

June 2, 1997

David Parsons
Mexican Wolf Recovery Program
U. S. Fish & Wildlife Service
P. O. Box 1306
Albuquerque, NM 87103-1306

Dear Mr. Parsons:

In reading the recent status report of April 1997, I was shocked to see that the wolves from the Ghost Ranch lineage were being included in the captive breeding program. In the early days of Mexican Wolf Recovery, the origin and genetics of the Ghost Ranch animals were discussed and investigated *ad nauseam*. In fact, the conclusion by all members of the early recovery team was that the animals were wolf-dog hybrids. This was the primary factor behind the decision to seek and capture the remaining wild population, because it was the only pure genetic stock available.

I was sent to inspect the Ghost Ranch animals that were in captivity at the *Living Desert Zoo* at Carlsbad and the private collection of Norma Ames. While some of the animals had some wolf characteristics, some specimens showed more dog than wolf. Nobody, dead or alive on the planet earth, has caught as many wolves in Mexico as I have. But none of the wild wolves resembled the animals that I saw represented in this captive collection. The explanation that the Ghost Ranch animals "do not look like wolves because of captivity and diet" is science right out of the *Twilight Zone*. The real reason that many of the Ghost Ranch animals look like dogs is because that is what they are.

With the understanding that the Endangered Species act does not protect hybrids, all the wolves from Norma Ames and Carlsbad Zoo were anesthetized. Since you have now revised history, and consider the Ghost Ranch animals are actually wolves, wouldn't the anesthetizing of these wolves be considered a "taking" of endangered species? Aren't you likewise guilty of a "taking" by

mixing the hybrids with the wolves? How are these facts going to be handled by law enforcement and have you notified them?

I have remained neutral about the reintroduction of the Mexican wolf in Arizona/New Mexico, because I don't believe it to be any of my business. But dumping out a bunch of hybrids to kill livestock, game animals, and restricting traditional activities is just taking it too far. If the Ghost Ranch animals are true wolves, then what are the animals that I took out of Mexico---- that are so different? And why was I sent to catch them when these other animals were already available? If you are concerned about genetic variability, why not augment the Mexican Wolf genes with those from Canada? Isn't that exactly what is going to happen in the wild when the reintroduction in Idaho and Wyoming meet with the reintroductions from the Southwest? By including the Ghost Ranch hybrids in the breeding program, you are threatening the validity of genetics of the entire wolf reintroduction program, both North and South.

When the first Mexican wolf is killed by some rancher or trapper, and it enters the courts as a legal matter, you will never be able to convict anyone of killing a true wolf. The early records of the recovery meetings, the credentials of the participants, and their conclusions will be contrary to your case, and they are a matter of public record---easily recovered. You may put dog blood in the wolves, but you will never take it out. And you will forever cloud the issue of what it is you have released into the wild. I believe you have made a serious mistake.

Sincerely,



Roy McBride



United States Department of the Interior

FISH AND WILDLIFE SERVICE
P.O. Box 1306
Albuquerque, New Mexico 87103

In Reply Refer To:
R2/ES-SE

JUL 23 1997

Mr. Roy McBride
Rancher's Supply, Inc.
P.O. Box 725
Alpine, Texas 79831

Dear Roy:

Thank you for your letter of June 2, 1997, expressing your views about the inclusion of the Ghost Ranch and Aragon lineages of Mexican wolves into the official captive breeding program for the subspecies. Your thoughts and opinions on matters relating to Mexican wolf recovery are always appreciated.

I am, of course, aware that wolves in the certified lineage all descend from the Mexican wolves you captured in Chihuahua and Durango, Mexico, in the late 1970's. I fully appreciate your concern about the management of these animals. The Fish and Wildlife Service (Service) has been considering the question of the purity of the Ghost Ranch and Aragon lines for a long time. The Service rejected the first recommendation made in 1987 to merge breeding lines. We believed the scientific evidence was inconclusive at that time.

Advances in molecular genetics technology brought new information to bear regarding the purity of the Ghost Ranch and Aragon lines. The Service appointed a "Genetics Committee" to the Mexican Wolf Recovery Team in 1994, and asked the committee to review available data and issue findings regarding the purity of all three lines of captive Mexican wolves (Certified, Ghost Ranch, and Aragon). The committee found all three breeding lines to be pure Mexican wolves and recommended a careful merging of the lines. The Mexican Wolf Recovery Team supported the recommendation of the Genetics Committee. Enclosed is the report of the Genetics Committee; relevant scientific papers from peer-reviewed journals; and the internal memorandum containing the Service's decision to accept the recommendation of the Genetics Committee.

The Certified line contains the most genetic variation of the three lines and remains the backbone of the Mexican wolf captive population. The contribution you made by capturing the five Mexican wolves from Mexico remains extremely significant to the success of the Mexican Wolf Recovery Program and has not been diminished by

Mr. Roy McBride

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the merging of the other lines. The result of this merging will be a more robust Mexican wolf that contains even more of the original genetic diversity of this rare subspecies. This should enhance its chance of survival.

I know that you hold very strong views on this issue, and I do not expect this information to change your opinion about inclusion of the Ghost Ranch and Aragon lineages. I do hope, however, that the information will allow you to appreciate that the Service's decision was made only after considerable thought and deliberation using the best scientific information available. Perhaps we will have a chance to discuss this issue further at the upcoming Animal Damage Control meeting in New Mexico. I look forward to seeing you there.

Sincerely,



David R. Parsons
Mexican Wolf Recovery Coordinator

Enclosures

1994 HERITAGE GRANT AWARDS

**Heritage - IIPAM (Identification, Inventory, Acquisition,
Protection and Management of Sensitive Habitat)**

Applicant: Arizona State University, Board of Regents
Department of Zoology
Third Party: Dr. Philip W. Hedrick

Project # I94038

Dollars Awarded: \$27,800.00

Project Title: Pedigree Analysis Of Captive Population Of Mexican Wolf

Project Contact: Philip S. Miller
Ph.D. Candidate

Tempe, AZ 85287-1501
602 965-3571

Proper genetic management of the captive population of the Mexican wolf (*Canis lupus baileyi*) is critical if recovery of the species is to be successful. The research here proposed will provide a comprehensive analysis of the captive wolf pedigree, addressing the following issues: founder gene survival in the current population, identification of genetically important and surplus individuals, the existence and extent of inbreeding depression in the population, and the prevalence and genetic basis of physiological defects with regards to future breeding strategies. Sophisticated computer algorithms will be employed, with future management strategies to be recommended based on this research.

