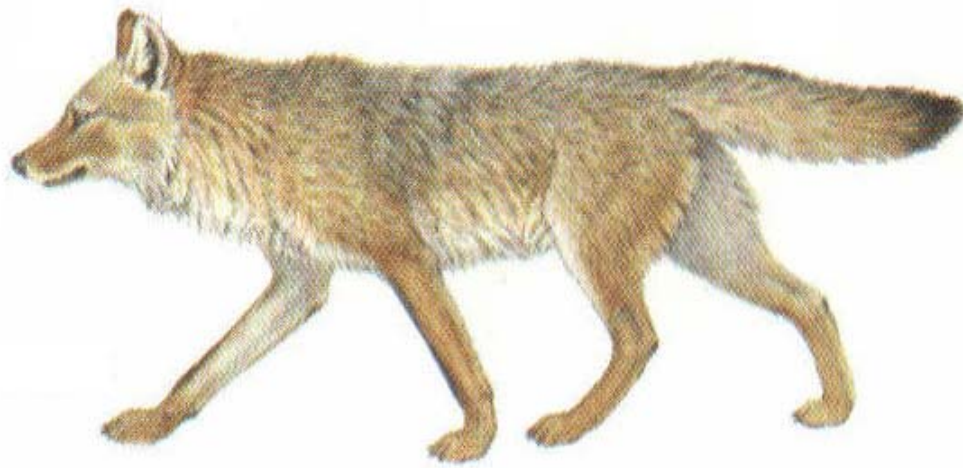


Population Analysis And Breeding/Transfer Plan

Red Wolf

Canis rufus gregoryi

Species Survival Plan[®]



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Lincoln Park
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ASSOCIATION
OF ZOOS &
AQUARIUMS

Executive Summary 2006 – 2007 Breeding/Transfer Plan – Red Wolf SSP®

The captive population of red wolves consists of 177 animals at 39 participating institutions as of August 2006. The population has been growing steadily in captivity since the early 1970s, with a decline in numbers in recent years. The target population size set by the SSP and the Canid Taxon Advisory Group is 250.

Current gene diversity for the managed population is 89.65% and is equivalent to the genetic diversity of a population descended from approximately five founders (4.83 fge). When gene diversity falls below 90%, it is expected that reproduction will be increasingly compromised by, among other factors, lower birth weights, smaller litter sizes, and greater neonatal mortality. Under the current conditions, with a target size of 250 and a growth rate of 2%, gene diversity can be maintained at or above 85% for 30 years. Strategies that may help maintain a high level of gene diversity for a longer period of time include increasing the population growth rate and increasing the proportion of breeders in the population (effective population size).

DEMOGRAPHY

Current Population Size	177	(86.91.0)
Specimens Excluded from Genetic Analyses	35	
Target Population Size	250	
Number of Participating Institutions	36	
Mean Generation Time (years)	5.55	
Population Growth Rate	1.02	
Number of Transfers Within The SSP (Breeding/Space)		
Number of Specimens to Import/Export	0/0	

GENETICS

	<i>Current</i>	<i>Potential</i>
Number of Founders	12	0
Founder Genome Equivalents (fge)	4.83	7.80
Current Gene Diversity (%)	89.65	93.59
Population Mean Kinship	0.1035	--
Mean Inbreeding Coefficient	0.0630	--
Effective Population Size to Census Size Ratio (Ne/N)	0.2872	--
Years To 90% Gene Diversity	n/a	--
Gene Diversity at 100 Years From Present (%)	77.75	--

Demographic projections indicate that approximately 30 – 34 births are needed in the coming year to maintain the population growth rate of 0 - 2% ($\lambda = 1.00 - 1.02$). For the 2006/07 breeding season 28 breeding recommendations have been made in order to meet genetic and demographic goals. Additional pairs could occur prior to next breeding season depending on available space or if breeding recommendations are modified as a result of unanticipated deaths or medical issues. Pairings are based on mean kinship, avoidance of inbreeding, avoidance of linking rare and common lineages, and logistical constraints identified by the participating institutions. Due to the age and low likelihood of success of many genetically valuable individuals, some pairs have been recommended for breeding not to meet genetic goals but to meet the demographic goal of maintaining or growing the population size. This strategy may have successfully contributed to the increase in births that occurred in the last breeding season.

Although inbreeding should be avoided in order to maintain a healthy captive population, it has become increasingly difficult to avoid in this population since no additional founders exist. Higher levels of inbreeding will need to be tolerated in forming reproductive pairs and long term genetic goals will need to be set at lower than 90% gene diversity. The Red Wolf Recovery Plan (USFWS) has set the target gene diversity to be retained at 80 – 85%. For the purposes of this plan, offspring inbreeding coefficients greater than the population mean kinship (0.1035) were avoided.

Summary Actions 2006 - 2007: *The SSP recommends 28 breeding pairs, no imports, no exports, and 17 transfers to create new breeding pairs or meet institutional requests.*

Table of Contents

Executive Summary	1
Acknowledgements	3
Description of Population Status	
Introduction	4
Demography	4
Genetics	5
Management Strategy	6
Recommendations	
Summary Recommendations	7
ALEXANDRI Alexandria Zoological Park	11
ASHEBORO North Carolina Zoological Park	12
ASHEVILLE Western NC Nature Center	13
AWENDA Cape Romain Nat'l Wildlife Refuge	14
BLOOMINGT Miller Park Zoo	14
BREVARD Brevard Zoo	15
BRIDGEPRT Beardsley Zoological Gardens	15
CHATT NAT Chattanooga Nature Center	16
CHEHAW Chehaw Wild Animal Park	16
CHICAGOLP Lincoln Park Zoo	17
DURHAM MS North Carolina Museum of Life and Science	17
FORTWORTH Fort Worth Zoological Park	18
FOSSILRIM Fossil Rim Wildlife Center	18
FRESNO Chaffee Zool Gardens of Fresno	19
GOLDENPND Land Between the Lakes	19
GREENBAY Northeastern Wisconsin Zoo	20
JACKSON Jackson Zoological Park	20
JACKSONVL Jacksonville Zoological Gardens	21
KNOXVILLE Knoxville Zoological Gardens	21
LOWRY Lowry Park Zoological Garden	22
MANTEO Alligator River Nat'l Wldf Refuge	23
MILL MOUN Mill Mountain Zoo	23
NCS RAL North Carolina State Univ Dept Zool	24
NYWOLF Wolf Conservation Center of New York	24
OKLAHOMA Oklahoma City Zoological Park	25
PROVIDNCE Roger Williams Park Zoo	25
SALISBURY Salisbury Zoological Park	26
SALIS NC Dan Nicholas Nature Center	26
SIOUX FAL Great Plains Zoo	26
SPRINGFIE Henson Robinson Zoo	27
SYRACUSE Rosamond Gifford Zoo (Burnet Park Zoo)	27
TACOMA Point Defiance Zoo & Aquarium	28
TALLAHASE Tallahassee Mus.History & Natural Sc	29
TREVOR Trevor Zoo	30
VA MUSEUM Virginia Living Museum	30
VICTOR TX Texas Zoo	31
WCSRC Wild Canid Survival & Res Center	32
WHEELING Oglebay's Good Children's Zoo	32
WOLFHAVEN Wolf Haven International	33
WSC MN Wildlife Science Center	33
Appendix A Summary of Data Used to Prepare Breeding & Transfer Plan	34
Appendix B List of Individuals Excluded from the Genetic Analyses	34
Appendix C Life Tables	35
Appendix D Ordered Mean Kinship List	36
Appendix E Definitions	38
Appendix F List of Institutional Representatives	40

Acknowledgements

The Red Wolf SSP planning meeting was hosted by Wolf Conservation Center in South Salem, NY on 3 – 4 August 2006 and was attended by the following:

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Description of Population Status

Red Wolf SSP®

Introduction: Red wolves have been maintained in captivity since the early 1970's, when the U.S. Fish and Wildlife Service began capturing individuals from the remaining wild population in Texas and Louisiana. At that time, a captive breeding program was established to increase the population size of red wolves and reestablish this federally endangered species in portions of its original range. The captive population has been managed demographically and genetically with the cooperation of approved zoos and nature centers across the country.

The demographic and genetic analyses upon which this report is based were performed in August 2006 using SPARKS v1.52 and PM2000 v1.211 software and data obtained from the North American Red Wolf Studbook, current to 28 July 2006. Based on these analyses, draft breeding recommendations were made at the Red Wolf SSP Master Plan Meeting at the Wolf Conservation Center in South Salem, New York on 3 – 4 August 2006.

Analytical Population: As of 3 August 2006, the size of the captive red wolf population in North America was 177 distributed among 39 institutions. This includes captive facilities at three USFWS locations at the Alligator River NWR, NC, Cape Romain NWR, SC, and North Carolina State University. Of these 177 animals, 35 were excluded from the genetic analyses due to sterility, age (primarily females over 10 and males over 12 years old), or health concerns (Appendix B), resulting in a population size of 142 for the analyses.

Demography: The Canid, Hyenid, and Aardwolf TAG has set a target population size for this species at 250. The SSP has decided that a growth rate of 2% is reasonable for this population. Projections show that an annual growth rate of 2% would increase the population to 181 over the next year and to 250 specimens in 17 years.

The captive population increased steadily from the late 1970's to the mid 1990's, when the population size peaked and began to decline (Figure 1) when births sharply decreased, due primarily to space limitations and the end of participation in the SSP by several cooperators. This resulted in fewer breeding recommendations and breeding prioritization of

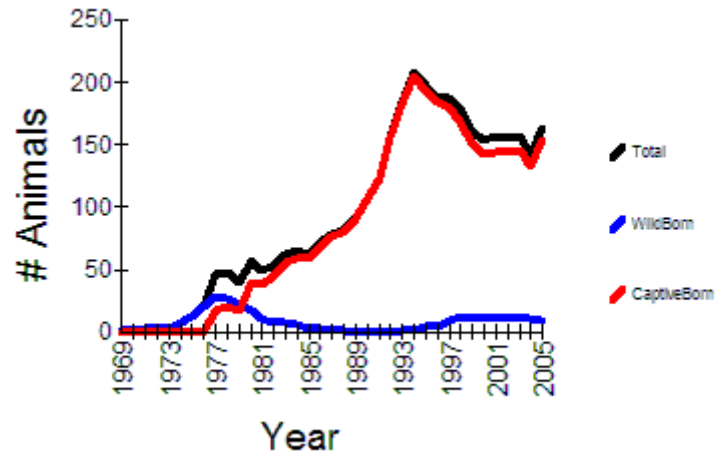


Figure 1. Census of captive red wolf population as of July 2006.

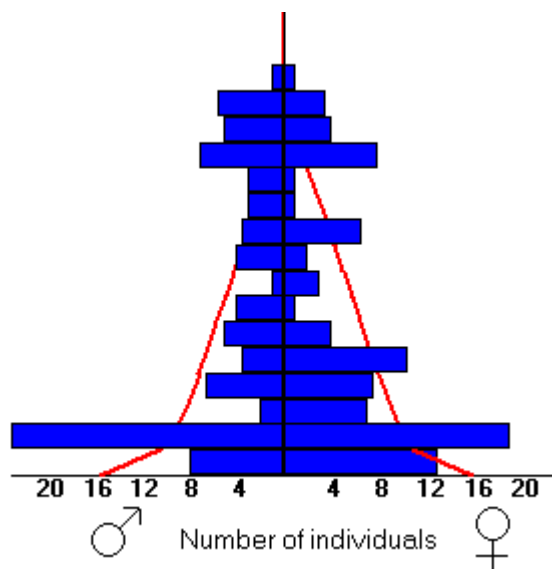


Figure 2a. Age distribution of entire captive North American Red Wolf SSP population as of August 2006 (N = 177).

