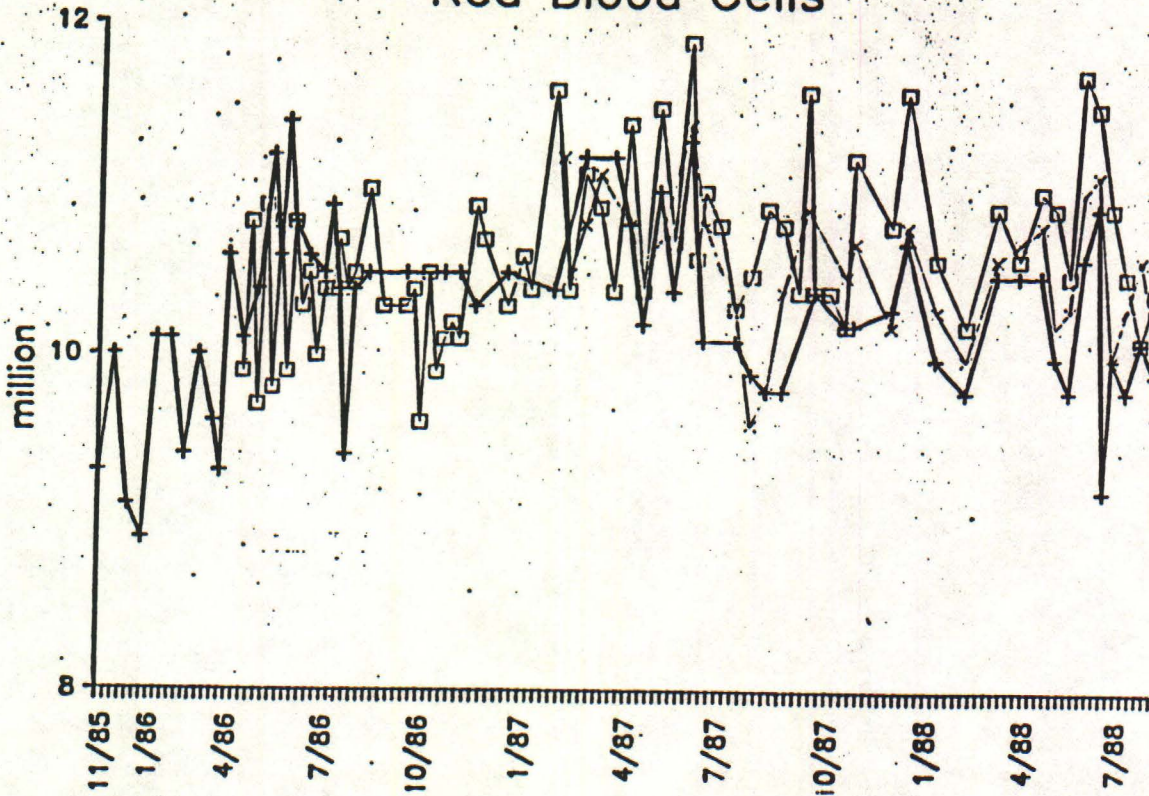
Complete hematology profiles and serum urea nitrogen and creatinine levels have been evaluated in the control (+), PP+EE2 (□) and EE2 (x) groups. The data are presented graphically with sampling starting in November, 1985 for control mares, in April, 1986 for PP+EE2 mares and in January, 1987 for EE2 mares. No obvious differences are apparent between control and treated animals over the entire treatment period except for hemoglobin. Hemoglobin levels appear to be higher in the treated animals than in the control animals. However, all values are within the normal range for healthy mares.

The conclusions that can be drawn from the data to date are:

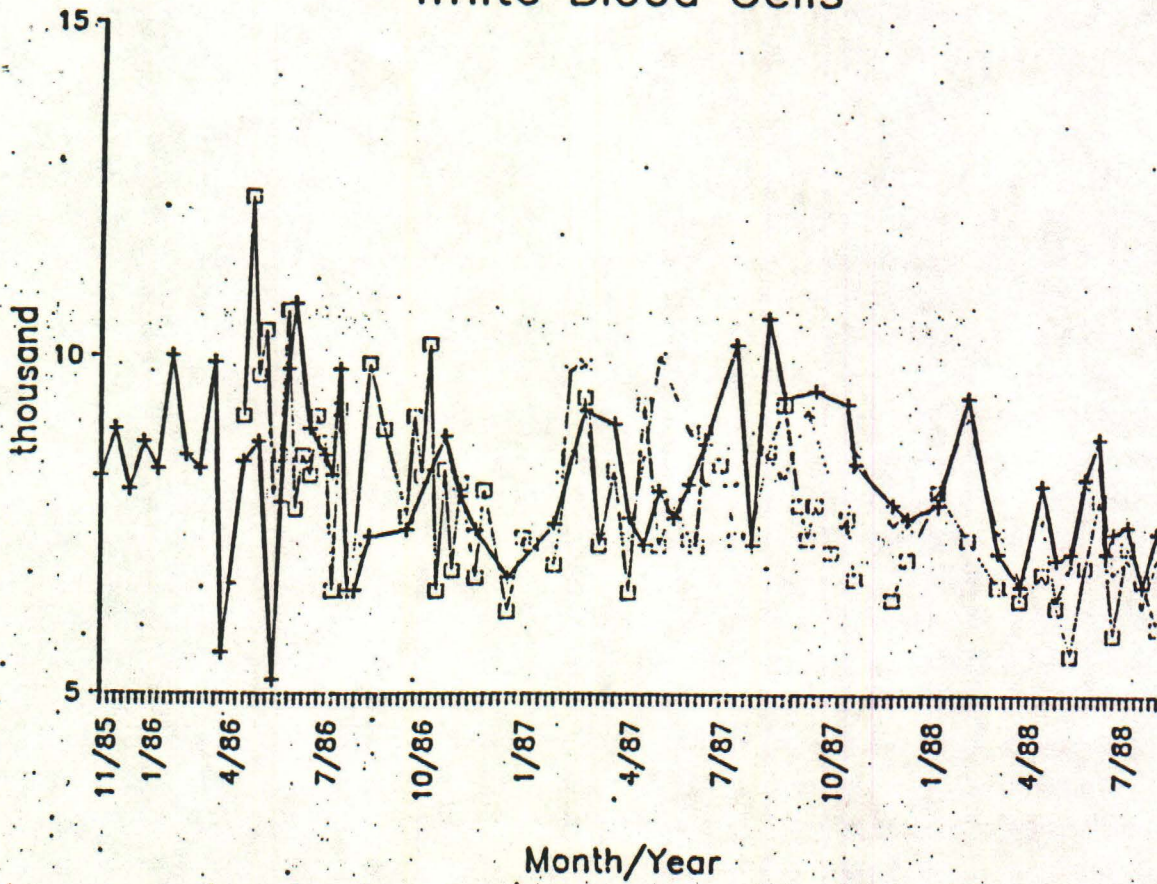
- (1) Effective contraception can be accomplished for at least 28 months.