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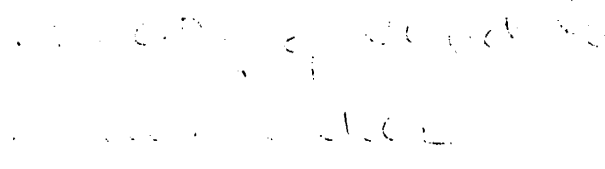
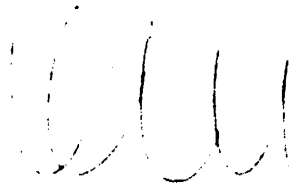
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David R. Parsons—Mexican Wolf Recovery Coordinator, U.S. Fish and Wildlife Service. B.S. in Fisheries and Wildlife Biology, Iowa State University, 1969. M.S. in Wildlife Biology, Oregon State University, 1975. Various positions, U.S. Fish and Wildlife Service, 1975-present. Duties included natural resource management coordination, environmental impact analysis and mitigation, research grant administration, and endangered species recovery.

Richard Phillips—State Director, U.S.D.A. Animal Damage Control. Arizona State Director, APHIS-ADC, 1992-present. 25 years experience in animal damage control, first with the U.S. Fish and Wildlife Service and later with U.S.D.A.-APHIS-ADC.

Greg Schmitt—Endangered Species Biologist, New Mexico Department of Game and Fish. B.S. in Wildlife Science, New Mexico State University, 1971; M.S. in Wildlife Science, New Mexico State University, 1973. New Mexico Department of Game and Fish, 1974 to present. Duties have included working with nongame wildlife, with emphasis on endangered species, throughout New Mexico (13 years) and working on waterfowl, sandhill cranes, and upland game species (7 years).

Daisan Taylor—Senior Wildlife Biologist, Environmental Services Division, Directorate of Environment and Safety, U.S. Army White Sands Missile Range. B.S. in Wildlife Management/Biology, University of Wisconsin-Stevens Point, 1976. M.S. in Wildlife Science, Purdue University, 1978. Wildlife Specialist II with Arizona Game and Fish Department, 1980-1982. Held present position since 1982, with emphasis on threatened and endangered species issues and Endangered Species Act compliance.

Consultants

Wendy Brown—Wildlife Biologist, U.S. Fish and Wildlife Service. Coordinating public information and education program and other facets of the Mexican Wolf Recovery Program.

John Duffield—Economist, Bioeconomics, Missoula, MT. Professor of Economics, University of Montana. Analyzed economic impacts.

Steven H. Fritts—Wolf Scientist, U.S. Fish and Wildlife Service. Provided wolf biology and management expertise.

Adele Girmendonk—Wildlife Biologist, Arizona Department of Game and Fish. Conducted research on wolves and Arizona wildlife.

Kathleen Grassel—Graphics Specialist, Institute of Public Law, University of New Mexico. Provided graphics assistance.

Kate Green-Hammond—Consultant in ecosystem modelling. Provided prey base computer modelling analysis.

Ray Gurule—Mapping Specialist, U.S. Fish and Wildlife Service. Provided all map figures.

Mark Johnson—Veterinarian, Yellowstone National Park, WY. Veterinary review.

Patrick Morrow—Biologist, White Sands Missile Range. Provided game data and hunting information.

Chris Neher—Economist, Bioeconomics, Missoula, MT. Analyzed economic impacts.

Dan Pletscher—Associate Professor in Forestry, University of Montana. Provided information on wolves and prey impacts.

Miriam Wolok—Staff Attorney, University of New Mexico School of Law, Institute of Public Law. Research Analyst. Conducted research and wrote portions of the DEIS.

Mexican Wolf Recovery Team

Larry Allen—Regional Wolf Coordinator, Coronado National Forest.

Javier de la Maza—Dirección General, Aprovechamiento Ecológico de los Recursos Naturales, Instituto Nacional de Ecología, Mexico.

Steven H. Fritts—Wolf Scientist, U.S. Fish and Wildlife Service.

* *Phil Hedrick*—Department of Zoology, Arizona State University. *

Terry Johnson—Nongame and Endangered Wildlife Coordinator, Arizona Department of Game and Fish.

David R. Parsons—Mexican Wolf Recovery Coordinator, U.S. Fish and Wildlife Service.

Mike Phillips—Yellowstone National Park Wolf Recovery Coordinator, National Park Service.

Greg Schmitt—Endangered Species Biologist, New Mexico Department of Game and Fish.

Peter Siminski—Mexican Wolf Species Survival Plan Coordinator, Arizona-Sonora Desert Museum.

Technical Experts Surveyed

The FWS surveyed various experts on technical issues related to potential wolf impacts on livestock and wild prey. The respondents were:

Livestock Impacts

- Larry Allen*, U.S. Forest Service, Arizona
- Paul Bouche*, U.S. Forest Service, New Mexico
- Cecil Brown*, San Carlos Apache Tribe, Arizona
- John Caid*, White Mountain Apache Tribe, Arizona
- Phil Clifton*, Arizona Cattlegrowers Association
- Gary Davis*, U.S. Forest Service, Arizona
- John Fowler*, New Mexico State University
- Steve Fritts*, U.S. Fish and Wildlife Service, Montana
- Mike Fusco*, New Mexico Cattlegrowers Association
- John Gunson*, Fish and Wildlife Service, Alberta, Canada
- Jerry Holocheck*, New Mexico State University
- Mike Howard*, Bureau of Land Management, New Mexico
- John Mack*, National Park Service, Wyoming
- Roy McBride*, Ranchers Supply, Inc., Texas
- David Mech*, National Biological Survey, Minnesota
- Curt Mullis*, USDA Animal Damage Control, New Mexico
- Carter Niemeyer*, USDA Animal Damage Control, Montana
- Gary Nunley*, USDA Animal Damage Control, Texas

Bill Paul, USDA Animal Damage Control, Minnesota

Rick Phillips, USDA Animal Damage Control, Arizona

George Ruyle, University of Arizona

Alan Savory, Holistic Management, Inc., New Mexico

Wild Prey Impacts

Warren Ballard, University of New Brunswick, Canada

Lou Carbyn, Canadian Wildlife Service, Alberta, Canada

Todd Fuller, University of Massachusetts

David Mech, National Biological Survey, Minnesota

Francois Messier, University of Saskatchewan, Canada

Mike Nelson, National Biological Survey, Minnesota

Paul Paquet, University of Alberta, Canada

Rolf Peterson, Michigan Tech University

Dan Pletscher, University of Montana

Jon Rachael, Idaho Department of Game and Fish

Participants in DEIS Open Houses and Public Hearings

The following individuals participated in the open houses and public hearings held on the DEIS:

- Arizona Game and Fish Department:
 - Dan Groebner*, *Terry Johnson*
- New Mexico Department of Game and Fish:
 - Jim Bailey*, *Eddie Bennett*, *Greg Schmitt*
- U.S.D.A. Animal Damage Control:
 - Richard Phillips*
- U.S.D.A. Forest Service:
 - Larry Allen*, *Frank Hayes*, *Sandy Knight*, *Andrea Martinez*
- U.S.D.I. Fish and Wildlife Service:
 - Charles Ault*, *Wendy Brown*, *Nick Chavez*, *Dom Ciconne*, *George Divine*, *Yvonne Fernandez*, *Scott Heard*, *Mark Johnson*, *John Keeler*, *Ken Kessler*, *Mike Lucckino*, *Susan MacMullin*, *Colleen McNerney*, *Doug McKenna*, *Kathy Granillo*, *Bill Myer*, *Bud Oliveira*, *David Parsons*, *Cindy Schroeder*, *Steve Spangle*, *Greg Stover*, *Hans Stuart*
- University of New Mexico:
 - Peter Jenkins*, *Mimi Wolok*