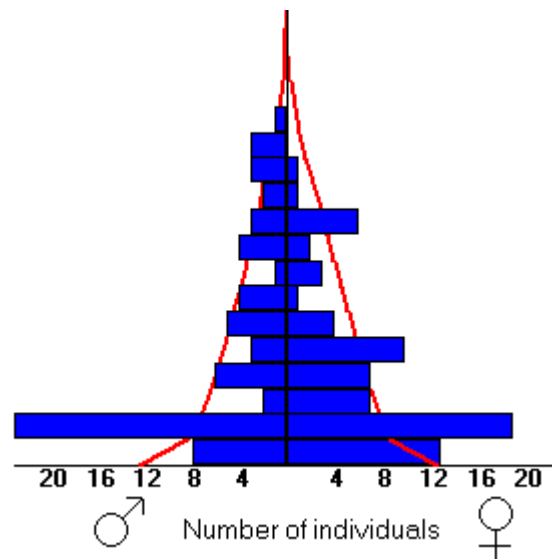


Figure 2b. Age distribution of the potentially breeding population of captive red wolves as of August 2006 (N = 142).

animals that, based on age, were considered marginal in terms of their reproductive potential. Additionally, space limitations during this time period required implanting reproductive inhibitors on a number of females which may have compromised their reproductive potential when implants were removed to resume expanded reproduction in the population. However, the population has stabilized in the past decade. In 2005 and 2006, the population experienced a marked increase in size due in part to a focus on breeding younger animals in addition to the genetically desirable older animals. A focus on increasing births remains crucial to maintaining or increasing the population size, replacing the animals that will be lost due to natural attrition, and providing a reproductive base for the future.

The age structure of this population shows a large proportion of animals in the older age classes in addition to a large base of juveniles from the recent baby boom (Figure 2a). The number of animals at or approaching reproductive senescence is still a concern for this population. Demographic data indicate that the most reproductive age classes are between 3 and 9 years old (Figure 2). Both males and females are capable of breeding as young as one year old, but female red wolves in zoos have not demonstrated the ability to reproduce beyond the age of 11, and males not past 15 years (Figure 3, Appendix B). In order to achieve a sufficient number of births to maintain demographic stability, the inclusion of younger animals in breeding pairs should continue. First-year mortality for both sexes has averaged 40% historically (based on studbook data from 1980-2005); however, in recent years first-year mortality has decreased to 32% (2000-2005 data).

Demographic projections indicate that with a growth rate of approximately 2% ($\lambda = 1.02$) approximately 30 - 34 births will be needed in the coming year to begin to reach the population size of 250. With an average litter size of four and a 25% probability of each pair breeding successfully (based on data from pairings in past years), this demographic goal requires making approximately 30 pairings.

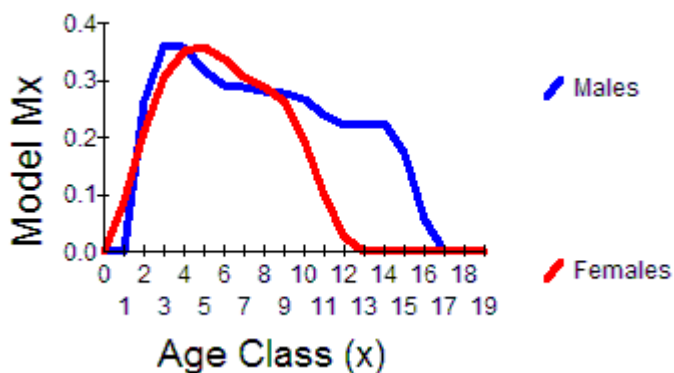


Figure 3. Age-specific fecundity illustrating ages at which most reproduction occurs.

Genetics: Gene diversity in this population is 89.65% and is equivalent to the gene diversity of a population originating from approximately five founders. Data from other mammalian species has shown that when gene diversity falls below 90%, reproduction is increasingly compromised by, among other factors, lower birth weights, smaller litter sizes, and greater neonatal mortality. Gene diversity inevitably decreases over time due to random genetic processes, as offspring are produced and as previous generations pass away (see Genetic Summary table).

One way that the loss of gene diversity can be minimized is by pairing animals so that underrepresented lineages are bred (Figure 4). Pairing animals with the lowest mean kinships helps to equalize founder representation and should be considered a priority, as many genetically valuable animals may soon be too old to reproduce. Founder representation changes with each birth and death, and changes from 2005 to 2006 show that some underrepresented founder lineages (16, 34, 42) have increased in the population in the past year.

In addition, to maintain gene diversity at 90% for a few more years the population could increase its growth rate and/or increase the proportion of breeders in the population (effective population size). Gene diversity can be maintained at or above 85% for 30 years with growth rate of 2% and a target population size of 250.

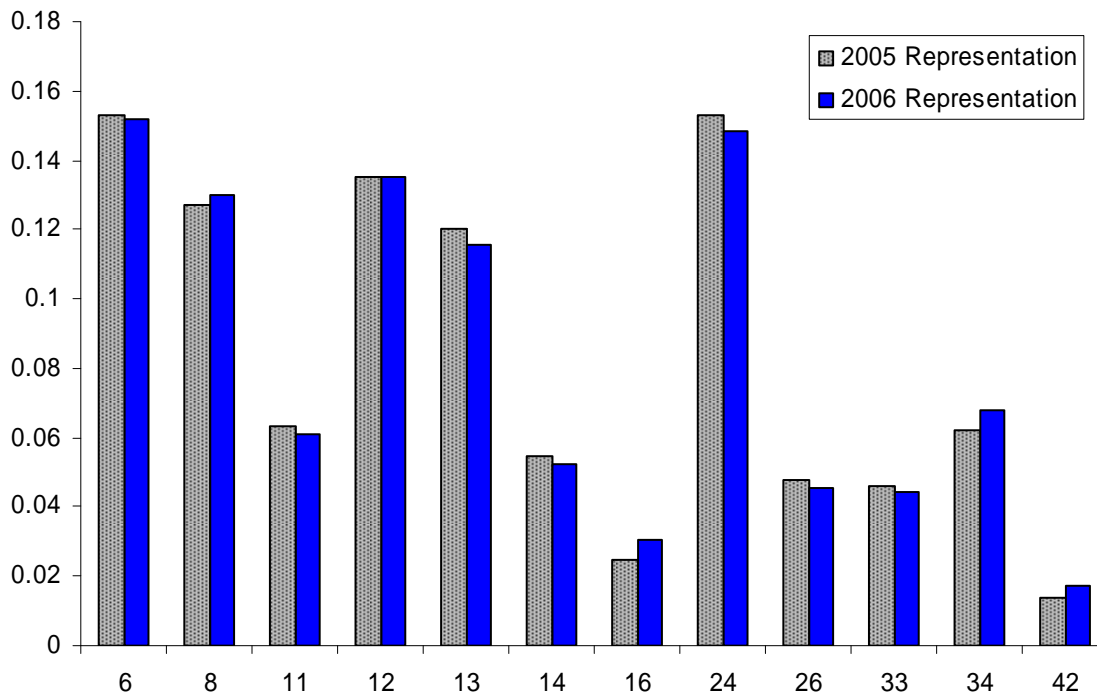


Figure 4. Founder representation graph illustrating the inequality of the 12 founder lineages that have contributed to the captive Red Wolf SSP population and the differences in the founder representation between 2005 and 2006.

Genetics Summary of Red Wolf SSP	2000	2001	2002	2003	2004	2005	2006	Potential
Current Gene Diversity	90.4	90.4	90.4	90.3	90.3	89.84	89.65	93.59
Number of Founders	12	12	12	12	12	12	12	0
Founder Genome Equivalents	5.22	5.20	5.23	5.15	5.17	4.92	4.83	7.80
Founder Genome Surviving	8.34	8.25	8.31	8.12	--	7.89	7.80	7.80
Population Mean Kinship	0.0967	0.0961	0.096	0.0972	0.97	0.1016	0.1035	--
Mean Inbreeding	0.0537	0.0546	0.0542	0.0562	0.0569	0.0625	0.0630	--
% Known Pedigree	100	100	100	100	100	100	100	--
Years To 90% Gene Diversity	0	0	0	0	0	0	0	--
Gene Diversity at 100 Years	70.92	72.03	74.71	75.12	76	77.8	77.8	--

Management Strategy: To achieve demographic and genetic goals, 30 - 34 births are recommended this year to maintain or slightly increase the current population size (λ 1.00 - 1.02). The SSP recommends 28 pairs to achieve this goal, assuming a litter size of four and taking into account that as few as 25% of pairs may successfully reproduce. Additional pairs may be considered prior to next breeding season pending available space and transfer logistics. The USFWS also requested consideration of establishing or maintaining breeding pairs near the northeastern North Carolina recovery area to accommodate possible captive to wild fostering opportunities. As with all PMP and SSP populations, breeding recommendations are based on mean kinship values, avoidance of inbreeding, avoidance of linking rare and common lineages, and logistical constraints identified by the participating institutions.

Summary and institutional tables in the following pages contain draft recommendations.

1. Recommend 28 breeding pairs.
2. Additional pairs could occur prior to next breeding season depending on available space.
3. An undetermined number of females may be monitored at Tacoma for potential artificial insemination pending logistical and budgetary considerations.

