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**Executive Summary**  
**GREEN ARACARI (PTEROGLOSSUS VIRIDIS) PMP 2004**  
**Species Manager: Nanette Bragin, The Denver Zoo**  
**SPMAG Advisor: Kevin Willis, The Minnesota Zoo**

**Introduction:** This is the sixth PMP for the green aracari. Comprehensive genetic and demographic analyses were performed in April 2004 using SPARKS 1.52 and PM2000 1.202. The analytical studbook was used for analysis. The demographic data was exported using the management date of 1 Jan 1985 to the present and the genetic data was exported using the filter data 05 Apr – 06 Apr 04.

The Piciformes TAG recommends a target population size of 100 specimens for this species. The current population is 83 animals (48.35) in 28 institutions.

When gene diversity falls below 90% of that in the founding population, it is expected that reproduction will be increasingly compromised by, among other factors, lower birth weights, smaller litter sizes, and greater neonatal mortality. Given the current gene diversity, this population will likely remain above the 90% level for 11 years; gene diversity at 100 years is expected to be about 62.38.

**Management Goals:** The TAG designates 100 spaces for this population. Due to space considerations and the need to recruit more institutions, it is recommended that 20 pairs reproduce and the population grow conservatively from 83 to 92 specimens. To grow the population from 83 to 92 with a clutch size of 1.5 and 50% probability of successful breeding, 17 births and 23 pairs are recommended. These goals require 14 transfers. There are several pairings recommended that do not have specific institutions for placement. They have a listing of 'available'. These pairs may be transferred to new participants who do not currently exhibit green aracari, or current participants wanting a second pair. Institutions that have expressed interest in participating in green aracari are Oklahoma City, Pueblo, Miami Metro Zoo, Sedgwick, Houston, John Ball Zoo, Albuquerque Bio Park, Roger Williams. In addition, Jason Crean, who works with the Brookfield Zoo, is a private breeder who works with other private breeders and is interested in pairing his green aracari. These are all possibilities for placement of your offspring.

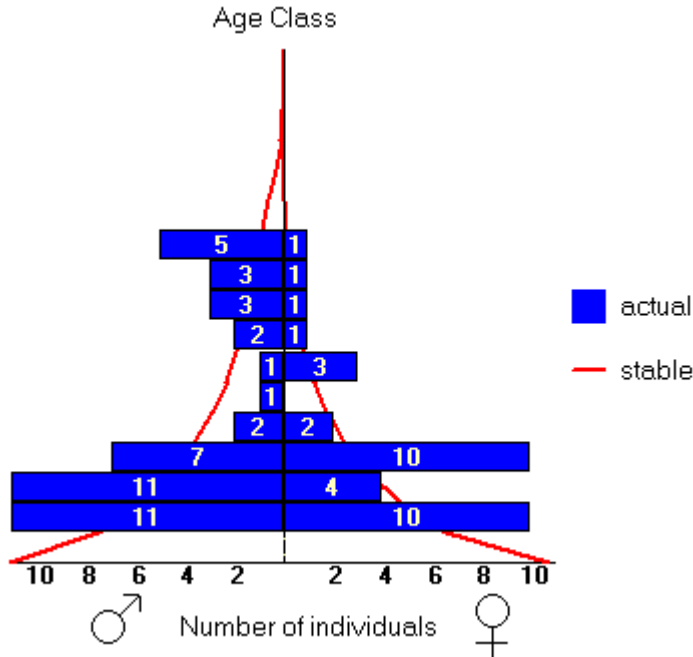
**Demography:** This past year the population dramatically increased from 60 to 83 animals as there were many offspring produced from non-recommended pairings and unknown lineages. This shows the capability of a higher population growth rate if it should be needed. This also shows a large number of specimens in the younger age classes. However, the middle age classes are low, thus yielding an unstable age pyramid.

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**Demographic Summary Table:**

Current size of managed population	83 (48.35)
# Specimens excluded from management	0
Mean generation time	4.7 years
Potential population growth rate	1.156
# Births in past year	27
# Deaths in past year	10



**Genetics** The managed population is descended from 23 founders and 1 potential founder exists. Gene diversity is at 94.7 % and could increase to 97.2%. Projections indicate that gene diversity will fall below 90% in 11 years. The gene diversity and founder numbers has increased from the previous plan due to the DNA study that Kevin Willis conducted. Based on his analysis of the DNA, assumptions were made (see assumption page) on relatedness for unknowns. Using the known lineages as a baseline, Mr. Willis reconstructed pedigrees for many of the unknown animals. This completely changed the mean kinships of the population. Some specimens with a previous low MK co-efficient (high ranking) ended up with a high MK co-efficient (low ranking) while many previous unknown pedigreed specimens now show a low MK co-efficient and rank at the top of the list.

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**Genetic Summary Table:**

	Current	Potential
Founders	23	1 additional
Founder genome equivalents	9.49	18.06
Founder genome surviving	16.65	18.06
Gene diversity retained	0.947	0.972
Population mean kinship	0.053	0.028
Mean inbreeding	0.003	0.028
Ne / N	0.27	-----
% of pedigree known	99	-----

As with most PMP populations, pairings are prioritized to maintain or increase gene diversity through considerations of mean kinship, avoidance of inbreeding, differences in sire and dam mean kinships, and the degree of uncertainty within a pedigree. Consideration is also given to age, compatibility, behavioral and other husbandry issues. I've constructed a priority list for breeding recommendations. The breeding and transfer recommendations have letters placed in the comments section. These letters indicate whether a breeding recommendation is a high or low priority. I hope that this helps you gauge whether to breed constantly, or slow down. The following is a legend for those letters:

- P\* Highest priority (very essential to breed as much as possible, try your hardest!)
- P Priority (essential to breed, breed a lot, try hard or harder!)
- M Medium priority (not a bad pairing, ok to breed)
- L-M Low to medium priority (ok breeding)
- L Low priority (not the best, but 1 clutch is ok)

**Summary Actions:**

- Transfer animals according to recommendations
- Breed according to recommendations
- Send available pairs or singletons to new participants

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## **Appendix 1: Species Manager and SPMAG Advisor contact information. Studbook export filters for genetic and demographic analyses**

Report compiled under Population Management 2000, version 1.202

Prepared Friday, April 16, 2004 at [insert location].