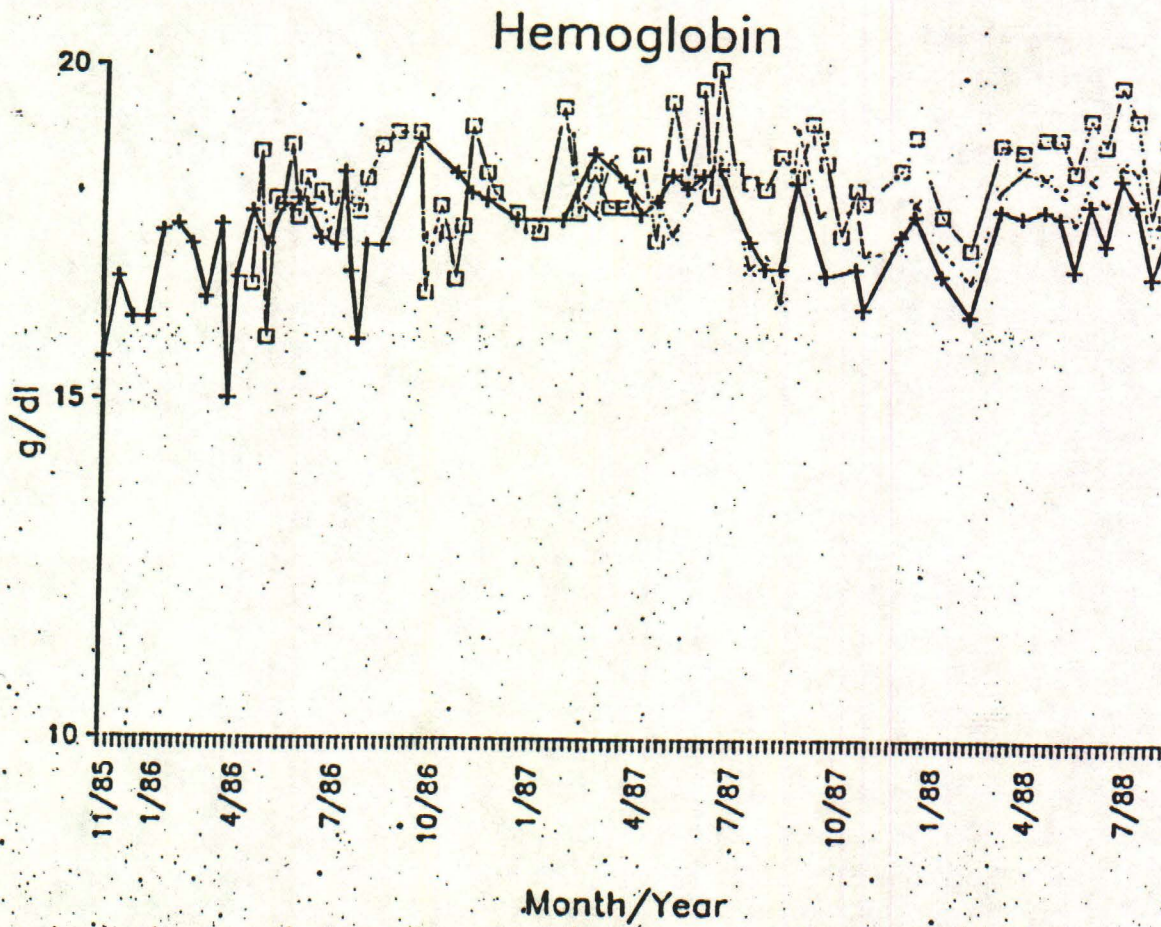
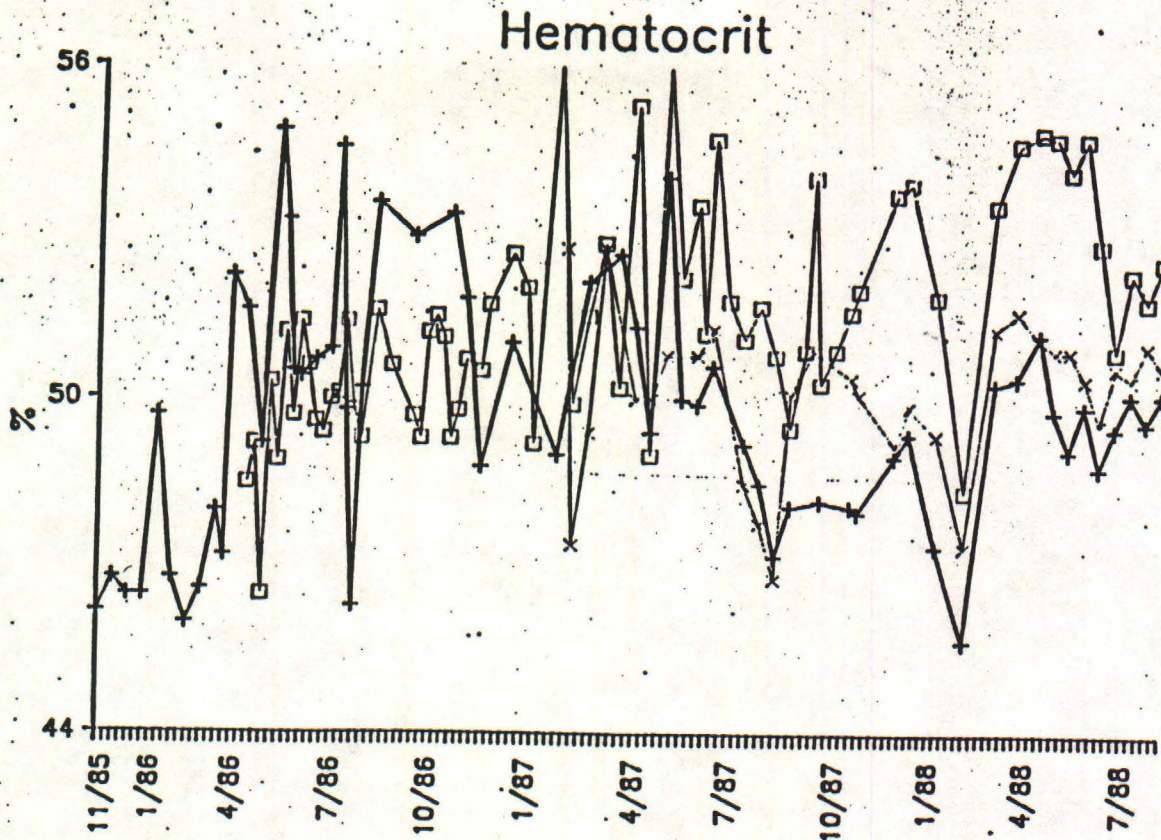
- (2) The length of time that the contraceptive is effective is not known.
- (3) The mechanism of action of the contraceptive effect is not completely understood but includes blocking of ovulation for higher concentrations of ethinylestradiol or estradiol with or without progesterone and at some step after ovulation such as fertilization or implantation for lower concentrations of ethinylestradiol.
- (4) The peritoneal cavity (intraperitoneal) is an efficient and effective location for routine implanting of hormonal contraceptives.
- (5) The only hematologic difference between groups appeared in hemoglobin. No differences were noted in hematocrit, red blood cells, white blood cells, MCV, MCH or MCHC. No differences were noted between groups with serum urea nitrogen and creatinine either.