Summary of Breeding and Transfer Recommendations 2006 - 2007

“BREED WITH” = breeding recommended

“PAIR WITH” = social pairing, breeding not recommended or not expected

ID	Location	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
921	ALEXANDRI	M00090	F	9	HOLD	ALEXANDRI	BREED WITH	932	
932	ALEXANDRI	M00232	M	9	HOLD	ALEXANDRI	BREED WITH	921	
701	ASHEBORO	1725	M	12	HOLD	ASHEBORO	PAIR WITH	1361	excluded - age
1194	ASHEBORO	1676	M	4	HOLD	ASHEBORO	DO NOT BREED		
1197	ASHEBORO	1689	F	4	HOLD	ASHEBORO	DO NOT BREED		
1361	ASHEBORO	1641	F	2	HOLD	ASHEBORO	PAIR WITH	701	
1366	ASHEBORO	1654	F	2	HOLD	ASHEBORO	BREED WITH	974	
1392	ASHEBORO	1710	F	1	HOLD	ASHEBORO	DO NOT BREED		
1393	ASHEBORO	1711	F	1	HOLD	ASHEBORO	DO NOT BREED		
983	ASHEVILLE	02M301	F	8	HOLD	ASHEVILLE	DO NOT BREED		
1394	ASHEVILLE	05M301	M	1	SEND TO	SALISBURY	DO NOT BREED		
1395	ASHEVILLE	05M302	M	1	SEND TO	SALISBURY	DO NOT BREED		
1396	ASHEVILLE	05M303	F	1	HOLD	ASHEVILLE	DO NOT BREED		
1397	ASHEVILLE	05M304	F	1	HOLD	ASHEVILLE	DO NOT BREED		
549	AWENDA	10549	M	14	HOLD	AWENDA	PAIR WITH	647	excluded - age
647	AWENDA	10647	F	13	HOLD	AWENDA	PAIR WITH	549	excluded - age
780	AWENDA	10780	M	11	HOLD	AWENDA	BREED WITH	1370	
1370	AWENDA	11370	F	2	HOLD	AWENDA	BREED WITH	780	
1226	BLOOMINGT	M04003	F	4	HOLD	BLOOMINGT	BREED WITH	1414	
720	BREVARD	2349	F	12	HOLD	BREVARD	PAIR WITH	1020	excluded - age
1020	BREVARD	24079	M	7	HOLD	BREVARD	PAIR WITH	720	
817	BRIDGEPRT	101335	M	10	HOLD	BRIDGEPRT	BREED WITH	1127	
1127	BRIDGEPRT	101359	F	5	HOLD	BRIDGEPRT	BREED WITH	817	
1479	BRIDGEPRT	101728	F	0	HOLD	BRIDGEPRT	PAIR WITH	817, 1127	
722	CHATT NAT	722	M	12	HOLD	CHATT NAT	PAIR WITH	744	collect sperm
620	CHATT NAT	620	M	13	HOLD	CHATT NAT	PAIR WITH	690	excluded - age
690	CHATT NAT	690	F	12	HOLD	CHATT NAT	PAIR WITH	620	excluded - age
744	CHATT NAT	744	F	12	HOLD	CHATT NAT	PAIR WITH	722	excluded - age
842	CHEHAW	M04022	M	10	HOLD	CHEHAW	PAIR WITH	919	excluded - reproductive
919	CHEHAW	M03009	F	9	HOLD	CHEHAW	PAIR WITH	842	
1121	CHICAGOLP	21600	M	5	HOLD	CHICAGOLP	BREED WITH	1353	
1353	CHICAGOLP	21456	F	2	HOLD	CHICAGOLP	BREED WITH	1121	
1389	DURHAM MS	08M05	M	4	SEND TO	ASHEBORO	PAIR WITH	1390, 1391	Temporary transfer
1390	DURHAM MS	09M05	M	4	SEND TO	ASHEBORO	PAIR WITH	1389, 1391	Temporary transfer
1391	DURHAM MS	10M05	M	4	SEND TO	ASHEBORO	PAIR WITH	1389, 1390	Temporary transfer
937	FORTWORTH	202057	F	9	HOLD	FORTWORTH	BREED WITH	956	
956	FORTWORTH	201422	M	8	HOLD	FORTWORTH	BREED WITH	937	
1091	FOSSILRIM	5053	M	6	HOLD	FOSSILRIM	BREED WITH	1363	
1363	FOSSILRIM	5051	F	2	HOLD	FOSSILRIM	BREED WITH	1091	
1480	FOSSILRIM	5054	F	0	HOLD	FOSSILRIM	DO NOT BREED		
1481	FOSSILRIM	5055	F	0	HOLD	FOSSILRIM	DO NOT BREED		
513	FOSSILRIM	5028	M	14	HOLD	FOSSILRIM	DO NOT BREED		excluded - age
514	FOSSILRIM	5029	M	14	HOLD	FOSSILRIM	DO NOT BREED		excluded - age
692	FOSSILRIM		F	12	HOLD	FOSSILRIM	DO NOT BREED		excluded - age
687	FRESNO	230126	M	12	HOLD	FRESNO	PAIR WITH	1386, 1387	
1386	FRESNO	250024	M	1	HOLD	FRESNO	PAIR WITH	687, 1387	

ID	Location	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
1387	FRESNO	250025	M	1	HOLD	FRESNO	PAIR WITH	687, 1386	
1388	FRESNO	250026	F	1	SEND TO	TACOMA	DO NOT BREED		
1201	GOLDENPND	1201	M	4	HOLD	GOLDENPND	PAIR WITH	725	
725	GOLDENPND	725	F	12	HOLD	GOLDENPND	PAIR WITH	1201	excluded - age
479	GREENBAY	200429	M	15	HOLD	GREENBAY	PAIR WITH	535	excluded - age
535	GREENBAY	200401	F	14	HOLD	GREENBAY	PAIR WITH	479	excluded - age
724	JACKSON	200377	M	12	HOLD	JACKSON	BREED WITH	1129	excluded - age; collect sperm
1129	JACKSON	200137	F	5	HOLD	JACKSON	BREED WITH	724	
1125	JACKSONVL	805374	M	5	HOLD	JACKSONVL	PAIR WITH	557	
557	JACKSONVL	801304	F	14	HOLD	JACKSONVL	PAIR WITH	1125	excluded - age
1200	KNOXVILLE	2769	M	4	SEND TO	CHATT NAT	BREED WITH	1274	
1360	KNOXVILLE	3167	F	2	HOLD	KNOXVILLE	PAIR WITH	917	In-house move
622	KNOXVILLE	1568	F	13	HOLD	KNOXVILLE	PAIR WITH	1408	excluded - age
917	KNOXVILLE	1896	s	9	HOLD	KNOXVILLE	PAIR WITH	1360	excluded - reproductive
779	LOWRY	102018	M	11	HOLD	LOWRY	BREED WITH	1275	
793	LOWRY	100923	F	11	HOLD	LOWRY	PAIR WITH	1375	
974	LOWRY	101761	M	8	SEND TO	ASHEBORO	BREED WITH	1366	
1459	LOWRY	102081	M	1	HOLD	LOWRY	DO NOT BREED		
1460	LOWRY	102082	M	1	HOLD	LOWRY	DO NOT BREED		
1274	MANTEO	11274	F	3	SEND TO	CHATT NAT	BREED WITH	1200	
1275	MANTEO	11275	F	3	SEND TO	LOWRY	BREED WITH	779	
1276	MANTEO	11276	F	3	HOLD	MANTEO	BREED WITH	1131	
1400	MANTEO	11400	M	1	HOLD	MANTEO	DO NOT BREED		
1403	MANTEO	11403	F	1	HOLD	MANTEO	DO NOT BREED		
1404	MANTEO	11404	F	1	HOLD	MANTEO	DO NOT BREED		
632	NCS RAL	10632	M	13	HOLD	NCS RAL	DO NOT BREED		excluded - age
640	NCS RAL	10640	M	13	HOLD	NCS RAL	DO NOT BREED		
1291	NYWOLF	1291	F	3	HOLD	NYWOLF	BREED WITH	1369	
1369	NYWOLF	1369	M	2	HOLD	NYWOLF	BREED WITH	1291	
619	OKLAHOMA	770521	M	13	HOLD	OKLAHOMA	PAIR WITH	1196	excluded - age
1196	OKLAHOMA	770119	F	4	HOLD	OKLAHOMA	PAIR WITH	619	
1097	PROVIDNCE	100119	M	6	HOLD	PROVIDNCE	BREED WITH	1287	
1287	PROVIDNCE	100192	F	3	HOLD	PROVIDNCE	BREED WITH	1097	
624	PROVIDNCE	931051	s	13	HOLD	PROVIDNCE	PAIR WITH	1292	excluded - age/reproductive
1292	PROVIDNCE	100196	s	3	HOLD	PROVIDNCE	PAIR WITH	624	excluded - reproductive
816	SALIS NC	816	M	10	HOLD	SALIS NC	BREED WITH	1195	
924	SIOUX FAL	3232	M	9	HOLD	SIOUX FAL	BREED WITH	958	
958	SIOUX FAL	2164	F	8	HOLD	SIOUX FAL	BREED WITH	924	
957	SPRINGFIE	853	M	8	HOLD	SPRINGFIE	BREED WITH	1204	
1204	SPRINGFIE	848	F	4	HOLD	SPRINGFIE	BREED WITH	957	
1383	SYRACUSE	M05095	M	1	HOLD	SYRACUSE	BREED WITH	1398	
1398	SYRACUSE	M05094	F	1	HOLD	SYRACUSE	BREED WITH	1383	
515	TACOMA	0515	F	14	HOLD	TACOMA	DO NOT BREED		excluded - age
543	TACOMA	0543	M	14	HOLD	TACOMA	DO NOT BREED		excluded - age
569	TACOMA	0569	M	14	HOLD	TACOMA	DO NOT BREED		excluded - age
645	TACOMA	0645	M	13	HOLD	TACOMA	DO NOT BREED		excluded - age
648	TACOMA	0648	F	13	HOLD	TACOMA	DO NOT BREED		excluded - age
702	TACOMA	0702	M	12	HOLD	TACOMA	BREED WITH	938	excluded - age
704	TACOMA	0704	F	12	HOLD	TACOMA	DO NOT BREED		excluded - age
705	TACOMA	0705	F	12	HOLD	TACOMA	DO NOT BREED		excluded - age
740	TACOMA	0740	M	12	HOLD	TACOMA	DO NOT BREED		excluded - reproductive/medical
938	TACOMA	0938	F	9	HOLD	TACOMA	BREED WITH	702	

ID	Location	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
939	TACOMA	0939	M	9	HOLD	TACOMA	DO NOT BREED		
1009	TACOMA	01009	F	7	HOLD	TACOMA	DO NOT BREED		
1010	TACOMA	01010	F	7	HOLD	TACOMA	DO NOT BREED		
1095	TACOMA	01095	M	6	HOLD	TACOMA	DO NOT BREED		
1123	TACOMA	01123	F	5	HOLD	TACOMA	DO NOT BREED		
1224	TACOMA	01224	F	4	HOLD	TACOMA	DO NOT BREED		
1228	TACOMA	01228	F	4	HOLD	TACOMA	BREED WITH	1284	
1277	TACOMA	01277	M	3	HOLD	TACOMA	DO NOT BREED		
1278	TACOMA	01278	M	3	HOLD	TACOMA	DO NOT BREED		
1279	TACOMA	01279	M	3	HOLD	TACOMA	DO NOT BREED		
1280	TACOMA	01280	F	3	HOLD	TACOMA	DO NOT BREED		
1281	TACOMA	01281	F	3	HOLD	TACOMA	DO NOT BREED		
1284	TACOMA	01284	M	3	HOLD	TACOMA	BREED WITH	1228	
1286	TACOMA	01286	M	3	HOLD	TACOMA	DO NOT BREED		
1364	TACOMA	01364	F	2	HOLD	TACOMA	BREED WITH	1381	
1381	TACOMA	01381	M	1	HOLD	TACOMA	BREED WITH	1364	
1382	TACOMA	01382	F	1	HOLD	TACOMA	DO NOT BREED		
1405	TACOMA	01405	M	1	HOLD	TACOMA	DO NOT BREED		
1406	TACOMA	01406	F	1	HOLD	TACOMA	DO NOT BREED		
1407	TACOMA	01407	F	1	HOLD	TACOMA	DO NOT BREED		
1414	TACOMA	01414	M	1	SEND TO	BLOOMINGT	BREED WITH	1226	
1415	TACOMA	01415	F	1	HOLD	TACOMA	DO NOT BREED		
1416	TACOMA	01416	F	1	HOLD	TACOMA	DO NOT BREED		
1467	TACOMA	01467	M	0	HOLD	TACOMA	DO NOT BREED		
1468	TACOMA	01468	M	0	HOLD	TACOMA	DO NOT BREED		
1482	TACOMA	01482	M	0	HOLD	TACOMA	DO NOT BREED		
1483	TACOMA	01483	M	0	HOLD	TACOMA	DO NOT BREED		
1484	TACOMA	01484	M	0	HOLD	TACOMA	DO NOT BREED		
1485	TACOMA	01485	F	0	HOLD	TACOMA	DO NOT BREED		
1486	TACOMA	01486	F	0	HOLD	TACOMA	DO NOT BREED		
1487	TACOMA	01487	F	0	HOLD	TACOMA	DO NOT BREED		
1488	TACOMA	01488	F	0	HOLD	TACOMA	DO NOT BREED		
1489	TACOMA	01489	F	0	HOLD	TACOMA	DO NOT BREED		
1490	TACOMA	01490	M	0	HOLD	TACOMA	DO NOT BREED		
1491	TACOMA	01491	M	0	HOLD	TACOMA	DO NOT BREED		
1492	TACOMA	01492	F	0	HOLD	TACOMA	DO NOT BREED		
1495	TACOMA	01495	F	0	HOLD	TACOMA	DO NOT BREED		
1496	TACOMA	01496	F	0	HOLD	TACOMA	DO NOT BREED		
1203	TALLAHASE	04L003	F	4	HOLD	TALLAHASE	PAIR WITH	1376, 1377, 1378	
1359	TALLAHASE	05L009	M	2	HOLD	TALLAHASE	PAIR WITH	494	
1375	TALLAHASE	05L001	M	1	SEND TO	LOWRY	PAIR WITH	793	
1376	TALLAHASE	05L002	F	1	HOLD	TALLAHASE	PAIR WITH	1203, 1377, 1378	
1377	TALLAHASE	05L003	F	1	HOLD	TALLAHASE	PAIR WITH	1203, 1376, 1378	
1378	TALLAHASE	05L004	F	1	HOLD	TALLAHASE	PAIR WITH	1203, 1376, 1377	
494	TALLAHASE	94M001	F	15	HOLD	TALLAHASE	PAIR WITH	1359	excluded age
1195	TREVOR	A5M673	F	4	SEND TO	SALIS NC	BREED WITH	816	
1379	TREVOR	A5M678	M	1	HOLD	TREVOR	DO NOT BREED		
1380	TREVOR	A5M679	M	1	HOLD	TREVOR	DO NOT BREED		
1126	VA MUSEUM	1080	F	5	HOLD	VA MUSEUM	BREED WITH	1273	
1273	VA MUSEUM	1222	M	3	HOLD	VA MUSEUM	BREED WITH	1126	