Aragon Lineage:

1. Origin of founders unknown (Hedrick, 1995, at p. 6).
2. Founders obtained from the Chapultepec Zoo in Mexico City, but the origin of the Chapultepec stock is unknown (Hedrick, 1995, at p. 6).
3. Aragon lineage established in 1965 (Hedrick, 1995, p. 6)
4. Aragon lineage established in 1985 (Wayne et.al, 1995, p. 3).
5. The number of founders of the Aragon lineage is thought to be 2 or 3 (Hedrick, 1995, at p. 6; Wayne et al., 1995, p. 3).
6. Neither Hedrick nor Wayne know how many animals founded the Aragon lineage.
7. One of the founders could be of Ghost Ranch lineage (McBride, pers. comm., 1987).
8. It is likely that the founders (given in Fig. 3, p. 7, by Hedrick, 1995, as #01 and #02) are themselves inbred but there is no information to substantiate this one way or another (Hedrick, 1995, at p. 6).
9. Origin and breeding of this lineage is poorly documented (Wayne, et al., 1995, p. 4; Hedrick, 1995, at p. 6).
10. The early history of this lineage is not known (Hedrick, 1995, p. 6).
11. Date and location of the capture of the founders is unknown (Hedrick, 1995, p. 6).
12. Remains of founders are not available for examination.
13. The Aragon lineage has been subjected to close inbreeding for 30 years and is limited in representation to 8 living animals (Hedrick, 1995, p. 6).
14. Weber (1989) compared skulls of Aragon wolves to those of Mexican wolves in the collection of the Institute of Biology of the National University of Mexico (UNAM), as well as dogs and coyotes. Weber (1989) found that the Aragon wolves grouped with the Mexican wolves he examined and were clearly separate from the specimens of dogs and coyotes he compared them to (Hedrick, 1995, at p. 8).

15. Lopez and Vasquez (1991) point out that Weber's **sample size was too small to be definitive**; but that his results are, nevertheless **suggestive** of the purity of the Aragon wolves (Hedrick, 1995, at p. 8).
16. Shields (1987) did not examine allozyme variation in wolves from the Aragon lineage (Hedrick, 1995, at p. 8).
17. Neither Shields et al. (1987) nor Wayne et al. (1992) examined mtDNA (mitochondrial DNA) variation in the Aragon lineage (Hedrick, 1995, at p. 10).
18. Fain et al. (1995) found that the Certified and Ghost Ranch animals shared the same haplotype which differed from the Aragon sequence by 3 substitutions and an 11 base inversion (Hedrick, 1995, at p. 10).
19. Fain et al. (1995) sequenced 576 base pairs of mtDNA (Hedrick, 1995, at p. 10).
20. There are **16,800** base pairs of canid mtDNA (Hedrick, 1995, at p. 9). Fain et al. (1995) sequenced **only 3 %** of the total number of canid mtDNA base pairs.
21. Wayne et al. (1995, p. 5 & 7) surveyed 10 microsatellite loci identified from a domestic dog genomic library and known to be polymorphic in wolf-like canids. **These loci consist of a variable number of tandem repeats of short sequences** and evolve through the gain or loss of repeat units rather than sequence substitutions.
22. According to Hedrick (1995, at p. 11), it is not surprising that two mtDNA haplotypes are present in the three female Mexican wolf founders (Certified, Ghost Ranch, and Aragon) because **the founders were caught from different parts of a wide ancestral range**.
23. Origin of the founders of the Aragon lineage is unknown (Hedrick, 1995, at p. 6). Therefore, it is not possible to state that the founding female was caught within some particular area of this species' wide ancestral range.
24. The origin of the female founder of the Ghost Ranch lineage is not known with certainty (Hedrick, 1995, at p. 3). She was donated to the Arizona Desert Museum, as a pup, by a tourist who claimed to have obtained her near Yecora, Sonora. No information is available as to where she was actually caught (Yecora is the major center of commerce for this region of the Sierra Madre along the Sonora - Chihuahua border). Therefore it is not known **where** within or outside of this "wide ancestral range" she originated.

25. Hedrick's theory (1995, at p. 11) that the 2 mtDNA haplotypes found in the 3 female Mexican wolf founders (only one of which was actually available for examination) can be explained by the capture of these 3 females in **different parts of a wide ancestral range**, is fundamentally compromised by the fact that the origin of 2 of these 3 females is actually **unknown**.
26. Fain et al. (1995) also used multilocus DNA fingerprints to examine variability within and among the three lineages (Certified, Ghost Ranch, and Aragon). Fain et al. (1995) found that the Ghost Ranch and Aragon lineages are most closely related, and the Certified and Ghost ranch are **most distantly related**, by the use of this methodology. **This is the reverse of the relationship found for the mtDNA analysis by Fain et al., 1995** (Hedrick, 1995, at p. 11).
27. mtDNA is **maternally inherited and does not give an indication of the ancestry of male founders** (Hedrick, 1995, p. 9).
28. Conclusions about the relationship of Aragon to the other taxa or the relationship of the Mexican wolf taxa to gray wolves or dogs **do not appear definitive** by use of mtDNA variation analysis (Hedrick, 1995, at p. 10).
29. Wayne et al. (1995) found that the genetic distances between the three Mexican wolf lineages (Certified, Ghost Ranch, and Aragon) are smallest, ranging from 0.09 to 0.32, when compared to northern gray wolves, coyotes and dogs based on an analysis of microsatellite variation (Hedrick, 1995, at p. 11). However, the distance between the Certified lineage and the Aragon lineage is 0.26, while the distance between the Certified and Ghost Ranch lineages is 0.32. The distance between the Aragon and Ghost Ranch lineages is only 0.09, or significantly smaller than the distance observed between either Certified-Aragon or Certified-Ghost Ranch (Garcia-Moreno et al., 1995, according to Hedrick, 1995, at p. 13).
30. The small genetic distance between the Aragon and Ghost Ranch lineages observed by Garcia-Moreno et al. (1995), and as reported by Hedrick (1995, at p. 13), is supportive of the suspicion (McBride, pers. comm., 1987) that one of the Aragon founders was actually of Ghost Ranch lineage.
31. According to Hedrick (1995, Fig. 3 at p. 7) of the 16 animals of stated Aragon lineage, Garcia-Moreno et al. (1995) examined 8. Neither of the "founders" were examined because their remains are not available for examination. Since these animals were obtained from the Chapultepec Zoo and were already likely inbred when obtained by the San Juan de Aragon Zoo in 1985 (Wayne et al., 1995, p.3),

and since it is further unknown which specific female produced by initial cross at Aragon is the mother of the animals subsequently produced by backcross with its sire (Hedrick, 1995, p. 6), it is not possible to offer a percentage probability of the likelihood of retention of currently considered non-Mexican wolf alleles in this lineage.