Red Blood Cells

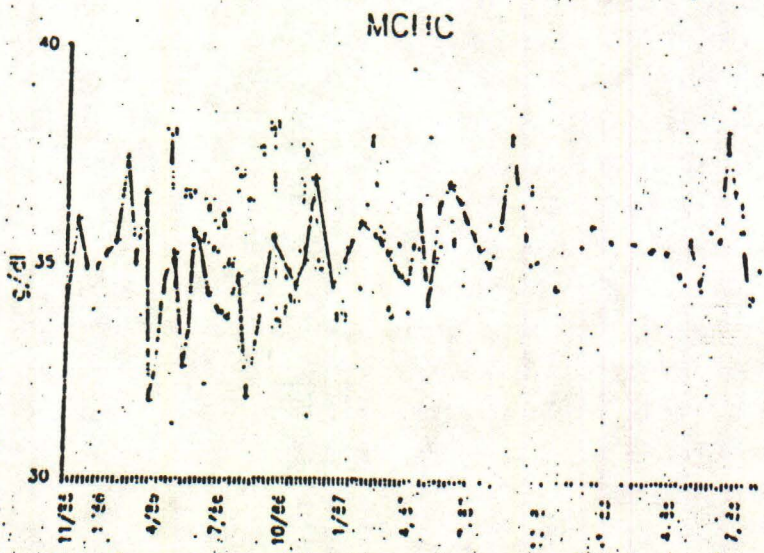
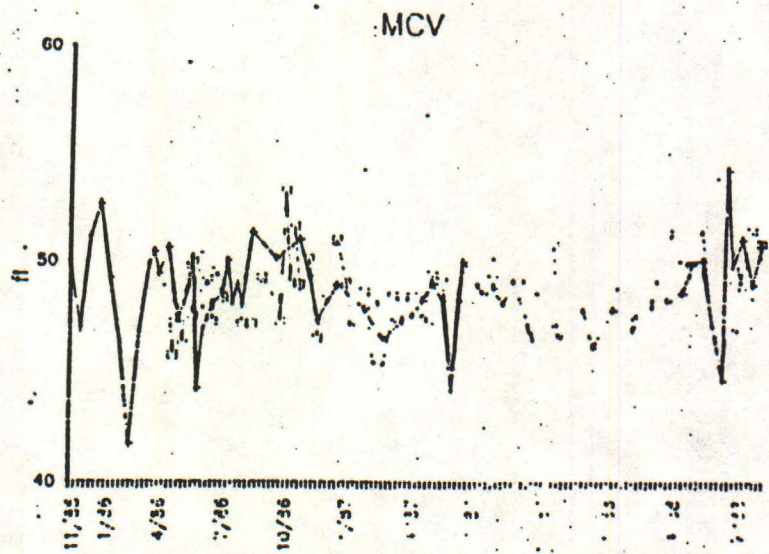
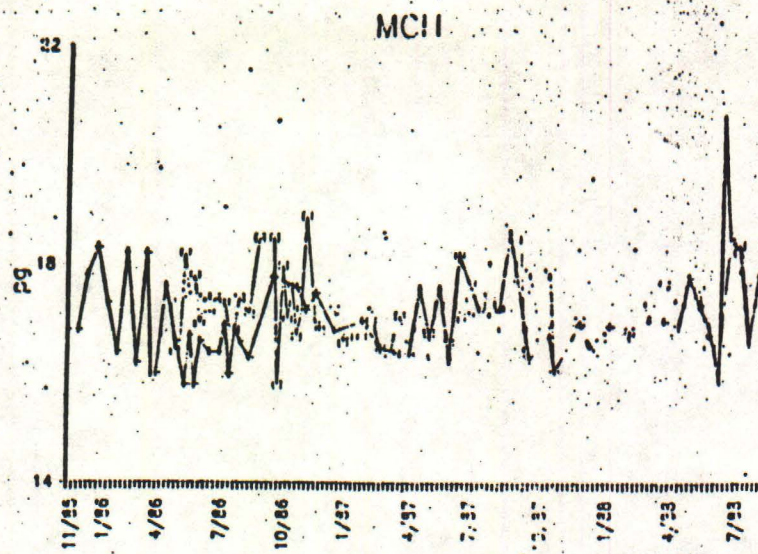


White Blood Cells





7



Month

B

2.0 FIELD STUDIES

2.1 Stallion Areas.

Four aerial surveys were conducted in the Flanigan study area and three in the Beaty Butte area in spring 1988. One survey of the Beaty Butte area was cancelled due to low clouds and high winds. Behavioral observations of horses continued during the spring and summer of 1988, and data from this effort are being analyzed. The aerial surveys in spring 1988 were the last scheduled for the stallion areas, and aerial data collection for these areas is now completed. Table 2 gives a display of the preliminary results of the stallion study. Dominant vasectomized stallions were classified, by whether they were in stable bands where they remained dominant, in an unstable situation where they were switching bands, or in a stud band. They were further classified as to where any foals had been born into their band that year. Examination of these aerial survey data (Table 2) suggests that sterilizing dominant stallions may have been effective in diminishing reproduction in mountainous habitats (Flanigan); however, its effectiveness in the flat Beaty Butte area where bands of horses regularly mingle is less certain. Final recommendations on the effectiveness of sterilizing dominant stallions will be delayed until thorough analysis of aerial survey data and ground behavioral observations are completed.

In October 1988 we surveyed the Flanigan study area to monitor status of collars on marked horses (Table 3). Four collars were observed that had slipped off the necks of horses and over their ears. Two of these were removed. Neither horse was injured due

Table 2. Status of vasectomized stallions as determined by aerial observation.

	1986	1987	1988
FLANIGAN			
201	STABLE, FOALS	STABLE, NO FOALS	STABLE, NO FOALS
202	UNSTABLE		STABLE, NO FOALS
204	UNSTABLE	STABLE, NO FOALS	STABLE, NO FOALS
207	STABLE, FOALS		
209	STABLE, FOALS		
211	UNSTABLE		STABLE, FOALS
216	STABLE, FOALS	STABLE, NO FOALS	STABLE, NO FOALS
219	STABLE, FOALS	STABLE, NO FOALS	
523		STABLE, NO FOALS	STABLE, NO FOALS
529		STABLE, NO FOALS	STABLE, NO FOALS
BEATY BUTTE			
520	STABLE, FOALS	STABLE, FOALS	
521	UNSTABLE		
532	UNSTABLE		
537	UNSTABLE	STABLE, NO FOALS	STABLE, NO FOALS
696	UNSTABLE	UNSTABLE	STABLE, FOALS
697	UNSTABLE	STUD BAND	STUD BAND
701	UNSTABLE	UNSTABLE	UNSTABLE
719	STABLE, FOALS	UNSTABLE	
732	STABLE, NO FOALS	UNSTABLE	STUD BAND
734	UNSTABLE	STABLE, NO FOALS	STABLE, FOALS
735	STABLE, FOALS		
738	STABLE, NO FOALS		
739	UNSTABLE	STABLE, NO FOALS	STABLE, NO FOALS
744	STABLE, FOALS	UNSTABLE	
747	STABLE, FOALS	STABLE, FOALS	STABLE, FOALS
750	STABLE, FOALS	STUD BAND	STUD BAND

Table 3. Flight summaries for October 1988. In the Flanigan two horses were observed with collars over their ears and not adjusted; all other collars that were tight or over the ears were adjusted or removed. In the Clan Alpines 12 radio-tagged horses were not observed. Because no other treated or control mares exhibited collar problems in this area, the flights were not extended to account for these twelve.

Area	Number Observed	Number Markers	Number Radios	Number Tight	Number Over Ears
Flanigan	356	45	4	0	4
Wassuks	121	27	33	0	1
Stone Cabin	594	51	80	3	1
Clan Alpines	761	87	116	0	0

to the collar being out of place. While attempting to land in the Flanigan to examine the second horse, the observation helicopter (carrying BLM personnel and pilot) crashed. No one was seriously injured in the accident. Because of this accident and since very minor, if any, injury has resulted to horses due to collars being over their ears, the need to adjust or remove such collars should be carefully evaluated.

We found two other horses with collars over their ears but these were not captured. We attempted unsuccessfully to dart one of these. When we landed to load new darts, the horses ran off and were not seen again despite our search for them until almost dark.

During these flights on the Flanigan, one vasectomized stallion (>20 years old) was found dead. The carcass was <1 month old (the horse had been observed from the ground in late August and was healthy), and only the hindquarters had been consumed by predators or scavengers. Hair and skin under the collar were intact and not injured.

The monitoring of the Beaty Butte herd was not conducted because that herd was scheduled to be gathered by BLM this fall. The Contracting Officer's Representative approved our not surveying that herd. Apparently the capture of horses in that area now has been completed collars have been removed from study animals. We anticipate that all data on collared horses will be provided for us by BLM.

2.2 Mare Control Area

Four surveys of the Wassuk Mountains control area were conducted in April-June 1988. The foaling rate of marked horses (Table 4) in the control area was about the same as the control animals in the Clan Alpine Mountains. It was also similar to the rate that was derived for unmarked bands in the Clan Alpines.

In October 1988 we examined the collars on marked horses in the Wassuks. One horse was found with the collar over the ears and it was removed because the number was no longer readable. The collar had caused no injury to the horse. Remains of two dead horses were found during the October survey. Although the deaths were probably recent (1-3 months), the carcasses were entirely consumed by predators or scavengers and bones were scattered about; thus, no cause of death could be determined. The radio collars on these two horses, however, were not stained or gave any indication that this was a contributing factor in the deaths.