ID	Location	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
1473	VA MUSEUM		F	0	HOLD	VA MUSEUM	DO NOT BREED		
1092	VICTOR TX	200201	M	6	HOLD	VICTOR TX	BREED WITH	1227	
1227	VICTOR TX	200504	F	4	HOLD	VICTOR TX	BREED WITH	1092	
559	VICTOR TX	960028	s	14	HOLD	VICTOR TX	DO NOT BREED		excluded - age
791	WCSRC	200537	M	11	HOLD	WCSRC	BREED WITH	819	
819	WCSRC	20009	F	10	HOLD	WCSRC	BREED WITH	791	
918	WCSRC	200414	F	9	HOLD	WCSRC	PAIR WITH	1409, 1410	
1408	WCSRC	200534	M	1	SEND TO	KNOXVILLE	PAIR WITH	622	
1409	WCSRC	200535	F	1	HOLD	WCSRC	PAIR WITH	918, 1410	
1410	WCSRC	200536	F	1	HOLD	WCSRC	PAIR WITH	918, 1409	
1464	WCSRC	200603	M	0	SEND TO	WSC MN	PAIR WITH	1465	
1465	WCSRC	200604	F	0	SEND TO	WSC MN	PAIR WITH	1464	
953	WHEELING	3425	M	8	HOLD	WHEELING	BREED WITH	1021	
1021	WHEELING	3052	F	7	HOLD	WHEELING	BREED WITH	953	
688	WOLFHAVEN	688	M	12	HOLD	WOLFHAVEN	BREED WITH	1096	
1096	WOLFHAVEN	1096	F	6	HOLD	WOLFHAVEN	BREED WITH	688	
1385	WOLFHAVEN	1385	F	1	HOLD	WOLFHAVEN	PAIR WITH	1222	
1222	WOLFHAVEN	1222	s	4	HOLD	WOLFHAVEN	PAIR WITH	1385	excluded - reproductive
1122	WSC MN	1122	M	5	HOLD	WSC MN	BREED WITH	1225	
1131	WSC MN	1131	M	5	SEND TO	MANTEO	BREED WITH	1276	
1225	WSC MN	1225	F	4	HOLD	WSC MN	BREED WITH	1122	
1401	WSC MN	1401	M	1	HOLD	WSC MN	PAIR WITH	1402	
1402	WSC MN	1402	M	1	HOLD	WSC MN	PAIR WITH	1401	

ALEXANDRI

Alexandria Zoological Park

Alexandria, LA

Institutional contact/representative: Lisa Laskoski (318) 473-1143 x19 – lisa.laskoski@cityofalex.com
Les Whitt (318) 473-1143 – les.whitt@cityofalex.com

Institutional notes:

Transfer: None

Receive: None

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
921	M00090	F	9	HOLD	ALEXANDRI	BREED WITH	932	
932	M00232	M	9	HOLD	ALEXANDRI	BREED WITH	921	

Summary:

Before transfers: 1 male, 1 female

After transfers: 1 male, 1 female

No Change

ASHEBORO

North Carolina Zoological Park

Asheboro, NC

Institutional contact/representative: Tim Mengel (336) 879-7675 – tim.mengel@ncmail.net

Institutional notes:

Transfer: None

Receive: 974M from LOWRY

~~1389M, 1390M, and 1391M from Durham MS (temporary)~~

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
701	1725	M	12	HOLD	ASHEBORO	PAIR WITH	1361	excluded from analysis (age)
1194	1676	M	4	HOLD	ASHEBORO	DO NOT BREED		
1197	1689	F	4	HOLD	ASHEBORO	DO NOT BREED		Maintain w/ 05 pups
1361	1641	F	2	HOLD	ASHEBORO	PAIR WITH	701	
1366	1654	F	2	HOLD	ASHEBORO	BREED WITH	974	
1392	1710	F	1	HOLD	ASHEBORO	DO NOT BREED		Maintain w/ dam
1393	1711	F	1	HOLD	ASHEBORO	DO NOT BREED		Maintain w/ dam
974	101761	M	8	RECEIVE FROM	LOWRY	BREED WITH	1366	

Summary:

Before transfers: 2 males, 5 females

After transfers: 3 males, 5 females

Addendum: Do not receive three males from Durham MS

ASHEVILLE

Western NC Nature Center

Asheville, NC

Institutional contact/representative: Bob Fay (828)298-5600 x309 – bfay@wildwnc.org

Institutional notes:

Transfer: 1394M and 1395M to SALISBURY

Receive: None

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
983	02M301	F	8	HOLD	ASHEVILLE	DO NOT BREED		Maintain w/ 05 pups that stay
1394	05M301	M	1	SEND TO	SALISBURY	DO NOT BREED		
1395	05M302	M	1	SEND TO	SALISBURY	DO NOT BREED		
1396	05M303	F	1	HOLD	ASHEVILLE	DO NOT BREED		Maintain w/ dam
1397	05M304	F	1	HOLD	ASHEVILLE	DO NOT BREED		Maintain w/ dam

Summary:

Before transfers: 2 males, 3 females

After transfers: 0 males, 3 females

No Change

AWENDA

Cape Romain Nat'l Wildlife Refuge

Awenda, SC

Institutional contact/representative: Sarah Dawsey (843) 928-3264 – sarah_dawsey@fws.gov

Institutional notes:

Transfer: None

Receive: None

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
549	10549	M	14	HOLD	AWENDA	PAIR WITH	647	excluded from analysis (age)
647	10647	F	13	HOLD	AWENDA	PAIR WITH	549	excluded from analysis (age)
780	780	M	11	HOLD	AWENDA	BREED WITH	1370	
1370	11370	F	2	HOLD	AWENDA	BREED WITH	780	

Summary:

Before transfers: 2 males, 2 females

After transfers: 2 males, 2 females

No Change

BLOOMINGT

Miller Park Zoo

Bloomington, IL

Institutional contact/representative: John Tobias (309) 434-2825 – jtobias@cityblm.org

Institutional notes:

Transfer: None

Receive: 1414M from TACOMA

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
1226	M04003	F	4	HOLD	BLOOMINGT	BREED WITH	1414	
1414	01414	M	1	RECEIVE FROM	TACOMA	BREED WITH	1226	

Summary:

Before transfers: 0 male, 1 female

After transfers: 1 male, 1 female

No Change

BREVARD

Brevard Zoo
Melbourne, FL

Institutional contact/representative: Michelle Smurl (321)254-9453 x17 – msmurl@brevardzoo.org

Institutional notes:

Transfer: None

Receive: None

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
720	2349	F	12	HOLD	BREVARD	PAIR WITH	1020	excluded from analysis (age)
1020	24079	M	7	HOLD	BREVARD	PAIR WITH	720	

Summary:

Before transfers: 1 male, 1 female

After transfers: 1 male, 1 female

No Change

BRIDGEPRT

Beardsley Zoological Gardens
Bridgeport, CT

Institutional contact/representative: Don Goff (203)394-6564 – dgoff@beardsleyzoo.org

Institutional notes: Maintain 06 offspring 1479F with parents during breeding season

Transfer: None

Receive: None

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
817	101335	M	10	HOLD	BRIDGEPRT	BREED WITH	1127	
1127	101359	F	5	HOLD	BRIDGEPRT	BREED WITH	817	
1479	101728	F	0	HOLD	BRIDGEPRT	PAIR WITH	817, 1127	

Summary:

Before transfers: 1 male, 2 female

After transfers: 1 male, 2 female

No Change

CHATT NAT

Chattanooga Nature Center

Chattanooga, TN

Institutional contact/representative: Tish Gailmard (423) 821-1160 x103 – tgailmard@chattanature.org

Institutional notes:

Transfer: None

Receive: 1200M from KNOXVILLE
1274F or 1275F or 1276F from MANTEO

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
620	620	M	13	HOLD	CHATT NAT	PAIR WITH	690	excluded from analysis (age)
690	690	F	12	HOLD	CHATT NAT	PAIR WITH	620	excluded from analysis (age)
722	722	M	12	HOLD	CHATT NAT	PAIR WITH	744	Collect/bank sperm
744	744	F	12	HOLD	CHATT NAT	PAIR WITH	722	excluded from analysis (age)
1200	2769	M	4	RECEIVE FROM	KNOXVILLE	BREED WITH	1274	See receive note above
1274	11274	F	3	RECEIVE FROM	MANTEO	BREED WITH	1200	See receive note above

Summary:

Before transfers: 2 males, 2 females

After transfers: 3 males, 3 females

No Change

CHEHAW

Chehaw Wild Animal Park

Albany, GA

Institutional contact/representative: Jan Thompson (229) 430-5275 – chehawwap@parksatchehaw.org

Institutional notes:

Transfer: None

Receive: None

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
842	M04022	M	10	HOLD	CHEHAW	PAIR WITH	919	excluded from analysis (reproductive)
919	MO3009	F	9	HOLD	CHEHAW	PAIR WITH	842	

Summary:

Before transfers: 1 male, 1 female

After transfers: 1 male, 1 female

No Change

CHICAGOLP

Lincoln Park Zoo

Chicago, IL

Institutional contact/representative: Diane Mulkerin (312) 742-2376 – dmulkerin@lpzoo.org

Institutional notes:

Transfer: None

Receive: None

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
1121	21600	M	5	HOLD	CHICAGOLP	BREED WITH	1353	
1353	21456	F	2	HOLD	CHICAGOLP	BREED WITH	1121	

Summary:

Before transfers: 1 male, 1 female

After transfers: 1 male, 1 female

No Change

DURHAM MS

North Carolina Museum of Life and Science

Durham, NC

Institutional contact/representative: Sherry Samuels (919) 220-5429 x333 – sherry.samuels@ncmls.org

Institutional notes: Transfer of three sibling males temporary

Transfer: ~~1389M, 1390M, 1391M to ASHEBORO~~

Receive: None

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
1389	08M05	M	1	SEND TO	ASHEBORO	PAIR WITH	1390, 1391	
1390	09M05	M	1	SEND TO	ASHEBORO	PAIR WITH	1389, 1391	
1391	10M05	M	1	SEND TO	ASHEBORO	PAIR WITH	1389, 1390	

Summary:

Before transfers: 3 male, 0 female

After transfers: 0 males, 0 female

Addendum: **Maintain three males per correspondence with IR**

FORTWORTH

Fort Worth Zoological Park

Ft Worth, TX

Institutional contact/representative: Stacey Johnson (817) 759-7190 – sjohnson@fortworthzoo.org

Institutional notes:

Transfer: None

Receive: None

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
937	202057	F	9	HOLD	FORTWORTH	BREED WITH	956	
956	201422	M	8	HOLD	FORTWORTH	BREED WITH	937	

Summary:

Before transfers: 1 male, 1 female

After transfers: 1 male, 1 female

No Change

FOSSILRIM

Fossil Rim Wildlife Center

Glen Rose, TX

Institutional contact/representative: Mary Jo Stearns (254) 897-2960 x314 – maryjos@fossilrim.com

Institutional notes: Maintain 06 offspring 1480F and 1481F with parents during breeding season

Transfer: None

Receive: None

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
513	5028	M	14	HOLD	FOSSILRIM	DO NOT BREED		excluded from analysis (age)
514	5029	M	14	HOLD	FOSSILRIM	DO NOT BREED		Died during comment period
692	_____	F	12	HOLD	FOSSILRIM	DO NOT BREED		excluded from analysis (age)
1091	5053	M	6	HOLD	FOSSILRIM	BREED WITH	1363	
1363	5051	F	2	HOLD	FOSSILRIM	BREED WITH	1091	
1480	5054	F	0	HOLD	FOSSILRIM	DO NOT BREED		
1481	5055	F	0	HOLD	FOSSILRIM	DO NOT BREED		

Summary:

Before transfers: 3 males, 4 females

After transfers: 3 males, 4 females

Addendum: Attempt pairing 513M with 692F

Separate 1480 & 1481 from adult pair prior to breeding season

FRESNO

Chaffee Zool Gardens of Fresno

Fresno, CA

Institutional contact/representative: Dale Thompson (559) 621-5700 – Dale.Thompson@ci.fresno.ca.us

Institutional notes:

Transfer: 1388F to TACOMA

Receive: None

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
687	230126	M	12	HOLD	FRESNO	PAIR WITH	1386, 1387	
1386	250024	M	1	HOLD	FRESNO	PAIR WITH	687, 1387	
1387	250025	M	1	HOLD	FRESNO	PAIR WITH	687, 1386	
1388	250026	F	1	SEND TO	TACOMA	DO NOT BREED		

Summary:

Before transfers: 3 males, 1 female

After transfers: 3 males, 0 female

No Change

GOLDENPND

Land Between the Lakes

Golden Pond, KY

Institutional contact/representative: Darrin Samborski (270) 924-2050 – dsamborski@fs.fed.us

Institutional notes:

Transfer: None

Receive: None

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
725	725	F	12	HOLD	GOLDENPND	BREED WITH	1201	excluded from analysis (age)
1201	1201	M	4	HOLD	GOLDENPND	BREED WITH	725	

Summary:

Before transfers: 1 male, 1 female

After transfers: 1 male, 1 female

No Change

GREENBAY

Northeastern Wisconsin Zoo

Green Bay, WI

Institutional contact/representative: Neil Anderson (920) 434-8597 – anderson_ns@itol.com

Institutional notes:

Transfer: None

Receive: None

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
479	200429	M	15	HOLD	GREENBAY	PAIR WITH	535	excluded from analysis (age)
535	200401	F	14	HOLD	GREENBAY	PAIR WITH	479	excluded from analysis (age)

Summary:

Before transfers: 1 male, 1 female

After transfers: 1 male, 1 female

No Change

JACKSON

Jackson Zoological Park

Jackson, MS

Institutional contact/representative: Dave Wetzel (601) 352-2590 – dlwetzel@msn.com

Institutional notes:

Transfer: None

Receive: None

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
724	200377	M	12	HOLD	JACKSON	BREED WITH	1129	excluded from analysis (age); collect sperm
1129	200137	F	5	HOLD	JACKSON	BREED WITH	724	

Summary:

Before transfers: 1 male, 1 female

After transfers: 1 male, 1 female

No Change

JACKSONVL

Jacksonville Zoological Gardens

Jacksonville, FL

Institutional contact/representative: Craig Miller (904) 757-4463 x136 – millerc@jaxzoo.org

Institutional notes:

Transfer: None

Receive: None

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
557	801304	F	14	HOLD	JACKSONVL	PAIR WITH	1125	excluded from analysis (age)
1125	805374	M	5	HOLD	JACKSONVL	PAIR WITH	557	

Summary:

Before transfers: 1 male, 1 female

After transfers: 1 male, 1 female

No Change

KNOXVILLE

Knoxville Zoological Gardens

Knoxville, TN

Institutional contact/representative: Lisa New (865) 637-5331 x329 – ldummer@knoxville-zoo.org

Institutional notes:

Transfer: 1200M to CHATT NAT

Receive: 1408M from WCSRC

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
622	1568	F	13	HOLD	KNOXVILLE	PAIR WITH	1408	excluded from analysis (age)
917	1896	m/s	9	HOLD	KNOXVILLE	PAIR WITH	1360	excluded from analysis (reproductive) In-house move
1200	2769	M	4	SEND TO	CHATT NAT	BREED WITH	1274	
1360	3167	F	2	HOLD	KNOXVILLE	PAIR WITH	917	In-house move
1408	200534	M	1	RECEIVE FROM	WCSRC	PAIR WITH	622	

Summary:

Before transfers: 2 male, 2 female

After transfers: 2 male, 2 female

No Change

LOWRY

Lowry Park Zoological Garden

Tampa, FL

Institutional contact/representative: Lee Ann Rottman (813) 935-8552 x221 – curator@lowryparkzoo.com

Institutional notes:

Transfer: 974M to ASHEBORO

Receive: 1274F or 1275F or 1276F from MANTEO
1375M from TALLAHASE

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
779	102018	M	11	HOLD	LOWRY	BREED WITH	1275	See receive note above
793	100923	F	11	HOLD	LOWRY	PAIR WITH	1375	
974	101761	M	8	SEND TO	ASHEBORO	BREED WITH	1366	
1459	102081	M	1	HOLD	LOWRY	DO NOT BREED		
1460	102082	M	1	HOLD	LOWRY	DO NOT BREED		
1375	05L001	M	1	RECEIVE FROM	TALLAHASE	PAIR WITH	793	
1275	11275	F	3	RECEIVE FROM	MANTEO	BREED WITH	779	See receive note above

Summary:

Before transfers: 4 males, 1 female

After transfers: 4 males, 2 females

No Change

MANTEO

Alligator River Nat'l Wldlf Refuge

Manteo, NC

Institutional contact/representative: Kathy Whidbee (252) 473-1131 x243 – kathy_whidbee@fws.gov
Art Beyer (252) 473-1131 x241 – arthur_beyer@fws.gov

Institutional notes:

Transfer: 1274F or 1275F or 1276F to CHATT NAT
1274F or 1275F or 1276F to LOWRY

Receive: 1131 from WSC MN

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
1274	11274	F	3	SEND TO	CHATT NAT	BREED WITH	1200	See transfer note above
1275	11275	F	3	SEND TO	LOWRY	BREED WITH	779	See transfer note above
1276	11276	F	3	HOLD	MANTEO	BREED WITH	1131	See transfer note above
1400	11400	M	1	HOLD	MANTEO	DO NOT BREED		Separate at breeding season
1403	11403	F	1	HOLD	MANTEO	DO NOT BREED		
1404	11404	F	1	HOLD	MANTEO	DO NOT BREED		
1131	1131	M	5	RECEIVE FROM	WSC MN	BREED WITH	1276	Pair 1131 w/ remaining female sib from above

Summary:

Before transfers: 1 male, 5 females

After transfers: 2 males, 3 females

No Change

MILL MOUN

Mill Mountain Zoo

Roanoke, VA

Institutional contact/representative: Laurie Spangler (540) 343-3241 – Lspangler@mmzoo.org

Institutional notes: No wolves while collection planning in progress

Transfer: None

Receive: None

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
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Summary:

Before transfers: 0 male, 0 female

After transfers: 0 male, 0 female

No Change

NCS RAL

North Carolina State Univ Dept Zool

Raleigh, NC

Institutional contact/representative: Michael Stoskopf (919) 513-6279 – mkstosko@unity.ncsu.edu

Institutional notes:

Transfer: None

Receive: None

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
632	10632	M	13	HOLD	NCS RAL	DO NOT BREED		excluded from analysis (age)
640	10640	M	13	HOLD	NCS RAL	DO NOT BREED		

Summary:

Before transfers: 2 males, 0 females

After transfers: 2 males, 0 females

No Change

NYWOLF

Wolf Conservation Center of New York

South Salem, NY

Institutional contact/representative: Barry Braden (914) 763-2373 – barry@nywolf.org

Institutional notes:

Transfer: None

Receive: None

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
1291	_____	F	3	HOLD	NYWOLF	BREED WITH	1369	
1369	_____	M	2	HOLD	NYWOLF	BREED WITH	1291	

Summary:

Before transfers: 1 male, 1 female

After transfers: 1 male, 1 female

No Change

OKLAHOMA

Oklahoma City Zoological Park

Oklahoma City, OK

Institutional contact/representative: Bill Savage (405) 424-3344 x232 – Bsavage@OKCZOO.com

Institutional notes:

Transfer: None

Receive: None

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
619	770521	M	13	HOLD	OKLAHOMA	PAIR WITH	1196	excluded from analysis (age)
1196	770119	F	4	HOLD	OKLAHOMA	PAIR WITH	619	

Summary:

Before transfers: 1 male, 1 female

After transfers: 1 male, 1 female

No Change

PROVIDNCE

Roger Williams Park Zoo

Providence, RI

Institutional contact/representative: Ron Martini (401) 785-3510 – rmartini@rwpzoo.org

Institutional notes:

Transfer: None

Receive: None

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
624	931051	f/s	13	HOLD	PROVIDNCE	PAIR WITH	1292	excluded from analysis (age/reproductive)
1097	100119	M	6	HOLD	PROVIDNCE	BREED WITH	1287	
1287	100192	F	3	HOLD	PROVIDNCE	BREED WITH	1097	
1292	100196	m/s	3	HOLD	PROVIDNCE	PAIR WITH	624	excluded from analysis (reproductive)

Summary:

Before transfers: 2 males, 2 females

After transfers: 2 males, 2 females

No Change

SALISBURY

Salisbury Zoological Park

Salisbury, MD

Institutional contact/representative: Jim Rapp (410) 548-3188 – jrapp@ci.salisbury.md.us

Institutional notes:

Transfer: None

Receive: 1394M and 1395M from ASHEVILLE

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
1394	05M301	M	1	RECEIVE FROM	ASHEVILLE	DO NOT BREED		
1395	05M302	M	1	RECEIVE FROM	ASHEVILLE	DO NOT BREED		

Summary:

Before transfers: 0 male, 0 female

After transfers: 2 male, 0 female

No Change

SALIS NC

Dan Nicholas Nature Center

Salisbury, NC

Institutional contact/representative: Bob Pendergrass (704) 216-7819 – bobpend@co.rowan.nc.us

Institutional notes:

Transfer: None

Receive: 1195F from TREVOR

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
816	816	M	10	HOLD	SALIS NC	BREED WITH	1195	
1195	A5M673	F	4	RECEIVE FROM	TREVOR	BREED WITH	816	

Summary:

Before transfers: 1 male, 0 female

After transfers: 1 male, 1 female

No Change

SIOUX FAL

Great Plains Zoo

Sioux Falls, SD

Institutional contact/representative: Jay Tetzloff (605) 367-7003 – jtetzloff@gpzoo.org

Institutional notes:

Transfer: None

Receive: None

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
924	3232	M	9	HOLD	SIOUX FAL	BREED WITH	958	
958	2164	F	8	HOLD	SIOUX FAL	BREED WITH	924	

Summary:

Before transfers: 1 male, 1 female

After transfers: 1 male, 1 female

No Change

SPRINGFIE

Henson Robinson Zoo

Springfield, IL

Institutional contact/representative: Jackie Peeler (217) 753-6217 – jpeeler@hensonrobinsonzoo.org

Institutional notes:

Transfer: None

Receive: None

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
957	853	M	8	HOLD	SPRINGFIE	BREED WITH	1204	
1204	848	F	4	HOLD	SPRINGFIE	BREED WITH	957	

Summary:

Before transfers: 1 male, 1 female

After transfers: 1 male, 1 female

No Change

SYRACUSE

Burnet Park Zoo (Rosamond Gifford Zoo)

Syracuse, NY

Institutional contact/representative: Tom Labarge (315) 435-8511 x122 – markhor_3@hotmail.com

Institutional notes:

Transfer: None

Receive: None

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
1383	M05095	M	1	HOLD	SYRACUSE	BREED WITH	1398	
1398	MO5094	F	1	HOLD	SYRACUSE	BREED WITH	1383	

Summary:

Before transfers: 1 male, 1 female

After transfers: 1 male, 1 female

No Change

TACOMA

Point Defiance Zoo & Aquarium

Tacoma, WA

Institutional contact/representative: Will Waddell (253) 858-9172 -- wwaddell@pdza.org

Institutional notes:

Transfer: 1414M to BLOOMINT

Receive: 1388F from FRESNO

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
1388	250026	F	1	RECEIVE FROM	FRESNO	DO NOT BREED		
515	0515	F	14	HOLD	TACOMA	PAIR WITH	1278	excluded from analysis (age)
543	0543	M	14	HOLD	TACOMA	DO NOT BREED		excluded from analysis (age)
569	0569	M	14	HOLD	TACOMA	PAIR WITH	1281	Died during comment period
645	0645	M	13	HOLD	TACOMA	PAIR WITH	1280	excluded from analysis (age)
648	0648	F	13	HOLD	TACOMA	PAIR WITH	1405	excluded from analysis (age)
702	0702	M	12	HOLD	TACOMA	BREED WITH	938	excluded from analysis (age)
704	0704	F	12	HOLD	TACOMA	PAIR WITH	1279	excluded from analysis (age)
705	0705	F	12	HOLD	TACOMA	PAIR WITH	1277	excluded from analysis (age)
740	0740	M	12	HOLD	TACOMA	DO NOT BREED		excluded from analysis (reproductive/medical)
938	0938	F	9	HOLD	TACOMA	BREED WITH	702	
939	0939	M	9	HOLD	TACOMA	DO NOT BREED	TBD	
1009	01009	F	7	HOLD	TACOMA	DO NOT BREED		
1010	01010	F	7	HOLD	TACOMA	DO NOT BREED		
1095	01095	M	6	HOLD	TACOMA	DO NOT BREED		
1123	01123	F	5	HOLD	TACOMA	DO NOT BREED		
1224	01224	F	4	HOLD	TACOMA	DO NOT BREED		
1228	01228	F	4	HOLD	TACOMA	BREED WITH	1284	
1277	01277	M	3	HOLD	TACOMA	PAIR WITH	705	
1278	01278	M	3	HOLD	TACOMA	PAIR WITH	515	
1279	01279	M	3	HOLD	TACOMA	PAIR WITH	704	
1280	01280	F	3	HOLD	TACOMA	PAIR WITH	645	
1281	01281	F	3	HOLD	TACOMA	PAIR WITH	569	
1284	01284	M	3	HOLD	TACOMA	BREED WITH	1228	
1286	01286	M	3	HOLD	TACOMA	DO NOT BREED		
1364	01364	F	2	HOLD	TACOMA	BREED WITH	1381	
1381	01381	M	1	HOLD	TACOMA	BREED WITH	1364	
1382	01382	F	1	HOLD	TACOMA	DO NOT BREED		
1405	01405	M	1	HOLD	TACOMA	PAIR WITH	648	
1406	01406	F	1	HOLD	TACOMA	DO NOT BREED		
1407	01407	F	1	HOLD	TACOMA	DO NOT BREED		
1414	01414	M	1	SEND TO	BLOOMINGT	BREED WITH	1226	
1415	01415	F	1	HOLD	TACOMA	DO NOT BREED		
1416	01416	F	1	HOLD	TACOMA	DO NOT BREED		
1467	01467	M	0	HOLD	TACOMA	DO NOT BREED		
1468	01468	M	0	HOLD	TACOMA	DO NOT BREED		
1482	01482	M	0	HOLD	TACOMA	DO NOT BREED		
1483	01483	M	0	HOLD	TACOMA	DO NOT BREED		
1484	01484	M	0	HOLD	TACOMA	DO NOT BREED		
1485	01485	F	0	HOLD	TACOMA	DO NOT BREED		
1486	01486	F	0	HOLD	TACOMA	DO NOT BREED		

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
1487	01487	F	0	HOLD	TACOMA	DO NOT BREED		
1488	01488	F	0	HOLD	TACOMA	DO NOT BREED		
1489	01489	F	0	HOLD	TACOMA	DO NOT BREED		
1490	01490	M	0	HOLD	TACOMA	DO NOT BREED		
1491	01491	M	0	HOLD	TACOMA	DO NOT BREED		
1492	01492	F	0	HOLD	TACOMA	DO NOT BREED		
1495	01495	F	0	HOLD	TACOMA	DO NOT BREED		
1496	01496	F	0	HOLD	TACOMA	DO NOT BREED		

Summary:

Before transfers: 22 males, 26 females

After transfers: 21 males, 27 females

No Change

TALLAHASE

Tallahassee Mus.History & Natural Sc

Tallahassee, FL

Institutional contact/representative: Mike Jones (850) 575-8685 – pwpalmik@nettally.com

Institutional notes:

Transfer: 1375M to LOWRY

Receive: None

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
494	94M001	F	15	HOLD	TALLAHASE	PAIR WITH	1359	Died during comment period
1203	04L003	F	4	HOLD	TALLAHASE	PAIR WITH	1376, 1377, 1378	Maintain w/ 05 pups
1359	05L009	M	2	HOLD	TALLAHASE	PAIR WITH	494	
1375	05L001	M	1	SEND TO	LOWRY	PAIR WITH	793	
1376	05L002	F	1	HOLD	TALLAHASE	PAIR WITH	1203, 1377, 1378	Maintain w/ dam
1377	05L003	F	1	HOLD	TALLAHASE	PAIR WITH	1203, 1376, 1378	Maintain w/ dam
1378	05L004	F	1	HOLD	TALLAHASE	PAIR WITH	1203, 1376, 1377	Maintain w/ dam

Summary:

Before transfers: 2 males, 5 females

After transfers: 1 male, 5 females

No Change

TREVOR

Trevor Zoo
Millbrook, NY

Institutional contact/representative: Jon Meigs (845) 677-3704 – trevorzoo@millbrook.org
Alan Tousignant (845) 677-3704 – atousignant@millbrook.org

Institutional notes:

Transfer: 1195F to SALIS NC

Receive: None

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
1195	A5M673	F	4	SEND TO	SALIS NC	BREED WITH	816	
1379	A5M678	M	1	HOLD	TREVOR	DO NOT BREED		
1380	A5M679	M	1	HOLD	TREVOR	DO NOT BREED		

Summary:

Before transfers: 2 males, 1 female

After transfers: 2 males, 0 female

No Change

VA MUSEUM

Virginia Living Museum
Newport News, VA

Institutional contact/representative: George Mathews (757) 595-1900 x213 – george.mathews@valivingmuseum.org

Institutional notes: Maintain 06 offspring 1473F with parents during breeding season

Transfer: None

Receive: None

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
1126	1080	F	5	HOLD	VA MUSEUM	BREED WITH	1273	
1273	1222	M	3	HOLD	VA MUSEUM	BREED WITH	1126	
1473	_____	F	0	HOLD	VA MUSEUM	DO NOT BREED		

Summary:

Before transfers: 1 male, 2 female

After transfers: 1 male, 2 female

No Change

VICTOR TX

Texas Zoo
Victoria, TX

Institutional contact/representative: Angie Branson (361) 573-7681 – animalcare@texaszoo.org

Institutional notes: RWSSP Coordinator to identify availability of companion male for 559F

Transfer: None

Receive: None

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
559	960028	f/s	14	HOLD	VICTOR TX	DO NOT BREED	TBD	excluded from analysis (age/reproductive)
1092	200201	M	6	HOLD	VICTOR TX	BREED WITH	1227	
1227	200504	F	4	HOLD	VICTOR TX	BREED WITH	1092	

Summary:

Before transfers: 1 male, 2 female

After transfers: 1 males, 2 female

No Change

WCSRC

Wild Canid Survival & Research Center

Eureka, MO

Institutional contact/representative: Sue Lindsey (636) 938-5900 – slindsey_wcc@onemain.com

Institutional notes:

Transfer: 1408M to KNOXVILLE
~~1464M and 1465M to WSC MN~~

Receive: None

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
791	200537	M	11	HOLD	WCSRC	BREED WITH	819	
819	20009	F	10	HOLD	WCSRC	BREED WITH	791	
918	200414	F	9	HOLD	WCSRC	PAIR WITH	1409, 1410	Maintain w/ 05 pups
1408	200534	M	1	SEND TO	KNOXVILLE	PAIR WITH	622	
1409	200535	F	1	HOLD	WCSRC	PAIR WITH	918, 1410	Maintain w/ dam
1410	200536	F	1	HOLD	WCSRC	PAIR WITH	918, 1409	Maintain w/ dam
1464	200603	M	0	SEND TO	WSC MN	PAIR WITH	1465	
1465	200604	F	0	SEND TO	WSC MN	PAIR WITH	1464	

Summary:

Before transfers: 3 males, 5 females

After transfers: 1 male, 4 females

Addendum: Maintain 1464 & 1465 with parents per institutional request

WHEELING

Oglebay's Good Children's Zoo

Wheeling, WV

Institutional contact/representative: Penny Miller (304) 243-4027 – pmiller@oglebay-resort.com

Institutional notes:

Transfer: None

Receive: None

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
953	3425	M	8	HOLD	WHEELING	BREED WITH	1021	
1021	3052	F	7	HOLD	WHEELING	BREED WITH	953	

Summary:

Before transfers: 1 male, 1 female

After transfers: 1 male, 1 female

No Change

WOLFHAVEN

Wolf Haven International

Tenino, WA

Institutional contact/representative: Wendy Spencer-Armestar (360) 264-4695 – wendy@wolfhaven.org

Institutional notes:

Transfer: None

Receive: None

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
688	688	M	12	HOLD	WOLFHAVEN	BREED WITH	1096	
1096	1096	F	6	HOLD	WOLFHAVEN	BREED WITH	688	
1222	1222	m/s	4	HOLD	WOLFHAVEN	PAIR WITH	1385	excluded from analysis (reproductive)
1385	1385	F	1	HOLD	WOLFHAVEN	PAIR WITH	1222	

Summary:

Before transfers: 2 male, 2 female

After transfers: 2 males, 2 females

No Change

WSC MN

Wildlife Science Center

Forest Lake, MN

Institutional contact/representative: Peggy Callahan (651) 464-3993 – peggy@wildlifesciencecenter.org

Institutional notes:

Transfer: 1131M to MANTEO

Receive: ~~1464M and 1465M from WCSRC~~

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
1464	200603	M	0	RECEIVE FROM	WCSRC	PAIR WITH	1465	
1465	200604	F	0	RECEIVE FROM	WCSRC	PAIR WITH	1464	
1122	1122	M	5	HOLD	WSC MN	BREED WITH	1225	
1131	1131	M	5	SEND TO	MANTEO	BREED WITH	1276	
1225	1225	F	4	HOLD	WSC MN	BREED WITH	1122	
1401	1401	M	1	HOLD	WSC MN	PAIR WITH	1402	
1402	1402	M	1	HOLD	WSC MN	PAIR WITH	1401	

Summary:

Before transfers: 4 males, 1 female

After transfers: 4 males, 2 females

Addendum: Do not receive 1464 & 1465 from WCSRC

Appendix A

Summary of Data Exports Used to Prepare Breeding & Transfer Plan

Project: redwolf

Report compiled under Population Management 2000, version 1.211 8:24:15 AM, 8/3/2006