The last Breeding and Transfer Recommendations for this species were completed The Denver Zoo, July, 2002.

Species Coordinator, Studbook keeper

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SPMAG Advisor

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Studbook information:

Data exported on: 7 Apr 2004 from Sparks v1.53

Data compiled by: Nanette Bragin

Data current thru: April 2004

Scope of data: North American Regional

Demographic data from: C:\sparks\11APRARA\M11APRAR.PRN and  
C:\sparks\11APRARA\F11APRAR.PRN

Demographic filter conditions:

Locations: N.AMERICA/ Dates: 01/01/1985 <= date

Genetic data from: C:\sparks\11APRARA\7apr 04 ara kevin analytical.ped

Genetic filter conditions:

Locations: N.AMERICA/

Dates: Between 05/04/2004 and 06/04/2004

Status: Living during 5 Apr 2004 -> 6 Apr 2004

Date used for calculations: 4/7/2004

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## Appendix 2: 2004 GREEN ARACARI PMP ASSUMPTIONS

### Assumptions

1. All unknown dates in the analytical studbook were changed to known dates using the convention of taking the last known date and using the day before. Example: if an animal is transferred to Seattle on 19 Aug 80, 18 Aug 80 is used for when it was transferred to the public. The exception to this were animals with unknown birth dates. Unknown dates could not be changed. For the 1999 studbook there were 2 birds that had this problem: 196 and 197.

### Assumptions for Changing unknowns to founders

- 152 From a private individual. No other green aracarids recorded as coming from here.  
93 From a private individual. Again, no other green aracarids recorded coming from here.  
190 From a private individual in Los Angeles who obtained from a private individual in San Juan Capistrano, was told not related to Fallbrook lineage.

### Wild1's

- Wild1, Wild2 recorded for most birds coming from Jerry Jennings with no history (e.g.: 35)  
The exception would be for birds from the DNA study that were assigned other assumptions.  
Wild3, Wild4 recorded for two siblings from The Ramphastid Conservancy. These birds are from wild caught stock. (e.g.: 191, 201, also part of DNA study and listed below as well).

### DNA Assumptions

- 149 = 139 140  
191 = WILD3 WILD4  
201 = WILD3 WILD4  
203 = WILD5 WILD6  
218 = WILD5 WILD6  
209 = WILD5 WILD6  
242 = WILD WILD  
243 = WILD WILD  
195 = WILD 243  
196 = WILD WILD  
139 = WILD7 WILD8  
140 = WILD7 WILD8

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### Appendix 3: Life Table data for males and females

Age	Males					Females				
	Q <sub>x</sub>	P <sub>x</sub>	L <sub>x</sub>	M <sub>x</sub>	V <sub>x</sub>	Q <sub>x</sub>	P <sub>x</sub>	L <sub>x</sub>	M <sub>x</sub>	V <sub>x</sub>
0	0.290	0.710	1.000	0.000	1.170	0.310	0.690	1.000	0.225	1.183
1	0.193	0.808	0.710	0.033	1.720	0.173	0.828	0.690	0.263	1.556
2	0.135	0.865	0.573	0.248	2.234	0.123	0.878	0.571	0.343	1.844
3	0.108	0.893	0.496	0.430	2.497	0.115	0.885	0.501	0.488	2.065
4	0.110	0.890	0.443	0.625	2.559	0.125	0.875	0.443	0.630	2.171
5	0.130	0.870	0.394	0.685	2.423	0.130	0.870	0.388	0.735	2.139
6	0.120	0.880	0.343	0.635	2.193	0.150	0.850	0.338	0.818	1.976
7	0.080	0.920	0.302	0.605	1.913	0.170	0.830	0.287	0.823	1.670
8	0.060	0.940	0.277	0.540	1.552	0.175	0.825	0.238	0.723	1.240
9	0.060	0.940	0.261	0.420	1.188	0.225	0.775	0.196	0.560	0.781
10	0.075	0.925	0.245	0.355	0.909	0.353	0.648	0.152	0.330	0.373
11	0.138	0.863	0.227	0.350	0.683	0.608	0.393	0.099	0.095	0.095
12	0.320	0.680	0.196	0.335	0.472	0.890	0.110	0.039	0.000	0.000
13	0.560	0.440	0.133	0.233	0.259	1.000	0.000	0.004	0.000	0.000
14	0.673	0.328	0.059	0.073	0.073	1.000	0.000	0.000	0.000	0.000
15	0.685	0.315	0.019	0.000	0.000	1.000	0.000	0.000	0.000	0.000
16	0.768	0.233	0.006	0.000	0.000	1.000	0.000	0.000	0.000	0.000

Q<sub>x</sub> = mortality; P<sub>x</sub> = survival; L<sub>x</sub> = cumulative survivorship; M<sub>x</sub> = fecundity; V<sub>x</sub> = expected future reproduction

### Projected population growth rates

Males:  $r = 0.0984$ ;  $\lambda = 1.1034$ ;  $R_0 = 1.716$ ;  $T = 5.49$

Females:  $r = 0.1919$ ;  $\lambda = 1.2116$ ;  $R_0 = 1.888$ ;  $T = 3.31$

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## Appendix 4: Ordered mean kinships