2.3 Mare Treatment Areas.

Four spring surveys of both mare treatment areas indicated that the foaling rate of mares treated in the Clan Alpine Mountains was about 44% and was similar to the foaling rate of controls in that area, and in the Wassuk Mountains (Table 4). The foaling rate in Stone Cabin Valley where treatments were due to be effective was about 9%. Because the treatments in the Clan Alpines were not expected to be effective until spring 1989, these results were anticipated. This similarity to foaling rates among control

Table 4. Foaling rate in mare areas, 1988

AREA	N	WITH FOALS	P.	95% CONFIDENCE INTERVAL (a)
CLAN ALPINE				.27-.55 (b)
CONTROLS	31	13	.41	.24-.58
EXPERIMENTAL	97	43	.44	.34-.54
UNMARKED (c)	109	51	.47	.38-.56
WASSUK				
CONTROLS	33	15	.45	.28-.62
STONE CABIN				
EXPERIMENTAL	90	8	.09	.03-.15

(a) 95% confidence intervals were calculated by the formula:

$$p \pm 1.96(pq/n)^{.5}$$

where p is the proportion of mares with foals, and q is the proportion of mares without foals.

(b) This is the 95% confidence interval that would have resulted from the Clan Alpine control mares if all 49 had survived and p remained constant. The actual 95% confidence interval is given below.

(c) This is an estimate based on aerial survey of the Clan Alpine study area on the third census (21 May 1988). In the Clan Alpines we captured 413 adults (yearlings or older), 149 of which were females 3-12 years old and were implanted with treatment or control capsules. $149/413=.36$ is the proportion of mares in that sample. On 21 May 1988 we counted 301 adults in bands with no marked horses. Assuming the same distribution of mares as in the collared sample (.36), 109 of the 301 adults were mares in the 3-12 year age class.

In the Clan Alpines we assigned 66 foals to collared mares, 56 (.85) to 3-12 year olds and 10 (.15) to older mares. On 21 May 88 we counted 60 foals in bands with no marked horses. Assuming the same distribution of foal production as in collared mares, 51 of the 60 foals were attributed to the 109 unmarked 3-12 year old mares.

suggests that the treatments do not induce abortions and do not contribute to early foal mortality.

Surveys of the mare treatment areas in October 1988 resulted in the removal of 4 collars in the Stone Cabin area. Three of the collars were on treated mares and had resulted in local infection of the neck. The fourth, on which the number was not readable from a distance, was removed from a stallion because it had slipped over his ears; only a slight cut at the jawline was present. On the Clan Alpine study area, one collar had slipped over a stallion's ears, but the stallion had been observed early with the collar in the normal position. Because the collar was apparently slipping back and forth over the ears, it was decided (with Project Inspector's approval) not to dart the horse to adjust the collar. No other collars required adjustment in the Clan Alpine study area.

Treated and control horses, like horses in unmarked bands, in the Clan Alpines appeared to be only in fair physical condition. The drought and resulting poor forage condition in the region likely contributed to this. One treated mare was found dead during the October flight in the Clan Alpines. Personnel in the observation helicopter examined the carcass from the air and could see no evidence that the mare had experienced trouble due to the collar. No cause of death was determined.

Over the course of the study, several animals have been sedated and collars removed and others have died. Because sample sizes have been changed due to these occurrences, a summary of the status of the treated and control groups is included as Table

Table 5. Status of treatment and control mare groups, October 1988. The column titled Unkn represents horses that have not been observed for at least one year despite repeated efforts to locate them; their status is unknown. Under collars off, those in column A are collars removed by horses and located on the ground; B are collars removed by researchers.

Area	Treatment Type	Date of Capture	Initial Sample		Dead	Collars Off		Current Sample
			Size	Unkn		A	B	
Wassuks	Control	Jan 86	41	0	10	0	0	31
Stone Cabin	Hormone	Aug 86	101	2	8	3	13 ^a	75
Clan Alpines	Control	Sep 87	49	0	18 ^b	0	0	31
Clan Alpines	Hormone	Sep 87	100	0	4	0	0	96

^aCollars were removed from these horses due to irritation. The mares' tails were bobbed, and, thus they are identifiable; some may be recovered.

^bThese mares died together following capture in September 1987. All other deaths have occurred at various times during the study and are considered natural mortality.

+30 more

3.0 GENERAL ASPECT OF THE STUDY

In mid-August study personnel met with the National Academy of Sciences committee on wild horses and burros to discuss the merits of the study in light of negative reports in the press and from animal welfare groups. Recommendations from the NAS committee are forthcoming.

On 25 August Ed Plotka and Tom Eagle met with Les Sweeney to discuss pen and field studies. Mr. Sweeney stated that a modification to the research contract extending field studies in the mare treatment and control areas through spring 1990 created a management conflict for the Nevada State Office. The management plan for the Stone Cabin Valley herd scheduled reduction during the summer or fall of 1989. Our research contract stipulates that the herd areas should not be gathered during the course of the study. Gathering in Stone Cabin Valley in 1989 would prevent our assessment of the treatment effect for the third year. We are awaiting resolution of this problem by BLM.

3.1 Modeling Population Dynamics.

The data base from past gathered horses we have assembled is virtually complete. Error checking and editing were conducted during the spring and summer, with preliminary results of these studies presented of the National Academy review in mid-August. The Committee seemed very interested in this work and encouraged its continuance.

§ 4700.0-1

Sec.

- 4750.2-1 Health and identification requirements.
- 4750.2-2 Brand inspection.
- 4750.3 Application requirement for private maintenance.
- 4750.3-1 Application for private maintenance of wild horses and burros.
- 4750.3-2 Qualification standards for private maintenance.
- 4750.3-3 Supporting information and certification for private maintenance of more than 4 wild horses or burros.
- 4750.3-4 Approval or disapproval of applications.
- 4750.4 Private maintenance of wild horses and burros.
- 4750.4-1 Private maintenance and care agreement.
- 4750.4-2 Adoption fee.
- 4750.4-3 Request to terminate private maintenance and care agreement.
- 4750.4-4 Replacement animals.
- 4750.5 Application for title to wild horses and burros.

Subpart 4760—Compliance

- 4760.1 Compliance with the Private Maintenance and Care Agreement.

Subpart 4770—Prohibited Acts, Administrative Remedies, and Penalties

- 4770.1 Prohibited acts.
- 4770.2 Civil penalties.
- 4770.3 Administrative remedies.
- 4770.4 Arrest.
- 4770.5 Criminal penalties.

AUTHORITY: Act of Dec. 15, 1971, as amended (16 U.S.C. 1331-1340). Act of Oct. 21, 1976 (43 U.S.C. 1701 et seq.). Act of Sept. 8, 1959 (18 U.S.C. 47). Act of June 28, 1934 (43 U.S.C. 315).

SOURCE: 51 FR 7414, Mar. 3, 1986, unless otherwise noted.

Subpart 4700—General

§ 4700.0-1 Purpose.

The purpose of these regulations is to implement the laws relating to the protection, management, and control of wild horses and burros under the administration of the Bureau of Land Management.

§ 4700.0-2 Objectives.

The objectives of these regulations are management of wild horses and burros as an integral part of the natural system of the public lands under the principle of multiple use; protec-

tion of wild horses and burros from unauthorized capture, branding, harassment or death; and humane care and treatment of wild horses and burros.

§ 4700.0-3 Authority.

The Act of September 8, 1959 (18 U.S.C. 47); the Act of December 15, 1971, as amended (16 U.S.C. 1331-1340); the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1711, 1712, and 1734); the Act of June 28, 1934, as amended (43 U.S.C. 315); and the National Environmental Policy Act of 1969 (42 U.S.C. 4321, 4331-4335, and 4341-4347).

§ 4700.0-5 Definitions.

As used in this part, the term:

(a) "Act" means the Act of December 15, 1971, as amended (16 U.S.C. 1331-1340), commonly referred to as the Wild Free-Roaming Horse and Burro Act.

(b) "Authorized officer" means any employee of the Bureau of Land Management to whom has been delegated the authority to perform the duties described herein.

(c) "Commercial exploitation" means using a wild horse or burro because of its characteristics of wildness for direct or indirect financial gain. Characteristics of wildness include the rebellious and feisty nature of such animals and their defiance of man as exhibited in their undomesticated and untamed state. Use as saddle or pack stock and other uses that require domestication of the animal are not commercial exploitation of the animals because of their characteristics of wildness.