Comments: created at SSP meeting in NY; captive popn only; demog 1980 to present

Studbook information:

Data exported on: 2 Aug 2006 from Sparks v1.52

Data compiled by: William Waddell

Contact info: Point Defiance Zoo & Aquarium wwaddell@pdza.org/253-858-9172

Data current thru: 28 Jul 2006

Scope of data: International

Demographic data from: C:\SPARKS\REDWOLF\M1980RED.PRN and C:\SPARKS\REDWOLF\F1980RED.PRN

Data compiled by: William Waddell

Data current thru: 28 Jul 2006

Data exported on: 2 Aug 2006

Filter Conditions In Effect: Dates: Between 01/01/1980 and 01/08/2006 User Defined Fields: "C" \$ upper(CAPFREE)

Genetic data from: C:\sparks\redwolf\redwolf.ped

Genetic filter conditions: Dates: As of 02/08/2006

User Defined Fields: "C" \$ upper(CAPFREE)

Status: Living on 2 Aug 2006

Appendix B

List of Individuals Excluded from the Genetic Analyses

SB#	Sex	Reason	SB#	Sex	Reason
479	male	age	647	female	age
494	female	age	648	female	age
513	male	age	690	female	age
514	male	age	692	female	age
515	female	age	701	male	age
535	female	age	702	male	age
543	male	age	704	female	age
549	male	age	705	female	age
557	female	age	720	female	age
559	female	age	724	male	age
569	male	age	725	female	age
619	male	age	726	female	age
620	male	age	740	male	reproductive/medical
622	female	age	744	female	age
624	female	age/reproductive	842	male	reproductive
632	male	age	917	male	reproductive
645	male	age	1222	male	age
			1292	male	reproductive

Appendix C

Life Tables

Data from 1980 - 2006

Males

Age	Qx	Px	lx	Mx	Vx	Ex	Risk (Qx)	Risk (Mx)
0	0.39	0.61	1	0	1.242	6.609	379.5	245.9
1	0.14	0.86	0.61	0.05	1.838	7.96	215.4	197.1
2	0.08	0.92	0.525	0.31	2.1	7.84	180.3	171.9
3	0.06	0.94	0.483	0.49	2.008	7.358	161.8	157.2
4	0.06	0.94	0.454	0.38	1.683	6.764	147.6	143.8
5	0.08	0.92	0.426	0.26	1.461	6.195	132.8	129.9
6	0.07	0.93	0.392	0.3	1.354	5.618	120.7	116.9
7	0.13	0.87	0.365	0.27	1.219	5.125	114	105.8
8	0.08	0.92	0.317	0.29	1.108	4.618	98.5	93.6
9	0.14	0.86	0.292	0.28	0.957	4.059	88.2	82.8
10	0.15	0.85	0.251	0.31	0.825	3.576	73.8	69
11	0.13	0.87	0.213	0.23	0.625	2.998	60.3	56.4
12	0.28	0.72	0.186	0.15	0.515	2.497	47.1	41.1
13	0.28	0.72	0.134	0.22	0.528	2.08	29.1	25.1
14	0.52	0.48	0.096	0.23	0.519	1.743	15.4	11
15	0.57	0.43	0.046	0.65	0.65	1.601	5.3	3.9
16	0.5	0.5	0.02	0	0	1.333	2	1.2
17	1	0	0.01	0	0	1	1	0.6
18	1	0	0	0	0	0	0	0

r = 0.0418
 lambda = 1.0426
 T = 5.74
 N = 85.00
 N(at 20 yrs) = 195.96

Females

Age	Qx	Px	lx	Mx	Vx	Ex	Risk (Qx)	Risk (Mx)
0	0.41	0.59	1	0.02	1.258	6.815	399.8	263.7
1	0.1	0.9	0.59	0.11	1.817	8.248	222.5	208
2	0.05	0.95	0.531	0.2	1.913	7.847	192.6	186.2
3	0.07	0.93	0.504	0.33	1.886	7.282	177.8	170.4
4	0.07	0.93	0.469	0.44	1.732	6.755	157.3	151.5
5	0.06	0.94	0.436	0.36	1.431	6.156	140.8	136.4
6	0.07	0.93	0.41	0.35	1.185	5.513	131.7	126.1
7	0.08	0.92	0.381	0.27	0.935	4.878	122.4	118
8	0.11	0.89	0.351	0.29	0.76	4.282	111	104.4
9	0.12	0.88	0.312	0.33	0.549	3.708	97.2	91.1
10	0.18	0.82	0.275	0.19	0.266	3.178	82.9	74.8
11	0.25	0.75	0.225	0.1	0.1	2.763	67.8	58.7
12	0.28	0.72	0.169	0	0	2.391	43.1	38.9
13	0.31	0.69	0.122	0	0	1.967	26	21.9
14	0.43	0.57	0.084	0	0	1.508	14.1	10.1
15	0.8	0.2	0.048	0	0	1.167	6.2	3.6
16	1	0	0.01	0	0	1	1	0.1
17	1	0	0	0	0	0	0	0

r = 0.0345
 lambda = 1.0351
 T = 5.36
 N = 92.00
 N(at 20 yrs) = 183.48

Appendix D Ordered Mean Kinship List

Note: This list is current to August 2006 and values are subject to change with any birth, death, import, export, inclusion, or exclusion.

Males SB#MK	%known	Age	Location	Females SB#	MK	%Known	Age	Location	
779	0.083	100.0	11	LOWRY	958	0.094	100.0	8	SIOUX FAL
780	0.083	100.0	11	AWENDA	1225	0.096	100.0	4	WSC MN
722	0.091	100.0	12	CHATT NAT	1227	0.096	100.0	4	VICTOR TX
957	0.092	100.0	8	SPRINGFIE	1228	0.096	100.0	4	TACOMA
1092	0.094	100.0	6	VICTOR TX	1226	0.096	100.0	4	BLOOMINGT
640	0.095	100.0	13	NCS RAL	1370	0.096	100.0	2	AWENDA
974	0.095	100.0	8	LOWRY	1364	0.097	100.0	2	TACOMA
956	0.095	100.0	8	FORTWORTH	1291	0.097	100.0	3	NYWOLF
1131	0.096	100.0	5	WSC MN	937	0.097	100.0	9	FORTWORTH
1369	0.096	100.0	2	NYWOLF	1353	0.098	100.0	2	CHICAGOLP
688	0.097	100.0	12	WOLFHAVEN	1366	0.098	100.0	2	ASHEBORO
924	0.097	100.0	9	SIOUX FAL	925	0.099	100.0	9	TACOMA
687	0.098	100.0	12	FRESNO	1224	0.099	100.0	4	TACOMA
1097	0.099	100.0	6	PROVIDNCE	1287	0.099	100.0	3	PROVIDNCE
1122	0.100	100.0	5	WSC MN	1274	0.099	100.0	3	MANTEO
1273	0.100	100.0	3	VA MUSEUM	1275	0.099	100.0	3	MANTEO
1383	0.100	100.0	1	SYRACUSE	1276	0.099	100.0	3	MANTEO
1091	0.100	100.0	6	FOSSILRIM	1363	0.099	100.0	2	FOSSILRIM
1121	0.100	100.0	5	CHICAGOLP	1385	0.100	100.0	1	WOLFHAVEN
1414	0.101	100.0	1	TACOMA	819	0.100	100.0	10	WCSRC
817	0.101	100.0	10	BRIDGEPRT	1415	0.101	100.0	1	TACOMA
1381	0.102	100.0	1	TACOMA	1416	0.101	100.0	1	TACOMA
816	0.102	100.0	10	SALIS NC	1480	0.101	100.0	0	FOSSILRIM
932	0.102	100.0	9	ALEXANDRI	1481	0.101	100.0	0	FOSSILRIM
953	0.103	100.0	8	WHEELING	1010	0.102	100.0	7	TACOMA
1284	0.103	100.0	3	TACOMA	1382	0.102	100.0	1	TACOMA
1200	0.103	100.0	4	KNOXVILLE	1204	0.103	100.0	4	SPRINGFIE
1201	0.103	100.0	4	GOLDENPND	921	0.103	100.0	9	ALEXANDRI
1020	0.103	100.0	7	BREVARD	1473	0.104	100.0	0	VA MUSEUM
1286	0.104	100.0	3	TACOMA	1009	0.104	100.0	7	TACOMA
1405	0.104	100.0	1	TACOMA	1406	0.104	100.0	1	TACOMA
1467	0.104	100.0	0	TACOMA	1407	0.104	100.0	1	TACOMA
1468	0.104	100.0	0	TACOMA	1129	0.104	100.0	5	JACKSON
1464	0.105	100.0	0	WCSRC	1096	0.105	100.0	6	WOLFHAVEN
1490	0.105	100.0	0	TACOMA	1465	0.105	100.0	0	WCSRC
1491	0.105	100.0	0	TACOMA	1126	0.105	100.0	5	VA MUSEUM
1459	0.105	100.0	1	LOWRY	938	0.105	100.0	9	TACOMA
1460	0.105	100.0	1	LOWRY	1492	0.105	100.0	0	TACOMA
1386	0.105	100.0	1	FRESNO	1495	0.105	100.0	0	TACOMA
1387	0.105	100.0	1	FRESNO	1496	0.105	100.0	0	TACOMA
1394	0.105	100.0	1	ASHEVILLE	1398	0.105	100.0	1	SYRACUSE
1395	0.105	100.0	1	ASHEVILLE	1388	0.105	100.0	1	FRESNO
1408	0.106	100.0	1	WCSRC	1127	0.105	100.0	5	BRIDGEPRT
1375	0.106	100.0	1	TALLAHASE	1479	0.105	100.0	0	BRIDGEPRT
1401	0.107	100.0	1	WSC MN	1396	0.105	100.0	1	ASHEVILLE
1402	0.107	100.0	1	WSC MN	1397	0.105	100.0	1	ASHEVILLE
791	0.107	100.0	11	WCSRC	1409	0.106	100.0	1	WCSRC
1359	0.107	100.0	2	TALLAHASE	1410	0.106	100.0	1	WCSRC
1095	0.107	100.0	6	TACOMA	1203	0.106	100.0	4	TALLAHASE
1124	0.107	100.0	5	ST.VINCE	1376	0.106	100.0	1	TALLAHASE
1461	0.107	100.0	1	ST.VINCE	1377	0.106	100.0	1	TALLAHASE
1462	0.107	100.0	1	ST.VINCE	1378	0.106	100.0	1	TALLAHASE
1463	0.107	100.0	1	ST.VINCE	1021	0.107	100.0	7	WHEELING
1400	0.107	100.0	1	MANTEO	1403	0.107	100.0	1	MANTEO
1277	0.108	100.0	3	TACOMA	1404	0.107	100.0	1	MANTEO
1278	0.108	100.0	3	TACOMA	1360	0.107	100.0	2	KNOXVILLE
1279	0.108	100.0	3	TACOMA	919	0.107	100.0	9	CHEHAW
1482	0.108	100.0	0	TACOMA	983	0.107	100.0	8	ASHEVILLE
1483	0.108	100.0	0	TACOMA	1361	0.107	100.0	2	ASHEBORO
1484	0.108	100.0	0	TACOMA	1280	0.108	100.0	3	TACOMA
1194	0.108	100.0	4	ASHEBORO	1281	0.108	100.0	3	TACOMA
939	0.109	100.0	9	TACOMA	1485	0.108	100.0	0	TACOMA
1379	0.110	100.0	1	TREVOR	1486	0.108	100.0	0	TACOMA
1380	0.110	100.0	1	TREVOR	1487	0.108	100.0	0	TACOMA
1125	0.111	100.0	5	JACKSONVL	1488	0.108	100.0	0	TACOMA
1389	0.114	100.0	1	DURHAM MS	1489	0.108	100.0	0	TACOMA
1390	0.114	100.0	1	DURHAM MS	1196	0.108	100.0	4	OKLAHOMA
1391	0.114	100.0	1	DURHAM MS	1123	0.109	100.0	5	TACOMA
					1195	0.110	100.0	4	TREVOR

918	0.111	100.0	9	WCSRC
793	0.111	100.0	11	LOWRY
1197	0.112	100.0	4	ASHEBORO
1392	0.114	100.0	1	ASHEBORO
1393	0.114	100.0	1	ASHEBORO

Definitions

Management Terms

SSP Master Plan – A document that provides complete breeding and transfer recommendations for a Species Survival Plan (SSP®) population. The document is based on genetic and demographic analyses with consideration of behavioral, social, and institutional wants and needs. A draft of the Master Plan must be published in the Members Only section of the AZA Web site for a 30-day comment period. After the Coordinator incorporates/responds to institutional comments, a final version of the Master Plan must be published in the Members Only section of the AZA Web site. SSP Participation by AZA institutions is required.