Rank	Males					Females				
	Stbk#	MK	Known	Age	Location	Stbk#	MK	Known	Age	Location
1	248	0.0065	100.0	3	DALLAS WA	85	0.0000	100.0	0	ST LOUIS
2	201	0.0097	100.0	7	TULSA	191	0.0097	100.0	7	INDIANAPL
3	242	0.0130	100.0	8	DALLAS WA	196	0.0162	100.0	8	SEATTLE
4	133	0.0143	100.0	10	INDIANAPL	274	0.0162	50.0	1	CHICAGOLP
5	279	0.0203	100.0	1	DALLAS WA	278	0.0244	100.0	1	AUDUBON
6	288	0.0203	100.0	1	DALLAS WA	246	0.0276	100.0	3	DALLAS WA
7	209	0.0244	100.0	0	NY BRONX	140	0.0280	100.0	0	TULSA
8	123	0.0247	100.0	10	NY BRONX	218	0.0292	100.0	6	DALLAS WA
9	139	0.0280	100.0	0	ST LOUIS	203	0.0308	100.0	6	MEMPHIS
10	239	0.0317	100.0	3	ASHEBORO	240	0.0317	100.0	3	MINNESOTA
11	251	0.0317	100.0	2	SEATTLE	286	0.0317	100.0	1	PITTS CA
12	195	0.0406	100.0	7	SEATTLE	287	0.0317	100.0	1	SEATTLE
13	231	0.0446	100.0	3	VOKATY H	213	0.0446	100.0	4	MEMPHIS
14	238	0.0446	100.0	3	PITTS CA	187	0.0562	100.0	6	TULSA
15	250	0.0446	100.0	2	MEMPHIS	220	0.0603	100.0	3	COLO SPRG
16	138	0.0451	100.0	10	LANSING	229	0.0603	100.0	3	ORLANDO
17	157	0.0451	100.0	9	BIODOME	232	0.0603	100.0	3	ORLANDO
18	168	0.0505	100.0	8	KNOXVILLE	233	0.0603	100.0	3	ORLANDO
19	135	0.0520	100.0	10	MEMPHIS	222	0.0603	100.0	3	LANSING
20	152	0.0552	100.0	9	PHOENIX	292	0.0615	100.0	2	CHICAGOLP
21	167	0.0564	100.0	8	SAN ANTON	269	0.0615	100.0	2	PITTS CA
22	204	0.0572	100.0	5	TRACY AV	271	0.0615	100.0	2	DALLAS WA
23	235	0.0572	100.0	3	CHICAGOBR	266	0.0615	100.0	2	CHICAGOLP
24	253	0.0603	100.0	2	SAN ANTON	117	0.0625	100.0	10	CHICAGOBR
25	258	0.0603	100.0	2	SAN ANTON	262	0.0628	100.0	1	TULSA
26	255	0.0603	100.0	2	SAN ANTON	263	0.0628	100.0	1	TULSA
27	257	0.0603	100.0	2	SAN ANTON	224	0.0635	100.0	3	MILWAUKEE
28	283	0.0603	100.0	1	DENVER	216	0.0668	100.0	4	NY BRONX
29	252	0.0615	100.0	2	MINNESOTA	226	0.0668	100.0	3	MADISON
30	291	0.0615	100.0	2	DALLAS WA	223	0.0684	100.0	3	ST AUGUST
31	293	0.0615	100.0	2	SEA WORLD	156	0.0718	100.0	9	PHOENIX
32	265	0.0615	100.0	2	DALLAS WA	294	0.0749	100.0	1	ST AUGUST
33	268	0.0615	100.0	2	AUDUBON	295	0.0749	100.0	1	JACKSONVL
34	270	0.0615	100.0	1	DALLAS WA	297	0.0749	100.0	1	ST AUGUST
35	273	0.0615	100.0	1	DALLAS WA	298	0.0749	100.0	1	ST AUGUST
36	260	0.0628	100.0	1	JACKSONVL					
37	261	0.0628	100.0	1	TULSA					
38	146	0.0629	100.0	9	TULSA					
39	215	0.0668	100.0	4	COLO SPRG					
40	225	0.0668	100.0	3	MADISON					
41	184	0.0694	100.0	6	DALLAS WA					
42	217	0.0700	100.0	4	MILWAUKEE					
43	300	0.0700	100.0	1	MILWAUKEE					
44	299	0.0700	100.0	1	MILWAUKEE					
45	125	0.0706	100.0	10	DENVER					
46	289	0.0727	50.0	1	DALLAS WA					
47	219	0.0749	100.0	3	ST AUGUST					
48	296	0.0749	100.0	1	ST AUGUST					

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## Summary of Breeding and Transfer Recommendations