(d) "Humane treatment" means handling compatible with animal husbandry practices accepted in the veterinary community, without causing unnecessary stress or suffering to a wild horse or burro.

(e) "Humane treatment" means handling compatible with animal husbandry practices accepted in the veterinary community, without causing unnecessary stress or suffering to a wild horse or burro.

(f) "Inhumane treatment" means any intentional or negligent action or failure to act that causes stress, injury, or undue suffering to a wild horse or burro and is not compatible

Exhibit 17

Bureau of Land Management, Interior

with animal husbandry practices accepted in the veterinary community.

(g) "Lame wild horse or burro" means a wild horse or burro with one or more malfunctioning limbs that permanently impair its freedom of movement.

(h) "Old wild horse or burro" means a wild horse or burro characterized because of age by its physical deterioration and inability to fend for itself, suffering, or closeness to death.

(i) "Private maintenance" means the provision of proper care and humane treatment to excess wild horses and burros by qualified individuals under the terms and conditions specified in a Private Maintenance and Care Agreement.

(j) "Public lands" means any lands or interests in lands administered by the Secretary of the Interior through the Bureau of Land Management.

(k) "Sick wild horse or burro" means a wild horse or burro with falling health, infirmity or disease from which there is little chance of recovery.

(l) "Wild horses and burros" means all unbranded and unclaimed horses and burros that use public lands as all or part of their habitat, or that have been removed from these lands by the authorized officer but have not lost their status under section 3 of the Act. Where it appears in this part the term "wild horses and burros" is deemed to include the term "free-roaming".

§ 4700.0-6 Policy.

(a) Wild horses and burros shall be managed as self-sustaining populations of healthy animals in balance with other uses and the productive capacity of their habitat.

(b) Wild horses and burros shall be considered comparably with other resource values in the formulation of land use plans.

(c) Management activities affecting wild horses and burros shall be undertaken with the goal of maintaining free-roaming behavior.

(d) In administering these regulations, the authorized officer shall consult with Federal and State wildlife agencies and all other affected interests, to involve them in planning for

of wild horses and burros from authorized capture, branding, harassment or death; and humane care and treatment of wild horses and burros.

43-3 Authority.

The Act of September 8, 1959 (16 U.S.C. 47); the Act of December 15, 1971, as amended (16 U.S.C. 1331-1334); the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1712, and 1734); the Act of June 19, 1974, as amended (43 U.S.C. 315); the National Environmental Policy Act of 1969 (42 U.S.C. 4321, 4335, and 4341-4347).

43-5 Definitions.

Used in this part, the term:

"Act" means the Act of December 15, 1971, as amended (16 U.S.C. 1334), commonly referred to as Wild Free-Roaming Horse and Burro Act.

"Authorized officer" means any employee of the Bureau of Land Management to whom has been delegated authority to perform the duties specified herein.

"Commercial exploitation" means using a wild horse or burro because of its characteristics of wildness for direct or indirect financial gain. Characteristics of wildness include the wild and feisty nature of such animals and their defiance of man as exhibited in their undomesticated and feral state. Use as saddle or pack animal and other uses that require domination of the animal are not commercial exploitation of the animals because of their characteristics of wildness.

"Herd area" means the geographic area identified as having been used by a herd as its habitat in 1971.

"Humane treatment" means handling compatible with animal husbandry practices accepted in the veterinary community, without causing unnecessary stress or suffering to a wild horse or burro.

"Inhumane treatment" means intentional or negligent action or failure to act that causes stress, injury, or undue suffering to a wild horse or burro and is not compatible

with animal husbandry practices accepted in the veterinary community.

(g) "Lame wild horse or burro" means a wild horse or burro with one or more malfunctioning limbs that permanently impair its freedom of movement.

(h) "Old wild horse or burro" means a wild horse or burro characterized because of age by its physical deterioration and inability to fend for itself, suffering, or closeness to death.

(i) "Private maintenance" means the provision of proper care and humane treatment to excess wild horses and burros by qualified individuals under the terms and conditions specified in a Private Maintenance and Care Agreement.

(j) "Public lands" means any lands or interests in lands administered by the Secretary of the Interior through the Bureau of Land Management.

(k) "Sick wild horse or burro" means a wild horse or burro with falling health, infirmity or disease from which there is little chance of recovery.

(l) "Wild horses and burros" means all unbranded and unclaimed horses and burros that use public lands as all or part of their habitat, or that have been removed from these lands by the authorized officer but have not lost their status under section 3 of the Act. Where it appears in this part the term "wild horses and burros" is deemed to include the term "free-roaming".

§ 4700.0-6 Policy.

(a) Wild horses and burros shall be managed as self-sustaining populations of healthy animals in balance with other uses and the productive capacity of their habitat.

(b) Wild horses and burros shall be considered comparably with other resource values in the formulation of land use plans.

(c) Management activities affecting wild horses and burros shall be undertaken with the goal of maintaining free-roaming behavior.

(d) In administering these regulations, the authorized officer shall consult with Federal and State wildlife agencies and all other affected interests, to involve them in planning for

and management of wild horses and burros on the public lands.

(e) Healthy excess wild horses and burros for which an adoption demand by qualified individuals exists shall be made available at adoption centers for private maintenance and care.

(f) Fees shall normally be required from qualified individuals adopting excess wild horses and burros to defray part of the costs of the adoption program.

Subpart 4710—Management Considerations

§ 4710.1 Land use planning.

Management activities affecting wild horses and burros, including the establishment of herd management areas, shall be in accordance with approved land use plans prepared pursuant to Part 1600 of this title.

§ 4710.2 Inventory and monitoring.

The authorized officer shall maintain a record of the herd areas that existed in 1971, and a current inventory of the numbers of animals and their areas of use. When herd management areas are established, the authorized officer shall also inventory and monitor herd and habitat characteristics.

§ 4710.3 Management areas.

§ 4710.3-1 Herd management areas.

Herd management areas shall be established for the maintenance of wild horse and burro herds. In delineating each herd management area, the authorized officer shall consider the appropriate management level for the herd, the habitat requirements of the animals, the relationships with other uses of the public and adjacent private lands, and the constraints contained in § 4710.4. The authorized officer shall prepare a herd management area plan, which may cover one or more herd management areas.

§ 4710.3-2 Wild horse and burro ranges.

Herd management areas may also be designated as wild horse or burro ranges to be managed principally, but not necessarily exclusively, for wild horse or burro herds.

§ 4710.4 Constraints on management.

Management of wild horses and burros shall be undertaken with the objective of limiting the animals' distribution to herd areas. Management shall be at the minimum level necessary to attain the objectives identified in approved land use plans and herd management area plans.

(a) If necessary to provide habitat for wild horses or burros, to implement herd management actions, or to protect wild horses or burros, to implement herd management actions, or to protect wild horses or burros from disease, harassment or injury, the authorized officer may close appropriate areas of the public lands to grazing use by all or a particular kind of livestock.

(b) All public lands inhabited by wild horses or burros shall be closed to grazing under permit or lease by domestic horses and burros.

(c) Closure may be temporary or permanent. After appropriate public consultation, a Notice of Closure shall be issued to affected and interested parties.

§ 4710.6 Removal of unauthorized livestock in or near areas occupied by wild horses or burros.

The authorized officer may establish conditions for the removal of unauthorized livestock from public lands adjacent to or within areas occupied by wild horses or burros to prevent undue harassment of the wild horses or burros. Liability and compensation for damages from unauthorized use shall be determined in accordance with subpart 4150 of this title.

§ 4710.7 Maintenance of wild horses and burros on privately controlled lands

Individuals controlling lands within areas occupied by wild horses and burros may allow wild horses or burros to use these lands. Individuals who maintain wild free-roaming horses and burros on their land shall notify the authorized officer and shall supply a reasonable estimate of the number of such animals so maintained. Individuals shall not remove or entice wild horses or burros from the public lands.

Subpart 4720—Removal

§ 4720.1 Removal of excess animals from public lands.