32. A quantitative evaluation of inbreeding in this lineage has not been undertaken and may not be possible because detailed data of juvenile mortality and other fitness components is not known and is therefore not available.
33. Wayne et al. (1995, p. 6) cannot eliminate the possibility that the Aragon lineage originated **from other North American grey wolves or a dog whose offspring had backcrossed to wild wolves for several generations.**

Ghost Ranch Lineage:

1. Origin of female founder unknown; acquired in or near Yecora, Sonora, and donated to the Arizona Sonora Desert Museum when a pup in 1961 (Woody, 1986).
2. Male founder suspected to be of hybrid (wolf/dog) ancestry (Woody, 1986). Male founder caught in 1959 by Raymundo Topas, Ramanote Canyon, foothills of the Atascosa Mountains, Santa Cruz County Arizona, and donated to the Arizona Sonora Desert Museum by ranch owner, Mr. Douglas Cumming (Cumming, pers. comm., 1986).
3. Wayne's claim (Wayne et al., 1995, p. 4) that the founding **male** of this lineage was bought as a cub by a tourist in the town of Yecora, Sonora, is incorrect.
4. Wayne's claim (Wayne et al., 1995, p. 4) that the founding female was captured in "Pack" Canyon, Tumacacori Mountains, southern Arizona, in 1959, is false. The founding male, not the founding female, was captured in Ramanote Canyon, foothills of the Atascosa Mountains, in 1959. There is no "Pack" Canyon in this area. Ramanote Canyon is a tributary to **Peck Canyon**, which is likely the canyon that Wayne et al. (1995, p. 4) both incorrectly and inaccurately refer to as the location of capture for the female founder of this lineage.
5. The skull of the male founder, a key item in determining lineage origin and which is said to have been retained at ASDM, vanished before it could be subjected to analysis (Woody, 1986).
6. Remains of neither founder are available for analysis (Hedrick, 1995, p. 3).
7. Neither the founders (2) nor any of the animals produced by the first 3 **generations** of breeding in this lineage (19); or those animals most likely to have retained currently considered non-Mexican wolf alleles, were examined for microsatellite variation by Wayne et al. (1995) (Hedrick, 1995, Fig. 2, p. 5).
8. The Certified lineage has the highest number of alleles per locus, 2.5, and the highest average observed heterozygosity, 0.495. In the other extreme, the Ghost Ranch lineage has only 1.3 alleles per locus and has a **very low observed heterozygosity of 0.040** (Hedrick, 1995, p. 11).

9. It appears that the Ghost Ranch and Aragon lineages are most closely related and that the Certified and Ghost Ranch lineages are most distantly related on the basis of multilocus DNA fingerprints (Hedrick, 1995, p. 11) and on the basis of microsatellite variation analysis (Hedrick, 1995, p. 11).
10. Multilocus DNA fingerprint findings by Fain et al. (1995) are **the reverse of the relationship found for the mtDNA by Fain et al. (1995)** (Hedrick, 1995, p. 11).
11. A quantitative evaluation of inbreeding in this lineage has not been undertaken and may not be possible because detailed data of juvenile mortality and other fitness components is not available (Hedrick, 1995, p. 3).
12. Management of the Ghost Ranch lineage has been haphazard, poorly documented and characterized by extensive full sibling and parent-sibling matings (Woody, 1986; Hedrick, 1995, p. 3).
13. There is a high degree of inbreeding in the Ghost Ranch lineage (Woody, 1986; McBride, pers. comm., 1995; Hedrick, 1995, p. 3).
14. Bogan and Mehlhop (1983: 14) examined 11 specimens of captive Ghost Ranch animals; not 8 as claimed by Hedrick (1995, p. 6).
15. According to Hedrick (1995, p. 8): "Nowak (personal communication) also had examined the skulls of some of the other captive animals and has noted certain questionable characters in a few specimens, **especially small teeth and bullae, which could hint at influence from the domestic dog.**"
16. The influence of captive rearing and maintenance of morphological development is generally poorly documented in wolves (Hedrick, 1995, p. 8).
17. The influence of captive rearing and maintenance of morphological development is poorly documented in all three captive "Mexican wolf" lineages.
18. Hedrick (1995, p. 8) recommends a thorough examination of morphological development in all three captive "Mexican wolf" lineages to allow differentiation of the influence of captive rearing and maintenance from the effect(s) of **possible hybridization with other species.**
19. Since one of the founders (the male) is suspected to be of wolf-dog origin (Woody, 1986; McBride, pers. comm., 1995), and since the remains of neither of the Ghost Ranch

lineage founders are available for analysis (Hedrick, 1995, p. 3), it is not possible to know the degree to which this founder was actually hybridized. In other words, the founding male could have been one quarter dog, one eighth dog, etc. Moreover, both the initial hybrid ancestor of the founder, and the founder himself, could have been the sole progeny produced by respective litters. If we assume that the founding male was not 1/2 dog, but was instead 1/4 or 1/8 dog, and if we further assume that he was the sole progeny produced in litter, then the probability that we would see one of the dog alleles given as diagnostic by Hedrick would be substantially lower than the figure quoted by him.

20. Phenotypic aberrations produced in the Ghost Ranch lineage include animals of two eye colors (where one eye is yellow while the other is blue), animals with floppy rather than erect ears, animals with pronouncedly shortened rostra, and animals with sickle tails carried over the back in pronounced dog fashion (McBride, pers. comm., 1995). According to Mr. McBride (pers. comm., 1995), the Ghost Ranch lineage is compromised by hybridization with dogs.
21. As of December 7, 1995, Mr. Parsons had yet to view any living descendant of Ghost Ranch lineage firsthand (Parsons, pers. comm., Dec. 7, 1995). Nevertheless, and without examining any of these animals firsthand, Mr. Parsons pronounced them fit, to be purely "Mexican wolf," and to be appropriate for inclusion with the Certified lineage in July of 1995. Mr. Parsons' determination was based entirely on the results of Hedrick's and Wayne's yet unpublished 1995 studies which remain not generally available for public review as of January, 1996.
22. Of the six coyote populations sampled by Wayne et al. (1995) and compared by them to the three captive "Mexican wolf" lineages, **none are from Mexico or the Southwest** (Arizona, New Mexico, Texas, Colorado or Utah) (Hedrick, 1995, p. 13 & Fig. 4, p. 14).
23. Since coyote populations from Arizona, New Mexico, Texas, Colorado or Utah were not sampled by Wayne et al. (1995), it cannot be stated that coyote populations "from throughout the United States" were examined by Wayne et al. (1995), as is inaccurately claimed by Hedrick at p. 13 of his 1995 work.
24. Since coyote populations from neither the Southwest nor Mexico were sampled by Wayne et al. (1995), there is no frequency data presented by them on the relationship of either southwestern or Mexican coyote populations to southwestern or Mexican originating captive "Mexican wolf"

lineages (Hedrick, 1995, p. 13 & Fig. 4, p. 14).