ID	Location	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
239	ASHEBORO	22773	M	3	SEND	HAL VOKATY	BREED WITH	294	M
268	AUDUBON	101128	M	2	HOLD	AUDUBON	BREED WITH	278	P
278	AUDUBON	10129	F	1	HOLD	AUDUBON	BREED WITH	268	P
157	BIODOME	1919	M	9	HOLD	BIODOME	BREED WITH	191	P*
117	CHICAGOBR	940124	F	10	SEND TO	DENVER	BREED WITH	125	M
235	CHICAGOBR	730	M	3	AVAILABLE		BREED WITH	287	
266	CHICAGOLP	21018	F	2	HOLD	CHICAGOLP	DO NOT BREED		
274	CHICAGOLP	21017	F	1	HOLD	CHICAGOLP	DO NOT BREED		
292	CHICAGOLP	21016	F	2	HOLD	CHICAGOLP	DO NOT BREED		
215	COLO SPRG	21A006	M	4	HOLD	COLO SPRG	DO NOT BREED		L Hold or 1 clutch
220	COLO SPRG	21A012	F	3	HOLD	COLO SPRG	DO NOT BREED		L
184	DALLAS WA	99A016	M	6	HOLD	DALLAS WA	DO NOT BREED		
218	DALLAS WA	99A071	F	6	HOLD	DALLAS WA	BREED WITH	242	P
242	DALLAS WA	99A106	M	8	HOLD	DALLAS WA	BREED WITH	218	P
246	DALLAS WA	1A0086	F	3	HOLD	DALLAS WA	BREED WITH	248	P
248	DALLAS WA	2A0013	M	3	HOLD	DALLAS WA	BREED WITH	246	P
265	DALLAS WA	2A0056	M	2	HOLD	DALLAS WA	DO NOT BREED		
270	DALLAS WA	3A022	M	1	HOLD	DALLAS WA	DO NOT BREED		
271	DALLAS WA	3A023	F	2	SEND TO	KNOXVILLE	BREED WITH	168	M
273	DALLAS WA	3A025	M	1	HOLD	DALLAS WA	DO NOT BREED		
279	DALLAS WA	3A071	M	1	HOLD	DALLAS WA	DO NOT BREED		
288	DALLAS WA	3AB001	M	1	SEND TO	PITTS CA	BREED WITH	269	P
289	DALLAS WA	3AB002	M	1	HOLD	DALLAS WA	DO NOT BREED		
291	DALLAS WA	2A0042	M	2	HOLD	DALLAS WA	DO NOT BREED		
125	DENVER	940521	M	10	HOLD	DENVER	BREED WITH	117	M Old animals, want 1 more clutch
283	DENVER	A03080	M	1	SEND TO	MINNESOTA	BREED WITH	240	P
133	INDIANAPL	201061	M	10	HOLD	INDIANAPL	DO NOT BREED		Possible TB exposure
191	INDIANAPL	980159	F	7	SEND TO	BIODOME	BREED	157	P*

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260	JACKSONVL	604308	M	1	HOLD	JACKSONVL	WITH DO NOT BREED		High inbreeding co-eff
295	JACKSONVL	603341	F	1	HOLD	JACKSONVL	DO NOT BREED		High inbreeding co-eff
168	KNOXVILLE	659	M	8	HOLD	KNOXVILLE	BREED	271	L-M
138	LANSING	1931	M	10	HOLD	LANSING	WITH BREED	222	M
222	LANSING	2563	F	3	HOLD	LANSING	WITH BREED	138	M
225	MADISON	2317__	M	3	HOLD	MADISON	DO NOT BREED		SIBS
226	MADISON	2316	F	3	HOLD	MADISON	DO NOT BREED		SIBS
135	MEMPHIS	15352	M	10	HOLD	MEMPHIS	BREED WITH	203	M
203	MEMPHIS	18362	F	6	HOLD	MEMPHIS	BREED WITH	135	M
213	MEMPHIS	19418	F	4	HOLD	MEMPHIS	DO NOT BREED		or pair w/ 251 or San Antonio males
250	MEMPHIS	20541	M	2	SEND TO	PHILADELPHIA	BREED WITH	263	M
217	MILWAUKEE	B3946	M	4	HOLD	MILWAUKEE	DO NOT BREED		High MK
224	MILWAUKEE	B3945	F	3	HOLD	MILWAUKEE	DO NOT BREED		High MK
299	MILWAUKEE	B3995	M	1	AVAILABLE		DO NOT BREED		Send to Jason Crean?
300	MILWAUKEE	B3994	M	1	AVAILABLE		DO NOT BREED		Send to Jason Crean?
240	MINNESOTA	10782	F	3	HOLD	MINNESOTA	BREED	283	P
252	MINNESOTA	10715	M	2	AVAILABLE		WITH BREED	262	M pair available
123	NY BRONX	992219	M	10	HOLD	NY BRONX	BREED WITH	216	M
209	NY BRONX	992042	M	0	HOLD	NY BRONX	BREED WITH	216	P
216	NY BRONX	B01049	F	4	HOLD	NY BRONX	BREED WITH	209, 123	
229	ORLANDO	GA2506	F	3	HOLD	ORLANDO	DO NOT BREED		Exhibit
232	ORLANDO	GA2509	F	3	HOLD	ORLANDO	DO NOT BREED		Exhibit
233	ORLANDO	GA2507	F	3	HOLD	ORLANDO	DO NOT BREED		Exhibit
152	PHOENIX	8950	M	9	HOLD	PHOENIX			M Could breed
156	PHOENIX	7791	F	9	HOLD	PHOENIX			M Could bred
238	PITTS CA	6475	M	3	HOLD	PITTS CA	BREED	286	P*
269	PITTS CA	6471	F	2	HOLD	PITTS CA	WITH BREED	288	P*
286	PITTS CA	6665	F	1	HOLD	PITTS CA	WITH BREED	238	P*