Upon examination of current information and a determination by the authorized officer that an excess of wild horses or burros exists, the authorized officer shall remove the excess animals immediately in the following order.

(a) Old, sick, or lame animals shall be destroyed in accordance with Subpart 4730 of this title;

(b) Additional excess animals for which an adoption demand by qualified individuals exists shall be humanely captured and made available for private maintenance in accordance with Subpart 4750 of this title; and

(c) Remaining excess animals for which no adoption demand by qualified individuals exists shall be destroyed in accordance with subpart 4730 of this title.

§ 4720.2 Removal of strayed or excess animals from private lands.

§ 4720.2-1 Removal of strayed animals from private lands.

Upon written request from the private landowner to any representative of the Bureau of Land Management, the authorized officer shall remove stray wild horses and burros from private lands as soon as practicable. The private landowner may also submit the written request to a Federal marshal, who shall notify the authorized officer. The request shall indicate the numbers of wild horses or burros, the date(s) the animals were on the land, legal description of the private land, and any special conditions that should be considered in the gathering plan.

§ 4720.2-2 Removal of excess animals from private lands.

If the authorized officer determines that proper management requires the removal of wild horses and burros from areas that include private lands, the authorized officer shall obtain the written consent of the private owner before entering such lands. Flying aircraft over lands does not constitute entry.

Subpart 4730—Destruction of Wild Horses or Burros and Disposal of Remains

§ 4730.1 Destruction.

Except as an act of mercy, no wild horse or burro shall be destroyed without the authorization of the authorized officer. Old, sick, or lame animals shall be destroyed in the most humane manner possible. Excess animals for which adoption demand does not exist shall be destroyed in the most humane and cost efficient manner possible.

§ 4730.2 Disposal of remains.

Remains of wild horses or burros that die after capture shall be disposed of in accordance with State or local sanitation laws. No compensation of any kind shall be received by any agency or individual disposing of remains. The products of rendering are not considered remains.

Subpart 4740—Motor Vehicles and Aircraft

§ 4740.1 Use of motor vehicles or aircraft.

(a) Motor vehicles and aircraft may be used by the authorized officer in all phases of the administration of the Act, except that no motor vehicle or aircraft, other than helicopters, shall be used for the purpose of herding or chasing wild horses or burros for capture or destruction. All such use shall be conducted in a humane manner.

(b) Before using helicopters or motor vehicles in the management of wild horses or burros, the authorized officer shall conduct a public hearing in the area where such use is to be made.

§ 4740.2 Standards for vehicles used for transport of wild horses and burros.

(a) Use of motor vehicles for transport of wild horses or burros shall be in accordance with appropriate local, State and Federal laws and regulations applicable to the humane transportation of horses and burros, and shall include, but not be limited to, the following standards:

(1) The interior of enclosures shall be free from protrusion that could injure animals;

Subpart 4720—Removal

4720.1 Removal of excess animals from public lands.

Upon examination of current information and a determination by the authorized officer that an excess of wild horses or burros exists, the authorized officer shall remove the excess animals immediately in the following order.

- (a) Old, sick, or lame animals shall be destroyed in accordance with Subpart 4730 of this title;
- (b) Additional excess animals for which an adoption demand by qualified individuals exists shall be humanely captured and made available for private maintenance in accordance with Subpart 4750 of this title; and
- (c) Remaining excess animals for which no adoption demand by qualified individuals exists shall be destroyed in accordance with subpart 4730 of this title.

4720.2 Removal of strayed or excess animals from private lands.

4720.2-1 Removal of strayed animals from private lands.

Upon written request from the private landowner to any representative of the Bureau of Land Management, the authorized officer shall remove wild horses and burros from private lands as soon as practicable. The private landowner may also submit the written request to a Federal marshal, who shall notify the authorized officer. The request shall indicate the numbers of wild horses or burros, the sex of the animals, the location of the animals on the private land, and any special conditions that should be considered in the gathering plan.

4720.2-2 Removal of excess animals from private lands.

The authorized officer determines proper management requires the removal of wild horses and burros from areas that include private lands, the authorized officer shall obtain the written consent of the private owner before entering such lands. Flying over private lands does not constitute

Bureau of Land Management, Interior

Subpart 4730—Destruction of Wild Horses or Burros and Disposal of Remains

4730.1 Destruction.

Except as an act of mercy, no wild horse or burro shall be destroyed without the authorization of the authorized officer. Old, sick, or lame animals shall be destroyed in the most humane manner possible. Excess animals for which adoption demand does not exist shall be destroyed in the most humane and cost efficient manner possible.

4730.2 Disposal of remains.

Remains of wild horses or burros that die after capture shall be disposed of in accordance with State or local sanitation laws. No compensation of any kind shall be received by any agency or individual disposing of remains. The products of rendering are not considered remains.

Subpart 4740—Motor Vehicles and Aircraft

4740.1 Use of motor vehicles or aircraft.

(a) Motor vehicles and aircraft may be used by the authorized officer in all phases of the administration of the Act, except that no motor vehicle or aircraft, other than helicopters, shall be used for the purpose of herding or chasing wild horses or burros for capture or destruction. All such use shall be conducted in a humane manner.

(b) Before using helicopters or motor vehicles in the management of wild horses or burros, the authorized officer shall conduct a public hearing in the area where such use is to be made.

4740.2 Standards for vehicles used for transport of wild horses and burros.

(a) Use of motor vehicles for transport of wild horses or burros shall be in accordance with appropriate local, State and Federal laws and regulations applicable to the humane transportation of horses and burros, and shall include, but not be limited to, the following standards:

(1) The interior of enclosures shall be free from protrusion that could injure animals;

Bureau of Land Management, Interior § 4750.2-1

(2) Equipment shall be in safe conditions and of sufficient strength to withstand the rigors of transportation;

(3) Enclosures shall have ample head room to allow animals to stand normally;

(4) Enclosures for transporting two or more animals shall have partitions to separate them by age and sex as deemed necessary by the authorized officer;

(5) Floors of enclosures shall be covered with nonskid material;

(6) Enclosures shall be adequately ventilated and offer sufficient protection to animals from inclement weather and temperature extremes; and

(7) Unless otherwise approved by the authorized officer, transportation shall be limited in sequence to a maximum of 24 hours followed by a minimum of 5 hours of on-the-ground rest with adequate feed and water.

(b) The authorized officer shall not load wild horses or burros if he/she determines that the vehicle to be used for transporting the wild horses or burros is not satisfactory for that purpose.

Subpart 4750—Private Maintenance

4750.1 Private maintenance.

The authorized officer shall make available for private maintenance all healthy excess wild horses or burros for which an adoption demand by qualified individuals exists.

4750.2 Health, identification, and inspection requirements.

4750.2-1 Health and identification requirements.

(a) An individual determined to be qualified by the authorized officer shall verify each excess animal's soundness and good health, determine its age and sex, and administer immunizations, worming compounds, and tests for communicable diseases.

(b) Documentation conforming compliance with State health inspection and immunization requirements for each wild horse or burro shall be provided to each adopter by the authorized officer.

(c) Each animal offered for private maintenance, including orphan and unweaned foals, shall be individually identified by the authorized officer with a permanent freeze mark of alpha numeric symbols on the left side of its neck. The freeze mark identifies the animal as Federal property subject to the provisions of the Act and these regulations by a patented symbol, the animal's year of birth, and its individual identification number. The authorized officer shall record the freeze mark on the documentation of health and immunizations. For purposes of this subpart, a freeze mark applied by the authorized officer is not considered a brand.

§ 4750.2-2 Brand inspection.

The authorized officer shall make arrangements on behalf of an adopter for State inspection of brands, where applicable, of each animal to be transported across the State where the adoption center is located. The adopter shall be responsible for obtaining inspections for brands required by other States to or through which the animal may be transported.

§ 4750.3 Application requirements for private maintenance.

§ 4750.3-1 Application for private maintenance of wild horses and burros.

An individual applying for a wild horse or burro shall file an application with the Bureau of Land Management on a form approved by the Director.

§ 4750.3-2 Qualification standards for private maintenance.