25. Meaningful conclusion regarding differences between coyotes and captive "Mexican wolf" lineages is precluded by the fundamental failure of Wayne et al. (1995) to compare coyote populations and captive "Mexican wolf" lineages of similar biogeographic origin (Hedrick, 1995, Fig. 4, p. 14).
26. Wayne et al. (1995, p. 6) cannot eliminate the possibility that the Ghost Ranch lineage originated from other North American grey wolves or a dog whose offspring had backcrossed to wild wolves for several generations.

1987-1988 lost 18 wolves

International Studbook For
The Mexican Wolf, 1987

SUMMARY - 1987

During 1987, four pups were born from a single breeding at WCSRC. The single death for the year was one of these pups. One other pairing did not produce pups, even though ties were observed. The male (#30) was later determined to be cryptorchid. Two other males (#9, #40) within the program were also found to suffer from this condition in 1987.

The chronic lack of wolf holding space was somewhat relieved, when the Mexican government requested that three pairs of captive raised wolves be sent to three facilities in Mexico. This was accomplished in September.

The report on the "Genetic assessment of the current captive breeding program for the Mexican wolf (Canis lupus baileyi)" by William Shields, Alan Templeton, and Scott Davis was completed in 1987. This report was made under contract from the New Mexico Department of Game and Fish (Contract # 516.6-73-13). It provided breeding strategy for the MWCMC, and also genetically assessed the advisability of adding the ASDM/GR lineage to the breeding program. The report summary follows:

Genealogical analysis of the captive population of the certified Mexican wolf indicates that the small number of founders used to found this line has resulted in intense and increasing levels of inbreeding. Currently there is no evidence of any inbreeding depression, but the narrow genetic base could result in problems for the recovery program. To reduce the potential inbreeding we would recommend adding founders to the certified lineage. Since capture of wild wolves is considered unlikely, if not impossible, we recommend adding founders from the certified line's nearest wolf relatives.

Molecular genetic analyses, including starch-gel electrophoresis and restriction enzyme polymorphism studies of mitochondrial DNA, indicate that a second captive population of wolves (the Arizona-Sonorra Desert Museum/Ghost Ranch, ASDM/GR line), is either from the same or very closely related source population. Thus, we recommend that these 2 lines of Mexican wolf be carefully merged in order to maintain or increase the genetic diversity of the animals to be reintroduced into the wild.

The ASDM/GR lineage originated at ASDM in 1959 and 1961 from two wolves. This lineage was then deleted from the program in the late 1970's, because of questions concerning their genetic heritage. Currently at least 12 ASDM/GR lineage wolves still exist in captivity. The Shields/Templeton/Davis report was positive for including them. However the USFWS sent the report out for independent review before final determination. Final determination is pending at this date.

The MWCMC meeting was held at the WCSRC in September. Breeding strategy for 1988 was developed, however plans were thwarted when USFWS's needs changed at the end of the year.

CERTIFIED LINEAGE, 1997

1. Established by one female and two male, wild-caught Mexican wolves.
2. No journal published or peer reviewed work pertaining to grey wolves supports the proposition that viable and self-sustaining populations of this species can be established by the release of captives bred up from only one female and two male wild-caught founders.
3. Reintroduction of the Mexican wolf, as proposed by the U.S. Fish and Wildlife Service, consists of the release of "Certified" lineage animals augmented by subsequent release of animals derived of Certified / Ghost Ranch / Aragon lineages. The genetic base of the Certified lineage consists of only one female and two male founders. The Aragon and Ghost Ranch lineages are compromised by hybridization with dogs.
4. Meaningful conclusion regarding the retention of genetic variability in the "Certified" lineage is precluded because only 1 of the last 89 and exactly 0 of the last 58 animals of the total number of animals which then made up this lineage (178) was actually sampled for retention of genetic variability.
5. Meaningful conclusion regarding differences between coyotes and the captive lineages of "Mexican wolves" is not possible because coyote populations and captive "Mexican wolf" lineages of similar biogeographic (southwestern) origin were not subjected to comparison.
6. Of the 6 coyote populations genetically sampled and compared to the 3, alleged "Mexican wolf" captive lineages, none are from the Southwest (Arizona, New Mexico, Texas, Colorado or Utah) or Mexico.
7. The influence of captive rearing on the non-maintenance of wolf morphological characteristics in this and the other captive lineages is poorly documented.
8. Reports of cryptorchidism in the "Certified" lineage highlight the possibility that inbreeding depression is already afflicting this line of captive Mexican wolves.
9. The reasonable probability has been established by Carrera that Mexican wolves exist in the wild in Mexico that could be captured and used to significantly broaden the genetic base of the "Certified" captive lineage.

GHOST RANCH LINEAGE, 1997

1. Origin of female founder not known with certainty.
2. Statements recorded at the time of the male founder's capture suggest that he was actually a wolf/dog hybrid.
3. The skull of the male founder, a key item in determining lineage purity and which is stated to have been retained by the Arizona Sonora Desert Museum, mysteriously disappeared from ASDM before it could be subjected to analysis.
4. Neither the founders of this lineage (2) nor any of the animals produced by the first three generations of captive breeding (19) were examined for purposes of establishing the alleged purity of this lineage.
5. After siring just one litter in 1963, the male founder escaped from the Arizona Sonora Desert Museum and was killed before he could be recaptured. The sole founding female was then bred back to her own sons and the progeny produced by these matings were then distributed to other zoos as brother/sister pairs.
6. There is a high degree of inbreeding in this lineage.
7. Management of this lineage has been haphazard, poorly documented and characterized by extensive full sibling and parent/progeny matings.
8. A quantitative evaluation of inbreeding in this lineage has not been undertaken and is not possible because detailed data pertaining to juvenile mortality and other fitness components is not available.
9. The influence of captive breeding and captive rearing on the development of morphological aberrations observed in this lineage (i.e., animals with shortened rostra, short legs, sickle tails and dual eye color) is poorly documented.
10. This lineage and the "Aragon" lineage are more closely related to each other than either is to the "Certified" lineage based on the results of genetic analyses.
11. There is considerable suspicion that one of the founders of the "Aragon" lineage was actually of "Ghost Ranch" lineage origin.
12. The Service's own genetic researchers cannot eliminate the possibility that the "Ghost Ranch" lineage originated from other North American wolves or a dog.