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167	SAN ANTON	961237	M	8	HOLD	SAN ANTON	WITH DO NOT BREED		Could pair any SA male with 213
253	SAN ANTON	A02028	M	2	HOLD	SAN ANTON	DO NOT BREED		"
255	SAN ANTON	U02017	M	2	HOLD	SAN ANTON	DO NOT BREED		"
257	SAN ANTON	U02056	M	2	HOLD	SAN ANTON	DO NOT BREED		"
258	SAN ANTON	Y02047	M	2	HOLD	SAN ANTON	DO NOT BREED		"
293	SEA WORLD	GA0001	M	2	HOLD	SEA WORLD	DO NOT BREED		"
195	SEATTLE	980037	M	7	HOLD	SEATTLE	BREED	196	P*
196	SEATTLE	980038	F	8	HOLD	SEATTLE	WITH BREED	195	P*
251	SEATTLE	200773	M	2	HOLD	SEATTLE	DO NOT BREED		
287	SEATTLE	201149	F	1	AVAILABLE		BREED	235	M-P
219	ST AUGUST	A0220	M	3	HOLD	ST AUGUST	DO NOT BREED		High MK
223	ST AUGUST	A0215	F	3	HOLD	ST AUGUST	DO NOT BREED		High MK
294	ST AUGUST	A0303	F	1	SEND TO	ASHEBORO	BREED	239	M
296	ST AUGUST	A0309	M	1	HOLD	ST AUGUST	DO NOT BREED		
297	ST AUGUST	A0310	F	1	AVAILABLE				Could send to Jason Crean
298	ST AUGUST	A0311	F	1	AVAILABLE				Could send to Jason Crean
85	ST LOUIS	101143	F	0	HOLD	ST LOUIS	BREED	139	P*
139	ST LOUIS	100881	M	0	HOLD	ST LOUIS	WITH BREED	85	P*
204	TRACY AV	1198	M	5	HOLD	TRACY AV	DO NOT BREED		
140	TULSA	13156	F	0	HOLD	TULSA	BREED	201	P**
146	TULSA	14307	M	9	HOLD	TULSA	WITH BREED	187	L-M
187	TULSA	13032	F	6	HOLD	TULSA	WITH BREED	146	L-M
201	TULSA	12978	M	7	HOLD	TULSA	WITH BREED	140	P**
261	TULSA	14498	M	1	HOLD	TULSA	DO NOT BREED		
262	TULSA	14499	F	1	AVAILABLE	TULSA	BREED	252	M pair available
263	TULSA	14500	F	1	SEND TO	PHILADELPHIA	WITH BREED	250	M
231	VOKATY H	_____	M	3	HOLD	VOKATY H	DO NOT BREED		

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**ASHEBORO**

**North Carolina Zoological Park**  
Asheboro, NC

Institutional contact/representative:

Institutional notes:

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
239	22773	M	3	SEND	HAL VOKATY	BREED WITH OR ANOTHER ST. AUG FEMALE	294	M

**Summary:**

Before transfers: 1 male, 0 females

After transfers: 1 male, 1 female

*Recommendations proposed by Population Management Plans are non-binding— participation is voluntary. Recommendations involving non-AZA institutions do not imply endorsement of the non-member by the AZA or the SPMAG Advisor.*

[Insert header text here]

**AUDUBON**

**Audubon Zoo**

New Orleans, LA

Institutional contact/representative:

Institutional notes:

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
268	101128	M	2	HOLD	AUDUBON	BREED WITH	278	P
278	10129	F	1	HOLD	AUDUBON	BREED WITH	268	P

**Summary:**

Before transfers: 1 male, 1 female

After transfers: 1 male, 1 female

*Recommendations proposed by Population Management Plans are non-binding— participation is voluntary. Recommendations involving non-AZA institutions do not imply endorsement of the non-member by the AZA or the SPMAG Advisor.*

[Insert header text here]

## **BIODOME**

### **Biodome de Montreal**

Montreal, Quebec

Institutional contact/representative:

Institutional notes:

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
157	1919	M	9	HOLD	BIODOME	BREED WITH	191	P*
191	980159	F	7	RECEIVE FROM	INDIANAPL	BREED WITH	157	P*

### **Summary:**

Before transfers: 1 male, 0 females

After transfers: 1 male, 1 female

Make sure there is no issue with TB exposure

*Recommendations proposed by Population Management Plans are non-binding— participation is voluntary. Recommendations involving non-AZA institutions do not imply endorsement of the non-member by the AZA or the SPMAG Advisor.*

[Insert header text here]

**CHICAGOBR**

**Chicago Zoological Park**

Brookfield, IL

Institutional contact/representative:

Institutional notes:

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
117	940124	F	10	SEND TO	DENVER	BREED WITH	125	M
235	730	M	3	AVAILABLE		BREED WITH	287	M-P

**Summary:**

Before transfers: 1 male, 1 female

After transfers: 0 male, 0 females

*Recommendations proposed by Population Management Plans are non-binding— participation is voluntary. Recommendations involving non-AZA institutions do not imply endorsement of the non-member by the AZA or the SPMAG Advisor.*

[Insert header text here]

## CHICAGOLP

### Lincoln Park Zoological Gardens

Chicago, IL

Institutional contact/representative:

Institutional notes:

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
266	21018	F	2	HOLD	CHICAGOLP	DO NOT BREED		
274	21017	F	1	HOLD	CHICAGOLP	DO NOT BREED		
292	21016	F	2	HOLD	CHICAGOLP	DO NOT BREED		

### Summary:

Before transfers: 0 males, 3 females

After transfers: 0 males, 3 females

*Recommendations proposed by Population Management Plans are non-binding— participation is voluntary. Recommendations involving non-AZA institutions do not imply endorsement of the non-member by the AZA or the SPMAG Advisor.*

[Insert header text here]

**COLO SPRG**

**Cheyenne Mtn Zoological Park**

Colorado Springs, CO

Institutional contact/representative:

Institutional notes:

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
215	21A006	M	4	HOLD	COLO SPRG	DO NOT BREED		L Hold or 1 clutch
220	21A012	F	3	HOLD	COLO SPRG	DO NOT BREED		L

**Summary:**

Before transfers: 1 male, 1 female

After transfers: 1 male, 1 female

*Recommendations proposed by Population Management Plans are non-binding— participation is voluntary. Recommendations involving non-AZA institutions do not imply endorsement of the non-member by the AZA or the SPMAG Advisor.*