(a) To qualify to receive a wild horse or burro for private maintenance, an individual shall:

- (1) Be 18 years of age or older;
- (2) Have no prior conviction for inhumane treatment of animals or for violation of the Act or these regulations;
- (3) Have adequate feed, water, and facilities to provide humane care to the number of animals requested. Facilities shall be in safe condition and of sufficient strength and design to contain the animals. The following standards apply:

(i) A minimum space of 144 square feet shall be provided for each animal maintained, if exercised daily; otherwise, a minimum of 400 square feet shall be provided for each animal;

(ii) Until fence broken, adult horses shall be maintained in an enclosure at least 6 feet high; burros in an enclosure at least 4½ feet high; and horses less than 18 months old in an enclosure at least 5 feet high. Materials shall be protrusion-free and shall not include large-mesh woven or barbed wire;

(iii) Shelter shall be available to mitigate the effects of inclement weather and temperature extremes. The authorized officer may require that the shelter be a structure, which shall be well-drained and adequately ventilated;

(iv) Feed and water shall be adequate to meet the nutritional requirements of the animals, based on their age, physiological condition and level of activity; and

(4) Have obtained no more than 4 wild horses and burros within the preceding 12-month period, unless specifically authorized in writing by the authorized officer.

(b) The authorized officer shall determine an individual's qualifications based upon information provided in the application form required by § 4750.3-1 of this subpart and Bureau of Land Management records of any previous private maintenance by the individual under the Act.

§ 4750.3-3 Supporting information and certification for private maintenance of more than 4 wild horses or burros.

(a) An individual applying for more than 4 wild horses or burros within a 12-month period, or an individual or group of individuals requesting to maintain more than 4 wild horses or burros at a single location shall provide a written report prepared by the authorized officer, or by a local humane official, veterinarian, cooperative extension agent, or similarly qualified person approved by the authorized officer, verifying that the applicant's facilities have been inspected appear adequate to care for the number of animals requested, and sat-

isfy the requirements contained in § 4750.3-2(a).

(1) The report shall include a description of the facilities, including corral sizes, pasture size, and shelter, barn, or stall dimensions, and shall note any discrepancies between the facilities inspected and representations made in the application form.

(2) When an applicant requests 25 or more animals or when 25 or more animals will be maintained at any single location regardless of the number of applicants, the facilities for maintaining the adopted animals shall be inspected by the authorized officer prior to approving the application.

(b) Any individual or group represented by a power of attorney and applying for more than 4 animals shall provide the following:

(1) A summary of the age, sex, and number of wild free-roaming horses or burros requested by species;

(2) Requested adoption date and center location;

(3) If applicable, names, addresses and telephone numbers of all applicants represented by a power of attorney submitted with the request;

(4) A transportation plan that describes the transport vehicle and any rest-stops;

(5) A distribution plan for delivering the animals to their assigned adopters;

(6) Names, addresses, and a concise summary of the experience of the individuals who will handle the adopted animals during transportation and distribution; and

(7) When the adopted animals will be maintained at a single location or where the applicants have been solicited by the holder of their power of attorney, a concise statement outlining the arrangements, including duties and responsibilities of the parties, for maintaining the animals.

§ 4750.3-4 Approval or disapproval of applications.

If an application is approved, the authorized officer shall offer the individual an opportunity to select the appropriate number, sex, age and species of animals from those available. If the authorized officer disapproves an application for private maintenance because the applicant lacks adequate fa-

(i) A minimum space of 144 square feet shall be provided for each animal maintained, if exercised daily; otherwise, a minimum of 400 square feet shall be provided for each animal;

(ii) Until fence broken, adult horses shall be maintained in an enclosure at least 6 feet high; burros in an enclosure at least 4½ feet high; and horses less than 18 months old in an enclosure at least 5 feet high. Materials shall be protrusion-free and shall not include large-mesh woven or barbed wire;

(iii) Shelter shall be available to mitigate the effects of inclement weather and temperature extremes. The authorized officer may require that the shelter be a structure, which shall be well-drained and adequately ventilated;

(iv) Feed and water shall be adequate to meet the nutritional requirements of the animals, based on their age, physiological condition and level of activity; and

(4) Have obtained no more than 4 wild horses and burros within the preceding 12-month period, unless specifically authorized in writing by the authorized officer.

(b) The authorized officer shall determine an individual's qualifications based upon information provided in the application form required by § 4750.3-1 of this subpart and Bureau of Land Management records of any previous private maintenance by the individual under the Act.

§ 4750.3-3 Supporting information and certification for private maintenance of more than 4 wild horses or burros.

(a) An individual applying for more than 4 wild horses or burros within a 12-month period, or an individual or group of individuals requesting to maintain more than 4 wild horses or burros at a single location shall prepare a written report prepared by the authorized officer, or by a local humane official, veterinarian, cooperative extension agent, or similarly qualified person approved by the authorized officer, verifying that the applicant's facilities have been inspected appear adequate to care for the number of animals requested, and sat-

isfy the requirements contained in § 4750.3-2(a).

(1) The report shall include a description of the facilities, including corral sizes, pasture size, and shelter, barn, or stall dimensions, and shall note any discrepancies between the facilities inspected and representations made in the application form.

(2) When an applicant requests 25 or more animals or when 25 or more animals will be maintained at any single location regardless of the number of applicants, the facilities for maintaining the adopted animals shall be inspected by the authorized officer prior to approving the application.

(b) Any individual or group represented by a power of attorney and applying for more than 4 animals shall provide the following:

(1) A summary of the age, sex, and number of wild free-roaming horses or burros requested by species;

(2) Requested adoption date and center location;

(3) If applicable, names, addresses and telephone numbers of all applicants represented by a power of attorney submitted with the request;

(4) A transportation plan that describes the transport vehicle and any rest-stops;

(5) A distribution plan for delivering the animals to their assigned adopters;

(6) Names, addresses, and a concise summary of the experience of the individuals who will handle the adopted animals during transportation and distribution; and

(7) When the adopted animals will be maintained at a single location or where the applicants have been solicited by the holder of their power of attorney, a concise statement outlining the arrangements, including duties and responsibilities of the parties, for maintaining the animals.

§ 4750.3-4 Approval or disapproval of applications.

If an application is approved, the authorized officer shall offer the individual an opportunity to select the appropriate number, sex, age and species of animals from those available. If the authorized officer disapproves an application for private maintenance because the applicant lacks adequate fa-

ilities or transport, the individual may correct the shortcoming and file a new application.

§ 4750.4 Private maintenance of wild horses and burros.

§ 4750.4-1 Private Maintenance and Care Agreement.

To obtain a wild horse or burro, a qualified applicant shall execute a Private Maintenance and Care Agreement and agree to abide by its terms and conditions, including but not limited to the following:

(a) Title to wild horses and burros covered by the agreement shall remain in the Federal Government for at least 1 year after the Private Maintenance and Care Agreement is executed and until a Certificate of Title is issued by the authorized officer.

(b) Wild horses and burros covered by the agreement shall not be transferred for more than 30 days to another location or to the care of another individual without the prior approval of the authorized officer;

(c) Wild horses and burros covered by the agreement shall be made available for physical inspection within 7 days of receipt of a written request by the authorized officer;

(d) The authorized officer shall be notified within 7 days of discovery of the death, theft or escape of wild horses and burros covered by the agreement;

(e) Adopters are financially responsible for the proper care and treatment of all wild horses and burros covered by the agreement.

(f) Adopters are responsible, as provided by State law, for any personal injury, property damage, or death caused by animals in their care; for pursuing animals that escape or stray; and for costs of recapture.

(g) Adopters shall notify the authorized officer within 30 days of any change in the adopter's address; and

(h) Adopters shall dispose of remains in accordance with applicable sanitation laws.

§ 4750.4-2 Adoption fee.

(a) -An individual obtaining wild horses and burros shall pay the Bureau of Land Management an adop-

tion fee of \$125 per horse and \$75 per burro, except that no fee shall be paid for unweaned foals.