ARAGON LINEAGE, 1997

1. Origin of founders (2 or 3) unknown.
2. Founders obtained from the Chapultepec Zoo in Mexico City, but the origin of the Chapultepec stock is unknown.
3. None of the genetic researchers employed by the Service know exactly how many animals founded this lineage.
4. One of the founders is suspected to be of "Ghost Ranch" lineage origin.
5. Remains of the founders are not available for examination.
6. The early history of this lineage is unknown.
7. Breeding of this lineage is poorly documented.
8. This lineage has been subjected to close inbreeding (i.e., full sibling and parent/progeny matings) for over 30 years and is limited in living representation to just 8 animals.
9. Since the origin of the founders of this lineage is unknown, it is not possible to state, as the Service does, that the founding female was captured within some part of the ancestral range of the Mexican wolf.
10. A quantitative evaluation of inbreeding in this lineage has not been undertaken and is not possible because detailed data pertaining to juvenile mortality and other fitness components is not available.
11. The influence of captive breeding / captive rearing on the development of morphological aberrations observed in this lineage (i.e., animals with shortened rostra of skulls, short legs, sickle tails, etc.) is poorly documented.
12. It is not known whether, or to what degree, morphological aberrations observed (i.e., shortened rostra of skulls, short legs, sickle tails, etc.) in animals produced by this and the "Ghost Ranch" lineage are due to hybridization with other species (dog or coyote).
13. The Service's own genetic researchers cannot eliminate the possibility that the Aragon lineage originated from other North American wolves or a dog.
14. This lineage and the "Ghost Ranch" lineage are more closely related to each other than either is to the "Certified" lineage based on the results of genetic analyses.

THE MEXICAN WOLF RECOVERY PLAN

March 1986

by

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The Mexican wolf (Canis lupus baileyi) was listed as an endangered species on April 28, 1976. As a subspecies of the gray wolf, the Mexican wolf is recognized as the southern most form of its species. Historically it occurred in southeast Arizona, southern New Mexico, west Texas, and then southward through Central Mexico to the State of Queretaro. In addition to the Mexican wolf, only two other subspecies of gray wolf exist south of the United States border with Canada, these being the eastern timber wolf (C. l. lycaon) and the northern rocky mountain wolf (C. l. irremotus).

Although it is often thought of as the smallest of the gray wolf subspecies, size and weight records for the Mexican wolf do overlap the size and weight averages recorded for the eastern timber wolf. Although rare, a few Mexican wolves will weigh as much as 100 pounds. In captivity, the weights have ranged from 45 pounds for a female to 102 pounds for a male.

Although we occasionally receive unconfirmed reports of Mexican wolves in New Mexico and Arizona, the subspecies is presumed to be extinct in the United States. Due to the often confused nature of unconfirmed reports, we have adopted a policy of not accepting reports as valid unless they can be supported by positive evidence. This policy has become necessary because of known occurrences of illegal releases of wolves by private citizens and the fact that public reports of sightings of a number of species are often biased by the observer's imagination and wishful thinking.

Due to both real and imagined fears, the decline of the wolf in the United States is largely the result of organized predator control activities initiated early in this century. We now know that many of the fears that led to the persecution of the wolf were imagined. Our enlightened view at this time is that wolves are not the notoriously vicious animals that they were once thought to be; however, we also understand that in some situations they can directly conflict with man's efforts to produce food and fibre. We do not consider wolves in North America to be a direct threat to man.

It is the understanding of the U.S. Fish and Wildlife Service and the Mexican Wolf Recovery Team that a few wolves may still exist in isolated areas of Mexico. However, their numbers are thought to be so low that for all practical purposes the species may already be biologically extinct. It is thought that most dispersing young-of-the-year soon die after venturing into livestock areas where they encounter private predator control activities directed toward coyotes. Perhaps due to their more primitive nature, wolves appear to be highly susceptible to predator control activities. Although an extensive public education program might yet save the wolf in it's final range, it is thought that such an effort may already be too late. It may be that the only salvation for the animal will be a lengthy process of increasing it's numbers in captivity and then reestablishing it in protected areas within its historic range.

To address the possibility of recovering the Mexican wolf, in cooperation with the government of Mexico, the U.S. Fish and Wildlife Service organized a Mexican Wolf Workshop in February of 1979. At that time there were only four wild caught confirmed Mexican wolves in captivity. All of the animals had been captured by Mr. Roy McBride of Alpine, Texas, under a contract issued by the U.S. Fish and Wildlife Service as part of a cooperative agreement that was then in force with the government of Mexico. The Mexican Government had arranged the necessary permits for the capture and export of the animals for the purpose of establishing an official captive breeding program. The four animals were three males; #AF001 captured 50 km west-southwest of Durango, Mexico, in December 1972; #AF002 captured 100 km north and 70 km west of Durango in October 1977; and #AF004 captured in the same area as #AF002 in March 1978, along with a female #AF005. A fourth male, #AF003, captured in Chihuahua, Mexico, in November 1977 died in captivity in March of 1978. Although it cannot be confirmed, it is possible that #AF005 is the mother of male #AF002, and that #AF004 was her mate.

One fortunate event was that the female wolf was pregnant when captured. The pregnancy resulted in the birth of one female and four male pups on May 8, 1978, at the Arizona-Sonora Desert Museum, Tucson, Arizona. The female pup died shortly after birth; however, the four males are still in the program today as #AF007, #AF008, #AF009, and #AF010. At the time of the 1979 workshop all but one of the animals, male #AF002, were housed at the Arizona-Sonora Desert Museum. In July of that year the Service had established a cooperative agreement with the museum for the receipt, maintenance, and breeding of all wolves coming out of Mexico. Male #AF002 was being temporarily housed at the San Diego Zoo in California.

Having reviewed the status of the Mexican wolf in the wild, the workshop participants began addressing the status of alleged Mexican wolves in captivity. One thing that must be understood about the identification of wolf subspecies is that at this time

there is no taxonomic means that will allow classification of individual animals to subspecies. One must know where the animal or its captive ancestors originated to know the subspecies of wolf it represents. If the individual animal is from a breeding line that has been in captivity for several generations, one must trace the breeding history of each animal in the line to be certain that other unidentifiable wolves have not been used in the line. To represent a "pure" subspecies, an individual wolf must have a complete and traceable ancestry that leads back to the original wild stock that was used to establish the breeding line. A thorough investigation of breeding records is necessitated by the fact that many wolves are known to have been hybridized in captivity. Private breeders, even today, are known to breed wolves to dogs and sell resultant offspring as true wolves. In the past, some zoos have unknowingly bred wolves of differing subspecies and distributed offspring to other zoos and private citizens as well. In addition, breeding records have often been poorly maintained. As a result, many wolves in captivity are not identifiable to subspecies and are probably hybrid forms.

At the time of the workshop there were two captive groups of alleged Mexican wolves. One breeding line was known as the Arizona-Sonora Desert Museum - Ghost Ranch lineage, which has become commonly referred to as the ASDM-GR line. The line was started by two animals that were said to have been Mexican wolves. Investigation of the records showed that the founding male was captured near Tumacacori, Arizona, in 1959. The records also recorded undocumented statements that the animal was actually a dog-wolf hybrid. After siring a litter of seven pups at ASDM, the male escaped in 1964 and was later killed. It was recorded that the animal's skull, a key item in the identification of wolves, had been preserved; however, the skull has never been located and does not seem to be available for examination.