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## DALLAS WA

### Dallas World Aquarium

Dallas, TX

Institutional contact/representative:

Institutional notes:

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
184	99A016	M	6	HOLD	DALLAS WA	DO NOT BREED		
218	99A071	F	6	HOLD	DALLAS WA	BREED WITH	242	P
242	99A106	M	8	HOLD	DALLAS WA	BREED WITH	218	P
246	1A0086	F	3	HOLD	DALLAS WA	BREED WITH	248	P
248	2A0013	M	3	HOLD	DALLAS WA	BREED WITH	246	P
265	2A0056	M	2	HOLD	DALLAS WA	DO NOT BREED		
270	3A022	M	1	HOLD	DALLAS WA	DO NOT BREED		
271	3A023	F	2	SEND TO	KNOXVILLE	BREED WITH	168	M
273	3A025	M	1	HOLD	DALLAS WA	DO NOT BREED		
279	3A071	M	1	HOLD	DALLAS WA	DO NOT BREED		
288	3AB001	M	1	SEND TO	PITTS CA	BREED WITH	269	P
289	3AB002	M	1	HOLD	DALLAS WA	DO NOT BREED		
291	2A0042	M	2	HOLD	DALLAS WA	DO NOT BREED		

### Summary:

Before transfers: 10 males, 3 females

After transfers: 9 males, 2 females

*Recommendations proposed by Population Management Plans are non-binding— participation is voluntary. Recommendations involving non-AZA institutions do not imply endorsement of the non-member by the AZA or the SPMAG Advisor.*

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## DENVER

### Denver Zoological Gardens

Denver, CO

Institutional contact/representative:

Institutional notes:

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
117	940124	F	10	RECEIVE FROM	CHICAGOBR	BREED WITH	125	M
125	940521	M	10	HOLD	DENVER	BREED WITH	117	M Old animals, want 1 more clutch
283	A03080	M	1	SEND TO	MINNESOTA	BREED WITH	240	P

### Summary:

Before transfers: 2 males, 0 females

After transfers: 1 male, 1 female

*Recommendations proposed by Population Management Plans are non-binding— participation is voluntary. Recommendations involving non-AZA institutions do not imply endorsement of the non-member by the AZA or the SPMAG Advisor.*

[Insert header text here]

## INDIANAPL

### Indianapolis Zoo

Indianapolis, IN

Institutional contact/representative:

Institutional notes:

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
133	201061	M	10	HOLD	INDIANAPL	DO NOT BREED		Possible TB exposure
191	980159	F	7	SEND TO	BIODOME	BREED WITH	157	P*

### Summary:

Before transfers: 1 male, 1 female

After transfers: 1 male, 0 females

Make sure there are no issues with TB

*Recommendations proposed by Population Management Plans are non-binding— participation is voluntary. Recommendations involving non-AZA institutions do not imply endorsement of the non-member by the AZA or the SPMAG Advisor.*

[Insert header text here]

## JACKSONVL

### Jacksonville Zoological Gardens

Jacksonville, FL

Institutional contact/representative:

Institutional notes:

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
260	604308	M	1	HOLD	JACKSONVL	DO NOT BREED		High inbreeding co-eff
295	603341	F	1	HOLD	JACKSONVL	DO NOT BREED		High inbreeding co-eff

### Summary:

Before transfers: 1 male, 1 female

After transfers: 1 male, 1 female

*Recommendations proposed by Population Management Plans are non-binding— participation is voluntary. Recommendations involving non-AZA institutions do not imply endorsement of the non-member by the AZA or the SPMAG Advisor.*

[Insert header text here]

## KNOXVILLE

### Knoxville Zoological Gardens

Knoxville, TN

Institutional contact/representative:

Institutional notes:

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
271	3A023	F	2	RECEIVE FROM	DALLAS WA	BREED WITH	168	L-M
168	659	M	8	HOLD	KNOXVILLE	BREED WITH	271	L-M

### Summary:

Before transfers: 1 male, 0 females

After transfers: 1 male, 1 female

*Recommendations proposed by Population Management Plans are non-binding— participation is voluntary. Recommendations involving non-AZA institutions do not imply endorsement of the non-member by the AZA or the SPMAG Advisor.*

[Insert header text here]

## LANSING

### Potter Park Zoological Gardens

Lansing, MI

Institutional contact/representative: Terri Atkinson

Institutional notes:

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
138	1931	M	10	HOLD	LANSING	BREED WITH	222	M
222	2563	F	3	HOLD	LANSING	BREED WITH	138	M

### Summary:

Before transfers: 1 male, 1 female

After transfers: 1 male, 1 female

*Recommendations proposed by Population Management Plans are non-binding— participation is voluntary. Recommendations involving non-AZA institutions do not imply endorsement of the non-member by the AZA or the SPMAG Advisor.*

[Insert header text here]

**MADISON**

**Henry Vilas Zoo**

Madison, WI

Institutional contact/representative:

Institutional notes:

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
225	2317__	M	3	HOLD	MADISON	DO NOT BREED		SIBS
226	2316	F	3	HOLD	MADISON	DO NOT BREED		SIBS

**Summary:**

Before transfers: 1 male, 1 female

After transfers: 1 male, 1 female

*Recommendations proposed by Population Management Plans are non-binding— participation is voluntary. Recommendations involving non-AZA institutions do not imply endorsement of the non-member by the AZA or the SPMAG Advisor.*

[Insert header text here]

## MEMPHIS

### Memphis Zoological Garden & Aquarium

Memphis, TN

Institutional contact/representative: Carol Hesch

Institutional notes:

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
135	15352	M	10	HOLD	MEMPHIS	BREED WITH	203	M
203	18362	F	6	HOLD	MEMPHIS	BREED WITH	135	M
213	19418	F	4	HOLD	MEMPHIS	DO NOT BREED		or pair w/ 251 or San Antonio males
250	20541	M	2	SEND TO	PHILADELPHIA	BREED WITH	263	M

### Summary:

Before transfers: 2 males, 2 females

After transfers: 1 male, 2 females

*Recommendations proposed by Population Management Plans are non-binding— participation is voluntary. Recommendations involving non-AZA institutions do not imply endorsement of the non-member by the AZA or the SPMAG Advisor.*

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## MILWAUKEE

### Milwaukee County Zoological Gardens

Milwaukee, WI

Institutional contact/representative:

Institutional notes:

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
217	B3946	M	4	HOLD	MILWAUKEE	DO NOT BREED		High MK
224	B3945	F	3	HOLD	MILWAUKEE	DO NOT BREED		High MK
299	B3995	M	1	AVAILABLE		DO NOT BREED		Send to Jason Crean?
300	B3994	M	1	AVAILABLE		DO NOT BREED		Send to Jason Crean?

#### Summary:

Before transfers: 3 males, 1 female

After transfers: 3 males, 1 female

Receive one of the available pairs

*Recommendations proposed by Population Management Plans are non-binding— participation is voluntary. Recommendations involving non-AZA institutions do not imply endorsement of the non-member by the AZA or the SPMAG Advisor.*

[Insert header text here]

## MINNESOTA

### Minnesota Zoological Garden

Apple Valley, MN

Institutional contact/representative:

Institutional notes:

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
283	A03080	M	1	RECEIVE FROM	DENVER	BREED WITH	240	P
240	10782	F	3	HOLD	MINNESOTA	BREED WITH	283	P
252	10715	M	2	AVAILABLE		BREED WITH	262	M pair available

### Summary:

Before transfers: 1 male, 1 female

After transfers: 1 males, 1 females

*Recommendations proposed by Population Management Plans are non-binding— participation is voluntary. Recommendations involving non-AZA institutions do not imply endorsement of the non-member by the AZA or the SPMAG Advisor.*

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**NY BRONX**

**The Wildlife Conservation Society**

Bronx, NY

Institutional contact/representative:

Institutional notes:

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
123	992219	M	10	HOLD	NY BRONX	BREED WITH	216	M
209	992042	M	0	HOLD	NY BRONX	BREED WITH	216	P
216	B01049	F	4	HOLD	NY BRONX	BREED WITH	209, 123	

**Summary:**

Before transfers: 2 males, 1 female

After transfers: 2 males, 1 female

*Recommendations proposed by Population Management Plans are non-binding— participation is voluntary. Recommendations involving non-AZA institutions do not imply endorsement of the non-member by the AZA or the SPMAG Advisor.*

[Insert header text here]

## ORLANDO

### Sea World Orlando

Orlando, FL

Institutional contact/representative:

Institutional notes:

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
229	GA2506	F	3	HOLD	ORLANDO	DO NOT BREED		Exhibit
232	GA2509	F	3	HOLD	ORLANDO	DO NOT BREED		Exhibit
233	GA2507	F	3	HOLD	ORLANDO	DO NOT BREED		Exhibit

### Summary:

Before transfers: 0 males, 3 females

After transfers: 0 males, 3 females

*Recommendations proposed by Population Management Plans are non-binding— participation is voluntary. Recommendations involving non-AZA institutions do not imply endorsement of the non-member by the AZA or the SPMAG Advisor.*

[Insert header text here]

## PHOENIX

### Phoenix Zoo

Phoenix, AZ

Institutional contact/representative:

Institutional notes:

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
152	8950	M	9	HOLD	PHOENIX			M Could breed
156	7791	F	9	HOLD	PHOENIX			M Could breed

### Summary:

Before transfers: 1 male, 1 female

After transfers: 1 male, 1 female

*Recommendations proposed by Population Management Plans are non-binding— participation is voluntary. Recommendations involving non-AZA institutions do not imply endorsement of the non-member by the AZA or the SPMAG Advisor.*

[Insert header text here]

## **PITTS CA**

### **National Aviary in Pittsburgh**

Pittsburgh, PA

Institutional contact/representative:

Institutional notes:

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
288	3AB001	M	1	RECEIVE FROM	DALLAS WA	BREED WITH	269	P
238	6475	M	3	HOLD	PITTS CA	BREED WITH	286	P*
269	6471	F	2	HOLD	PITTS CA	BREED WITH	288	P*
286	6665	F	1	HOLD	PITTS CA	BREED WITH	238	P*

### **Summary:**

Before transfers: 1 male, 2 females

After transfers: 2 males, 2 females

*Recommendations proposed by Population Management Plans are non-binding— participation is voluntary. Recommendations involving non-AZA institutions do not imply endorsement of the non-member by the AZA or the SPMAG Advisor.*

[Insert header text here]

**SAN ANTON**

**San Antonio Zool. Gardens & Aquarium**

San Antonio, TX

Institutional contact/representative:

Institutional notes:

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
167	961237	M	8	HOLD	SAN ANTON	DO NOT BREED		Could pair any SA male with 213
253	A02028	M	2	HOLD	SAN ANTON	DO NOT BREED		"
255	U02017	M	2	HOLD	SAN ANTON	DO NOT BREED		"
257	U02056	M	2	HOLD	SAN ANTON	DO NOT BREED		"
258	Y02047	M	2	HOLD	SAN ANTON	DO NOT BREED		"