(b) The Director may adjust or waive the adoption fee on determining that wild horses or burros in the custody of the Bureau of Land Management are unadoptable when the full adoption fee is required, and that it is in the public interest to adjust or waive the adoption fee stated in paragraph (a) of this section. The adjustment or waiver shall extend only to those persons who are willing to maintain such animals privately, who demonstrate the ability to care for them properly, and who agree to comply with all rules and regulations relating to wild horses and burros.

§ 4750.4-3 Request to terminate Private Maintenance and Care Agreement.

An adopter may request to terminate his/her responsibility for an adopted animal by submitting a written relinquishment of the Private Maintenance and Care Agreement for that animal. The authorized officer shall arrange to transfer the animal to another qualified applicant or take possession of the animal at a location specified by the authorized officer within 30 days of receipt of the written request for relinquishment.

§ 4750.4-4 Replacement animals.

The authorized officer shall replace an animal, upon request by the adopter, if (a) within 6 months of the execution of the Private Maintenance and Care Agreement the animal dies or is required to be destroyed due to a condition that existed at the time of placement with the adopter; and (b) the adopter provides, within a reasonable time, a statement by a veterinarian certifying that reasonable care and treatment would not have corrected the condition. Transportation of the replacement animal shall be the responsibility of the adopter.

§ 4750.5 Application for title to wild horses and burros.

(a) The adopter shall apply for title, using a form designated by the Director, upon signing the Private Maintenance and Care Agreement.

(b) The authorized officer shall issue a Certificate of Title after 12 months, if the adopter has complied with the terms and conditions of the agreement and the authorized officer determines, based either on a field inspection or a statement provided by the adopter from a veterinarian, extension agent, local humane official, or other individual acceptable to the authorized officer, that the animal or animals covered by the Agreement have received proper care and humane treatment.

(c) An adopter may not obtain title to more than 4 animals per 12-month period of private maintenance. Effective the date of issuance of the Certificate of Title, Federal ownership of the wild horse or burro ceases and the animal loses its status as a wild horse or burro and is no longer under the protection of the Act or regulations under this title.

Subpart 4760—Compliance

§ 4760.1 Compliance with the Private Maintenance and Care Agreement.

(a) An adopter shall comply with the terms and conditions of the Private Maintenance and Care Agreement and these regulations. The authorized officer may verify compliance by visits to an adopter, physical inspections of the animals, and inspections of the facilities and conditions in which the animals are being maintained. The authorized officer may authorize a cooperative extension agent, local humane official or similarly qualified individual to verify compliance.

(b) The authorized officer shall verify compliance with the terms of the Private Maintenance and Care Agreement when an adopter has received 25 or more animals or when 25 or more animals are maintained at a single location.

(c) The authorized officer shall conduct an investigation when a complaint concerning the care, treatment, or use of a wild horse or burro is received by the Bureau of Land Management.

(d) The authorized officer may require, as a condition for continuation of a Private Maintenance and Care Agreement, that an adopter take spe-

Bureau of Land Management, Interior

cific corrective actions if the authorized officer determines that an animal is not receiving proper care or is being maintained in unsatisfactory conditions. The adopter shall be given reasonable time to complete the required corrective actions.

Subpart 4770—Prohibited Acts, Administrative Remedies, and Penalties

§ 4770.1 Prohibited acts.

The following acts are prohibited:

(a) Maliciously or negligently injuring or harassing a wild horse or burro;

(b) Removing or attempting to remove a wild horse or burro from the public lands without authorization from the authorized officer;

(c) Destroying a wild horse or burro without authorization from the authorized officer except as an act of mercy;

(d) Selling or attempting to sell, directly or indirectly, a wild horse or burro or its remains;

(e) Commercially exploiting a wild horse or burro;

(f) Treating a wild horse or burro inhumanely;

(g) Violating a term or condition of the Private Maintenance and Care Agreement;

(h) Branding a wild horse or burro;

(i) Removing or altering a freeze mark on a wild horse or burro;

(j) Violating an order, term, or condition established by the authorized officer under this part.

§ 4770.2 Civil penalties.

(a) A permittee or lessee who has been convicted of any of the prohibited acts found in § 4770.1 of this title may be subject to suspension or cancellation of the permit or lease.

(b) The authorized officer shall issue Certificate of Title after 12 months, if the adopter has complied with the terms and conditions of the agreement and the authorized officer determines, based either on a field inspection or a statement provided by the adopter from a veterinarian, extension agent, local humane official, or other individual acceptable to the authorized officer, that the animal or animals covered by the Agreement have received proper care and humane treatment.

(c) An adopter may not obtain title to more than 4 animals per 12-month period of private maintenance. Effective the date of issuance of the Certificate of Title, Federal ownership of the wild horse or burro ceases and the animal loses its status as a wild horse or burro and is no longer under the protection of the Act or regulations under this title.

Subpart 4760—Compliance

§ 4760.1 Compliance with the Private Maintenance and Care Agreement.

(a) An adopter shall comply with the terms and conditions of the Private Maintenance and Care Agreement and these regulations. The authorized officer may verify compliance by visits to an adopter, physical inspections of the animals, and inspections of the facilities and conditions in which the animals are being maintained. The authorized officer may authorize a cooperative extension agent, local humane official or similarly qualified individual to verify compliance.

(b) The authorized officer shall verify compliance with the terms of the Private Maintenance and Care Agreement when an adopter has received 25 or more animals or when 25 or more animals are maintained at a single location.

(c) The authorized officer shall conduct an investigation when a complaint concerning the care, treatment, or use of a wild horse or burro is received by the Bureau of Land Management.

(d) The authorized officer may require, as a condition for continuation of a Private Maintenance and Care Agreement, that an adopter take spe-

cific corrective actions if the authorized officer determines that an animal is not receiving proper care or is being maintained in unsatisfactory conditions. The adopter shall be given reasonable time to complete the required corrective actions.

Subpart 4770—Prohibited Acts, Administrative Remedies, and Penalties

§ 4770.1 Prohibited acts.

The following acts are prohibited:

(a) Maliciously or negligently in juring or harassing a wild horse or burro;

(b) Removing or attempting to remove a wild horse or burro from the public lands without authorization from the authorized officer;

(c) Destroying a wild horse or burro without authorization from the authorized officer except as an act of mercy;

(d) Selling or attempting to sell, directly or indirectly, a wild horse or burro or its remains;

(e) Commercially exploiting a wild horse or burro;

(f) Treating a wild horse or burro inhumanely;

(g) Violating a term or condition of the Private Maintenance and Care Agreement;

(h) Branding a wild horse or burro;

(i) Removing or altering a freeze mark on a wild horse or burro;

(j) Violating an order, term, or condition established by the authorized officer under this part.

§ 4770.2 Civil penalties.

(a) A permittee or lessee who has been convicted of any of the prohibited acts found in § 4770.1 of this title may be subject to suspension or cancellation of the permit or lease.

(b) An adopter's failure to comply with the terms and conditions of the Private Maintenance and Care Agreement may result in the cancellation of the agreement, repossession of wild horses and burros included in the agreement and disapproval of requests by the adopted for additional excess wild horses and burros.

§ 4770.3 Administrative remedies.

Any person who is adversely affected by a decision of the authorized officer in the administration of these regulations may file an appeal in accordance with 43 CFR 4.4 within 30 days of receipt of the written decision.

§ 4770.4 Arrest.

The Director of the Bureau of Land Management may authorize an employee who witnesses a violation of the Act or these regulations to arrest without warrant any person committing the violation, and to take the person immediately for examination or trial before an officer or court of competent jurisdiction. Any employee so authorized shall have power to execute any warrant or other process issued by an officer or court of competent jurisdiction to enforce the provisions of the Act or these regulations.

§ 4770.5 Criminal penalties.

Any person who commits any act prohibited in § 4770.1 of these regulations shall be subject to a fine of not more than \$2,000 or imprisonment for not more than 1 year, or both, for each violation. Any person so charged with such violation by the authorized officer may be tried and sentenced by a United States Commissioner or magistrate, designated for that purpose by the court by which he/she was appointed, in the same manner and subject to the same conditions as provided in 18 U.S.C. 3401.