The founding female of the ASDM-GR line was said to have been captured as a pup near Yecora, Sonora, Mexico, in 1961. She was donated to ASDM by a tourist passing through Tucson, Arizona, on a motorcycle trip. The tourist was concerned the pup would not survive the motorcycle journey. In 1963, with the founding male, she produced a litter of seven pups. With the death of the founding male, she was bred in subsequent years with several of her sons from the 1963 litter. She and her offspring produced a number of litters which ended up widely distributed to zoos, in the United States and Mexico, as Mexican wolves. An unfortunate occurrence in the distribution of the animals to zoos, was that in most instances brother-sister pairs were usually sent to the new facilities. These pairs were usually bred and their offspring were distributed as brother-sister pairs as well. In short, there is a high degree of inbreeding in the ASDM-GR line.

Today representatives of this line are known to exist in facilities at Window Rock, Arizona, and Ghost Ranch, Santa Fe, and Carlsbad, New Mexico. For the most part, breeding in the

line has been halted until it's value to the recovery of the Mexican wolf can be determined. Skulls of animals born to the line show definite dog, as well as, wild canine characteristics. It has not been determined if the dog characters in the skulls are due to a dog heritage or the result of successive generations raised in captivity. Although members of the ASDM-GR line are known to be at only four facilities, due to the wide and sometimes unrecorded distribution of the animals, it is possible that other members are in other facilities as well.

The other group of alleged Mexican wolves in captivity during the 1979 workshop was a group maintained by the Wild Canid Survival and Research Center (WCSRC) at Eureka, Missouri. The founding pair of wolves for this line was purchased by a private citizen from a California animal dealer in 1965. The citizen had a "standing order" with the dealer for Mexican gray wolves for several years. The original story behind the animals was that the dealer purchased them from a man in Texas, who said he dug them out of a den somewhere in the Chihuahuan Desert in 1963. A story that later developed was that the dealer purchased the young wolves at an auction, because they reminded him of a picture he once saw of Mexican gray wolf pups. Of course, we know that wolf pups all look much the same, they like adults, certainly cannot be identified to subspecies on the basis of appearance. Efforts to confirm the origin of the animals resulted in the animal dealer reporting that he could not recall the animals or their acquisition. Unfortunately, all of his written records were reported destroyed in a flood in the late 1960's. Therefore, there is no way the origin of this line can now be confirmed.

The founders of the WCSRC line produced their first litter in 1965. The pups were returned to the animal dealer who supposedly sold them. It is not known if they were sold as Mexican wolves. In a second litter, one pup was sent to an individual in St. Louis, Missouri, where it died a short time later. A male and female from the litter were sent to an individual in Salem, Oregon. The final disposition of this pair or any offspring they might have produced is not known. A third litter of unknown size was traded back to the animal dealer for a pair of alleged "Texas Red Wolves". It is assumed the dealer sold these pups as well. From the red wolf recovery program we know that the alleged "Texas Red Wolves" were red wolf-coyote hybrids. The fourth litter produced by the founding animals died, and the fifth litter, born in 1973, was sent to WCSRC with the founding pair in August of that year. Another litter was born at WCSRC in 1974, and then the organization stopped the breeding of the line due to lack of space. No members of this line have left WCSRC.

The workshop concluded that there are a number of unanswerable questions about the origins and identity of the founders of both the ASDM-GR and WCSRC lineages. Wanting to protect the genetic purity of the wolves used as founders for the Mexican Wolf Recovery

Program, it was also concluded that for the time being, the only wolves that can be accepted by the program are those that come from the wild range of the subspecies in Mexico, if there are not indications of coyote and/or dog hybridization in the wild population.

We hope this summary of the known history of the ASDM-GR and WCSRC wolf lineages demonstrates that it is imperative that the breeding records of individual wolves be thoroughly examined before they are accepted as representing any specific form of wolf. Through our efforts in examining these and other lineages, we are amazed at how common wolf-like canids are in captivity, how wide spread a captive lineage can become in a short time, and how easily these animals are accepted by individuals and institutions on the basis of unsupported verbal assurance that they represent specific subspecies of wolves. Unfortunately, in the serious effort of attempting to recover endangered subspecies, our experiences have led us to understand that under no circumstances can an individual wolf be accepted at face value. Unfortunately, this same precept must be applied to wild animals as well. Although, we have no indication of such happenings in Mexico as yet, we do know that captive wolves have occasionally been illegally released in the United States. Therefore, even wild captured wolves are standardly examined for tattoos and other indications of having been raised in captivity, as well as, indications of hybridization. In short, out of necessity, we have learned that one must be skeptical of each new wolf that is to be added to the founding stock of a breeding program.

In the fall of 1979, the U.S. Fish and Wildlife Service appointed a recovery team for the Mexican wolf. Endangered species recovery teams do not directly manage listed species, but serve as advisors to the U.S. Fish and Wildlife Service in establishing and conducting recovery programs. The work with the animals is either conducted by Fish and Wildlife Service personnel, personnel of cooperating government agencies, or contracted to appropriate institutions or individuals. The entire recovery effort is overseen by the U.S. Fish and Wildlife Service.

Members of recovery teams are selected on the basis of their knowledge of the species and the problems with which it is confronted. Recovery teams only address the problems of the species and make recommendations to the U.S. Fish and Wildlife Service. They do not become involved in the politics that may surround recovery actions, nor do they actively campaign for the species. Their primary objective is to develop a written recovery plan that will result in the eventual recovery of the species and its removal from the Federal list of endangered species. Once a recovery plan is developed and approved, the recovery team may be disbanded or it may be retained to further advise on the implementation of the plan. As a recovery program evolves, the membership of the team may be changed to add new expertise on new activities and to remove individuals who have served the program's needs on past actions.

The Mexican Wolf Recovery Team, chaired by Ms. Norma Ames of Santa Fe, New Mexico, completed the task of developing an approved recovery plan on September 15, 1982. The primary objective of the recovery plan is to ensure the survival of the Mexican wolf by maintaining a captive breeding program and reestablishing a viable population in the species historic range. Although the plan outlines quite a number of recovery steps, it basically consists of two parts: 1) establishment and maintenance of a captive breeding program, and; 2) reestablishment of the species in the wild. It is important to understand that captive breeding is only part of the program and that it's purpose is to provide animals for the long range objective of reestablishment in the wild. We do not intend to simply preserve animals in captivity.

While the recovery team was developing the recovery plan, Mr. Roy McBride captured another male wolf in Mexico. This animal, #AF011, was captured on the Las Minas Ranch, 30 km south and 10 km east of Buenaventura, Chihuahua, Mexico. Mr. McBride reported that the wolf had bred a ranch dog, who subsequently whelped a litter of hybrid pups. This was the first and only indication we received that hybridization might be taking place in the wild population. It is not known if any of the pups dispersed to the wild.

The newly captured wolf was flown to Tucson, Arizona, for quarantine at ASDM and subsequently transferred to the WCSRC at Eureka, Missouri. Mr. McBride continued monitoring wolf reports from his contacts in Mexico but did not receive any reports that he felt were valid enough to warrant attempting to capture additional animals. Lacking further verifiable wolf reports on which to act, and due to increased difficulty in obtaining permits that would allow capture and export of additional wolves, Mr. McBride declined renewal of his U.S. Fish and Wildlife Service contract in 1983.