Full Participation – AZA policy stating that all AZA accredited institutions and certified related facilities having an SSP animal in their collection are required to participate in the SSP partnership process and abide by the recommendations of the SSP.

Population Management Plan (PMP)– A document that provides complete breeding and transfer recommendations for a PMP population. The document is based on genetic and demographic analyses with consideration of behavioral, social, and institutional wants and needs. A draft of the PMP must be published in the Members Only section of the AZA Web site for a 30-day comment period. After the PMP Manager incorporates/responds to institutional comments, a final version of the PMP must be published in the Members Only section of the AZA Web site. PMP Participation by AZA institutions is voluntary.

Demographic Terms

Age Distribution – A two-way classification showing the numbers or percentages of individuals in various age and sex classes.

Ex, Life Expectancy – Average years of further life for an animal in age class x.

Lambda (λ) or Population Growth Rate – The proportional change in population size from one year to the next. Lambda can be based on life-table calculations (the expected lambda) or from observed changes in population size from year to year. A lambda of 1.11 means a 11% per year increase; lambda of .97 means a 3% decline in size per year.

lx, Age-Specific Survivorship – The probability that a new individual (e.g., age 0) is alive at the *beginning* of age x. Alternatively, the proportion of individuals which survive from birth to the beginning of a specific age class.

Mx, Fecundity – The average number of same-sexed young born to animals in that age class. Because SPARKS is typically using relatively small sample sizes, SPARKS calculates Mx as 1/2 the average number of young born to animals in that age class. This provides a somewhat less "noisy" estimate of Mx, though it does not allow for unusual sex ratios. The fecundity rates provide information on the age of first, last, and maximum reproduction.

Px, Age-Specific Survival – The probability that an individual of age x survives one time period; is conditional on an individual being alive at the beginning of the time period. Alternatively, the proportion of individuals which survive from the beginning of one age class to the next.

Qx, Mortality – Probability that an individual of age x dies during time period. $Qx = 1 - Px$

Risk (Qx or Mx) – The number of individuals that have lived during an age class. The number at risk is used to calculate Mx and Qx by dividing the number of births and deaths that occurred during an age class by the number of animals at risk of dying and reproducing during that age class.

The proportion of individuals that die during an age class. It is calculated from the number of animals that die during an age class divided by the number of animals that were alive at the beginning of the age class (i.e. "at risk").

Vx, Reproductive Value – The expected number of offspring produced this year and in future years by an animal of age x.

Genetic Terms

Allele Retention – The probability that a gene present in a founder individual exists in the living, descendant population.

Current Gene Diversity (GD) -- The proportional gene diversity (as a proportion of the source population) is the probability that two alleles from the same locus sampled at random from the population will not be identical by descent. Gene diversity is calculated from allele frequencies, and is the heterozygosity expected in progeny produced by random mating, and if the population were in Hardy-Weinberg equilibrium.

Effective Population Size (Inbreeding N_e) -- The size of a randomly mating population of constant size with equal sex ratio and a Poisson distribution of family sizes that would (a) result in the same mean rate of inbreeding as that observed in the population, or (b) would result in the same rate of random change in gene frequencies (genetic drift) as observed in the population. These two definitions are identical only if the population is demographically stable (because the rate of inbreeding depends on the distribution of alleles in the parental generation, whereas the rate of gene frequency drift is measured in the current generation).

FOKE, First Order Kin Equivalents – The number of first-order kin (siblings or offspring) that would contain the number of copies of an individual's alleles (identical by descent) as are present in the captive-born population. Thus an offspring or sib contributes 1 to FOKE; each grand-offspring contributes 1/2 to FOKE; each cousin contributes 1/4 to FOKE. $FOKE = 4 * N * MK$, in which N is the number of living animals in the captive population.

Founder – An individual obtained from a source population (often the wild) that has no known relationship to any individuals in the derived population (except for its own descendants).

Founder Contribution -- Number of copies of a founder's genome that are present in the living descendants. Each offspring contributes 0.5, each grand-offspring contributes 0.25, etc.

Founder Genome Equivalents (FGE) – The number wild-caught individuals (founders) that would produce the same amount of gene diversity as does the population under study. The gene diversity of a population is $1 - 1 / (2 * FGE)$.

Founder Genome Surviving – The sum of allelic retentions of the individual founders (i.e., the product of the mean allelic retention and the number of founders).

Founder Representation -- Proportion of the genes in the living, descendant population that are derived from that founder. I.e., proportional Founder Contribution.

GU, Genome Uniqueness – Probability that an allele sampled at random from an individual is not present, identical by descent, in any other living individual in the population. GU-all is the genome uniqueness relative to the entire population. GU-Desc is the genome uniqueness relative to the living non-founder, descendants.

Inbreeding Coefficient (F) -- Probability that the two alleles at a genetic locus are identical by descent from an ancestor common to both parents. The mean inbreeding coefficient of a population will be the proportional decrease in observed heterozygosity relative to the expected heterozygosity of the founder population.

Kinship Value (KV) – The weighted mean kinship of an animal, with the weights being the reproductive values of each of the kin. The mean kinship value of a population predicts the loss of gene diversity expected in the subsequent generation if all animals were to mate randomly and all were to produce the numbers of offspring expected for animals of their age.

Mean Generation Time (T) – The average time elapsing from reproduction in one generation to the time the next generation reproduces. Also, the average age at which a female (or male) produces offspring. It is not the age of first reproduction. Males and females often have different generation times.

Mean Kinship (MK) – The mean kinship coefficient between an animal and all animals (including itself) in the living, captive-born population. The mean kinship of a population is equal to the proportional loss of gene diversity of the descendant (captive-born) population relative to the founders and is also the mean inbreeding coefficient of progeny produced by random mating. Mean kinship is also the reciprocal of two times the founder genome equivalents: $MK = 1 / (2 * FGE)$. $MK = 1 - GD$.

Percent Known – Percent of an animal's genome that is traceable to known Founders. Thus, if an animal has an UNK sire, the % Known = 50. If it has an UNK grandparent, % Known = 75.

Prob Lost – Probability that a random allele from the individual will be lost from the population in the next generation, because neither this individual nor any of its relatives pass on the allele to an offspring. Assumes that each individual will produce a number of future offspring equal to its reproductive value, V_x .

Appendix F - List of Institutional Representatives

FirstName	LastName	Institution	Phone	EmailAddress
Leslie	Whitt	Alexandria Zoological Park	318-473-1385	les.whitt@cityofalex.com
Art	Beyer	Alligator River NWR	252-473-1131 (x241)	art_beyer@fws.gov
Don	Goff	Beardsley Zoological Gardens	203-394-6564	Dgoff4538@aol.com
Michelle	Smurl	Brevard Zoo	321-254-9453 (x217)	msmurl@brevardzoo.org
Sarah	Dawsey	Cape Romain NWR	843-928-3264	sarah_dawsey@fws.gov
Dale	Thompson	Chaffee Zoo	559-621-5700	Dale.Thompson@ci.fresno.ca.us
Tish	Gailmard	Chattanooga Nature Center	423-821-1160 (x103)	tgailmard@chattanature.org
Jan	Thompson	Chehaw Wild Animal Park	229-430-5275	chehawwap@parksatchehaw.org
Bob	Pendergrass	Dan Nicholas Nature Center	704-216-7819	bobpend@co.rowan.nc.us
Stacey	Johnson	Fort Worth Zoo	817-759-7190	sjohnson@fortworthzoo.org
Mary Jo	Stearns	Fossil Rim Wildlife Center	254-897-2960 (x314)	maryjos@fossilrim.com
Jay	Tetzloff	Great Plains Zoo	605-367-7003	jtetzloff@gpzoo.org
Jackie	Peeler	Henson Robinson Zoo	217-753-6217	jpeeler@hensonrobinsonzoo.org
Dave	Wetzel	Jackson Zoological Park	601-352-2590	dlwetzel@msn.com
Craig	Miller	Jacksonville Zoo	904-757-4463 (x136)	millerc@jaxzoo.org
Lisa	New	Knoxville Zoo	865-637-5331 (x329)	ldrummer@knoxville-zoo.org
Darrin	Samborski	Land Between the Lakes	270-924-2050	dsamborski@fs.fed.us
Diane	Mulkerin	Lincoln Park Zoo	312-742-2376	dmulkerin@lpzoo.org
LeeAnn	Rottman	Lowry Park Zoo	813-935-8552 (x221)	curator@lowryparkzoo.org
Laurie	Spangler	Mill Mountain Zoo	540-343-3241	Lspangler@mmzoo.org
John	Tobias	Miller Park Zoo	309-434-2825	jtobias@cityblm.org
Sherry	Samuels	North Carolina Life & Science	919-220-5429 (x333)	sherry.samuels@ncmls.org
Michael	Stoskopf	North Carolina State University	919-513-6279	mkstosko@unity.ncsu.edu
Tim	Mengel	North Carolina Zoo	336-879-7675	tim.mengel@ncmail.net
Neil	Anderson	North Eastern Wisconsin Zoo	920-434-8597	anderson_ns@itol.com
Barry	Braden	NY Wolf Conservation Center	914-763-2373	barry@nywolf.org
Penny	Miller	Oglebay's Good Zoo	304-243-4027	pmiller@oglebay-resort.com
Bill	Savage	Oklahoma City Zoo	405-424-3344 (x232)	bsavage@okczoo.com
Will	Waddell	Point Defiance Zoo & Aquarium	253-858-9172	wwaddell@pdza.org
Ron	Martini	Roger Williams Park Zoo	410-785-3510	rmartini@rwpzoo.org
Tom	Labarge	Rosamond Gifford Zoo at Burnet	315-435-8511 (x122)	markhor_3@hotmail.com
Jim	Rapp	Salisbury Zoo	410-548-3188	jrapp@ci.salisbury.md.us
Mike	Jones	Tallahassee Mus. of Nat. History	850-575-8685	pwpalmit@nettally.com
Angie	Branson	Texas Zoo	361-573-7681	animalcare@texaszoo.org
Jon	Meigs	Trevor Zoo	845-677-3704	trevorzoo@millbrook.org
George	Mathews	Virginia Living Museum	757-595-1900 (x213)	george.mathews@valivingmuseum.org
Bob	Fay	Western North Carolina Nature Center	828-298-5600 (x309)	bfay@wildwnc.org
Sue	Lindsey	Wild Canid Survival and Research Center	636-938-5900	slindsey_wcc@onemain.com
Peggy	Callahan	Wildlife Science Center	651-464-3993	peggy@wildlifesciencecenter.org
Wendy	Spencer-Armestar	Wolf Haven International	360-264-4695	wendy@wolfhaven.org