**Summary:**

Before transfers: 5 males, 0 females

After transfers: 5 males, 0 females

*Recommendations proposed by Population Management Plans are non-binding— participation is voluntary. Recommendations involving non-AZA institutions do not imply endorsement of the non-member by the AZA or the SPMAG Advisor.*

[Insert header text here]

**SEA WORLD**

**Sea World San Diego**

San Diego, CA

Institutional contact/representative:

Institutional notes:

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
293	GA0001	M	2	HOLD	SEA WORLD	DO NOT BREED		"

**Summary:**

Before transfers: 1 male, 0 females

After transfers: 1 male, 0 females

*Recommendations proposed by Population Management Plans are non-binding— participation is voluntary. Recommendations involving non-AZA institutions do not imply endorsement of the non-member by the AZA or the SPMAG Advisor.*

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## SEATTLE

### Woodland Park Zoological Gardens

Seattle, WA

Institutional contact/representative:

Institutional notes:

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
195	980037	M	7	HOLD	SEATTLE	BREED WITH	196	P*
196	980038	F	8	HOLD	SEATTLE	BREED WITH	195	P*
251	200773	M	2	HOLD	SEATTLE	DO NOT BREED		
287	201149	F	1	AVAILABLE		BREED WITH	235	M-P

### Summary:

Before transfers: 2 males, 2 females

After transfers: 2 males, 1 females

*Recommendations proposed by Population Management Plans are non-binding— participation is voluntary. Recommendations involving non-AZA institutions do not imply endorsement of the non-member by the AZA or the SPMAG Advisor.*

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## ST AUGUST

### St. Augustine Alligator Farm

St Augustine, FL

Institutional contact/representative:

Institutional notes:

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
219	A0220	M	3	HOLD	ST AUGUST	DO NOT BREED		High MK
223	A0215	F	3	HOLD	ST AUGUST	DO NOT BREED		High MK
294	A0303	F	1	AVAILABLE	ST AUGUST	BREED WITH	239	M
296	A0309	M	1	HOLD	ST AUGUST	DO NOT BREED		
297	A0310	F	1	AVAILABLE				Could send to Jason Crean
298	A0311	F	1	AVAILABLE				Could send to Jason Crean

### Summary:

Before transfers: 2 males, 4 females

After transfers: 2 males, 1 females

*Recommendations proposed by Population Management Plans are non-binding— participation is voluntary. Recommendations involving non-AZA institutions do not imply endorsement of the non-member by the AZA or the SPMAG Advisor.*

[Insert header text here]

## ST LOUIS

### Saint Louis Zoological Park

St. Louis, MO

Institutional contact/representative:

Institutional notes:

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
85	101143	F	0	HOLD	ST LOUIS	BREED WITH	139	P*
139	100881	M	0	HOLD	ST LOUIS	BREED WITH	85	P*

### Summary:

Before transfers: 1 male, 1 female

After transfers: 1 male, 1 female

*Recommendations proposed by Population Management Plans are non-binding— participation is voluntary. Recommendations involving non-AZA institutions do not imply endorsement of the non-member by the AZA or the SPMAG Advisor.*

[Insert species name and report type here]

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## TRACY AV

Tracy Aviary

Salt Lake City, UT

Institutional contact/representative:

Institutional notes:

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
204	1198	M	5	HOLD	TRACY AV	DO NOT BREED		

### Summary:

Before transfers: 1 male, 0 females

After transfers: 1 male, 0 females

Obtain an available pair

*Recommendations proposed by Population Management Plans are non-binding— participation is voluntary. Recommendations involving non-AZA institutions do not imply endorsement of the non-member by the AZA or the SPMAG Advisor.*

[Insert header text here]

## TULSA

### Tulsa Zoological Park

Tulsa, OK

Institutional contact/representative:

Institutional notes:

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
140	13156	F	0	HOLD	TULSA	BREED WITH	201	P**
146	14307	M	9	HOLD	TULSA	BREED WITH	187	L-M
187	13032	F	6	HOLD	TULSA	BREED WITH	146	L-M
201	12978	M	7	HOLD	TULSA	BREED WITH	140	P**
261	14498	M	1	HOLD	TULSA	DO NOT BREED WITH		
262	14499	F	1	SEND TO	MINNESOTA	BREED WITH	252	M pair available
263	14500	F	1	SEND TO	PHILADELPHIA	BREED WITH	250	M

### Summary:

Before transfers: 3 males, 4 females

After transfers: 3 males, 2 females

*Recommendations proposed by Population Management Plans are non-binding— participation is voluntary. Recommendations involving non-AZA institutions do not imply endorsement of the non-member by the AZA or the SPMAG Advisor.*

[Insert species name and report type here]

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**VOKATY H**

**Mr. Hal Vokaty**

Temecula, CA

Institutional contact/representative:

Institutional notes:

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
231	_____	M	3	HOLD	VOKATY H	DO NOT BREED		

**Summary:**

Before transfers: 1 male, 0 females

After transfers: 1 male, 0 females

Or pair with recommended female as per conversation

*Recommendations proposed by Population Management Plans are non-binding— participation is voluntary. Recommendations involving non-AZA institutions do not imply endorsement of the non-member by the AZA or the SPMAG Advisor.*

[Insert header text here]

## PHILADELPHIA

Institutional notes:

ID	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes
250	20541	M	2	RECEIVE FROM	MEMPHIS	BREED WITH	263	M
263	14500	F	1	RECEIVE FROM	TULSA	BREED WITH	250	M

### Summary:

Before transfers: 0 males, 0 females

After transfers: 1 male, 1 female

## Acknowledgements

I would like to thank The Denver Zoo in supporting the publication of this plan. I would also like to thank Kevin Willis for his advice on this population and completing the DNA study.

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