Without success, several attempts were made at ASDM to breed the only female wolf in the program. Being a wild wolf, it was determined that the possibility of successfully breeding her could be enhanced by placing her in a more remote and larger breeding pen. After much discussion of the risks involved, and utilizing procedures developed by the Red Wolf Captive Breeding Program, female #AF005 was transferred to the WCSRC in June of 1980 for pairing with the newly captured male #AF011. Wild canids breed only once a year, have a 63-day gestation period, and normally whelp in April or May. On May 20, 1981, the female whelped in a brush pile in her large pen.

Although there may have been more born, four pups, a male and three females, were known to be in the litter. The actual litter size is not known because the pups were not examined until eight days after birth for fear of disturbing the female. All four pups were found to be quite healthy; however, to secure the future of the captive population, two of the female pups were

transferred to the St. Louis Zoo for hand rearing during the first few months of life. The remaining male and female were left with their mother. All four pups survived and the two zoo raised animals were returned to WCSRC in late July. Since 1981 there has not been any difficulty in breeding Mexican wolves in captivity. We now have 28 wolves distributed among ASDM (3 male, 4 female), WCSRC (6 male, 4 female), and the Rio Grande Zoological Park (4 male, 7 female) in Albuquerque, New Mexico. Several more facilities have expressed interest in maintaining wolves as part of the recovery program.

Since the genetic base of the Mexican Wolf Captive Breeding Program is only four wild caught animals, there is concern about potential inbreeding problems. Recognizing that long term success in the breeding program would require considerable coordination and careful management, the U.S. Fish and Wildlife Service petitioned the American Association of Zoological Parks and Aquariums (AAZPA) to establish a Species Survival Plan (SSP) and management group for the Mexican wolf. The AAZPA has established several SSP groups and plans for listed species being bred in captivity. The basis of such plans is to treat all captive members of the species as part of a single population regardless of their distribution among zoos. After lengthy deliberation, the AAZPA respectfully declined assumption of the responsibility for captive management of the Mexican wolf. Their rejection of the project was based on their need to prioritize the use of their limited resources by working only with full species and a concern that the genetic base of the population was too small for survival.

In lieu of establishment of a management group by the AAZPA, the U.S. Fish and Wildlife Service decided to sponsor a Mexican Wolf Captive Management Committee (MWCMC) based on the SSP program. The committee first met in November of 1985 and Mr. Kent Newton, of the Rio Grande Zoological Park, was elected as its chairman. The committee is composed of a member from each facility maintaining program wolves, as well as a representative of the Mexican Wolf Recovery Team and the U.S. Fish and Wildlife Service. The Mexican Wolf Management Committee will meet at least once each year for the purpose of determining which animals should be bred, which animals should be transferred to other facilities, confer on management problems of each participant, and evaluate zoos that wish to join the program. All animals in the program remain in the stewardship of the U.S. Fish and Wildlife Service. For a new facility to participate in the recovery program, the facility must agree to abide by the decisions of the MWCMC regarding breeding, transfer, and management of the animals placed in their care. Refusal to abide by a MWCMC decision could result in the U.S. Fish and Wildlife Service withdrawing the wolves and removing the facility from the program. We consider the establishment of the MWCMC to be a major step in the preservation of the Mexican wolf.

As discussed earlier, the long range objective of the recovery program is reestablishment of the Mexican wolf in the wild. At best, this will be a difficult objective to achieve. One reason it will be difficult is that the image of the wolf has been misrepresented to the public. From our perspective, the misrepresentation of the species has created an imaginary mystic animal in the mind of man. Because of misrepresentation, many people are convinced that wolves are extremely vicious and a severe danger to man, livestock, and huntable wildlife. To these people just the mention of reestablishing wolves can lead to highly vocal emotionally charged opposition. On the other hand, other misrepresentations have developed strongly pro-wolf individuals that see the animal as highly unique in its social organization, alleged loyalty to it's mate, and defense of it's young. Neither view is correct and individuals and agencies responsible for the recovery of the species often find themselves between two groups who vehemently oppose each others' views. The loser in these disputes is the wolf.

Each side will have to understand that the wolf is not entirely what they have been led to believe it is and that any reintroduction will have to result in a managed population. The reestablished wolf population will be monitored and managed much like other wildlife species. This means, as in other wildlife populations, there may be times that individual animals may cause local problems that will have to be tolerated. The situation would not be unlike other wildlife damaging crops in some areas at some times of the year. On the other hand, it will have to be accepted that some problems may have to be managed by population reductions or removal of specific animals. The price of saving the species will be the occasional inconvenience of some people and the occasional loss of a wolf.

All concerned parties will have to accept this fact if a reestablishment effort is to succeed. One must remember, our objective is not to save wolves, our objective is to save a species that is a part of our heritage. The reestablished population will have to become part of the ecosystem in which it is placed. For it's own survival it cannot be allowed to significantly impact any part of the ecosystem. Man is already a part of all earth ecosystems and cannot be significantly impacted.

It is not possible to address specific problems that might be associated with reestablishment until a specific site has been chosen and the ecosystem of the site has been evaluated. Once the site is evaluated, potential conflicts that might develop during the reestablishment effort will have to be addressed in a detailed project proposal. Contingencies will have to be developed for careful monitoring of the environment, as well as the wolves, and management concessions will have to be granted to make the reestablishment effort feasible.

The U.S. Fish and Wildlife Service is initiating an effort to evaluate potential reestablishment sites in the historic range of the Mexican wolf in the United States. In general, we will be seeking relatively large government managed lands on which there is limited human activity. Sites that initially appear suitable will be evaluated for current and proposed land use plans for livestock, hunting, and predator control, and their proximity to private lands. The prey base will be evaluated to determine its density and stability, as well as how it is being impacted by existing predators. Information will also be gathered on the seasonal changes of the area, temperature extremes, water availability, snow depths, and accessibility. Once each potential site has been evaluated, the apparent best site will be selected for development of a detailed project proposal and management plan.

It is difficult to put a minimum size on areas that should be considered for evaluation. However, in general, areas of less than 300 square miles would be questionable. The variable nature of each areas' terrain, prey base, seasonal changes, and current management will determine the suitability of the site. In some cases, the relationship of these variable elements may indicate that one of the smaller sites is more suitable than a larger site.

It is not likely that the species can be recovered by reestablishment of a managed population on a single site. The recovery effort will most likely involve reestablishment of several small populations on several widely dispersed areas. However, to accomplish this goal, a concerted effort will first have to be made to correct the human perception of wolves. At this time unreasonable poorly based biases, both for and against wolves, could prevent any possibility of reestablishment in the foreseeable future.

This has been a summary of the Mexican Wolf Recovery Program. A recovery team has been established and a recovery plan has been developed. A captive population has been secured, successful breeding has taken place, and a committee has been established to oversee the management of the animals. We are attempting to change the public perception of wolves and are initiating the process of selecting sites for reestablishment of managed populations in the wild. There is still much to be accomplished; however, we feel we have made a good start.

THE END