CORACIIFORMES TAG
REGIONAL COLLECTION PLAN
Third Edition, June 2011

Photo by Jeff Strout

Prepared by the Coraciiformes Taxon Advisory Group
Edited by Lee Schoen

TAG website address: http://www.coraciiformestag.com/

Thanks to everyone that helped put this together especially Christine Sheppard, Kevin Graham, Megan Neal and Shelly Collinsworth.

Table of Contents

CORACIIFORMES TAG STEERING COMMITTEE

The Coraciiformes TAG has nine members, elected for staggered three year terms (excepting the chair).

Chair:
Lee Schoen
Curator of Birds
Audubon Zoo
6500 Magazine St.
New Orleans, LA 70118
Phone: (504) 861-5124 Fax: (504) 866-0819 email: lschoen@audubooninstitute.org

Vice Chair:
vacant

Secretary: (non-voting)
Kevin Graham , PMP coordinator, Blue-crowned Motmot
Department of Ornithology
Disney's Animal Kingdom
PO Box 10000
Lake Buena Vista, FL 32830
Phone: (407) 938-2501 Fax: (407) 939-6240 email: kevin.t.graham@disney.com

John Azua
Curator, Ornithology, Denver Zoological Gardens
2300 Steele St.
Denver, CO 80205
Phone: (303) 376-4914 Fax: (303) 376-4801 email: Jazua@denverzoo.org

Susan Healy
Sacramento Zoo
3930 W. Land Park Dr.
Sacramento, CA 95822
Phone (916) 264-5166 Fax: (916) 264-5887 email: shealy@cityofsacramento.org

Mike Mace
Curator, Ornithology
San Diego Wild Animal Park
15500 San Pasqual Valley Rd.
Escondido, CA 92927
Phone: (760) 738-5077, Fax: (760) 746-7081, email: mmace@sandiegozoo.org

Mike Macek
Curator, Ornithology, Saint Louis Zoological Park
1 Government Dr.
Saint Louis, MO 63110
Phone: (314) 781-0900 x362, Fax: (314) 647-7969, email macek@stlzoo.org

Mark Myers
Curator, Ornithology
Woodland Park Zoo
601 N. 59th St.
Seattle, WA 98103
Phone: (206) 548-2500 x1309, Fax: (206) 6548-1536, email Mark.Myers@zoo.org

Paul Schutz, Disney's Animal Kingdom
Department of Ornithology
Disney's Animal Kingdom
PO Box 10000
Lake Buena Vista, FL 32830
Phone: (407) 938-2936, Fax (407) 939 6240, email: Paul.J.Schutz@disney.com

ADVISORS:

Nutrition:

Dr. Ellen Dierenfeld
EDierenfeld@aol.com

Veterinary:

Kathryn Gamble
Director of Veterinary Services
Lincoln Park Zoo
2001 N. Clark St.
Chicago, IL 60614
Phone: (312) 742 7722, Fax: (312) 742 2137, email: kgamble@lpzoo.org

ADVISORS, continued

Husbandry and Management:

Bee-eaters
Martin Vince
Curator, Ornithology
Riverbanks Zoo & Garden
PO Box 1060
Columbia, SC 29202
Phone: (803) 779-8717x 1159, Fax: (803) 253-6381, email: mvince@riverbanks.org

Kingfishers
Beth Bahner, SSP coordinator Micronesian Kingfisher
Collections Manager
Philadelphia Zoo
3400 West Girard Ave.
Philadelphia, PA 19104
Phone: (215) 243-0219, Fax: (215) 243-5292, email: Bahner.Beth@phillyzoo.org

Hornbills:

Aceros
Eric Kowalczyk
Department of Ornithology
Woodland Park Zoo
601 N. 59th St.
Seattle, WA 98103
Phone: (206) 548-2500 x1408, Fax: (206) 684-4854, email: eric.kowalczyk@zoo.org

Bucorvus
Roger Sweeney, PMP coordinator Abyssinian and Southern Ground Hornbill
Assistant Director
Virginia Zoo
3500 Granby St
Norfolk VA 23504
Phone: (757) 441-2374 x 255, Fax: (757) 441-5408, email: Roger.Sweeney@norfolk.gov

Bycanistes
Cindy Dupree, PMP coordinator, Trumpeter Hornbill
Department of Ornithology
Central Florida Zoo
PO Box 470309
Lake Monroe, FL 32747
Phone: (407) 323-4450 Fax: (407) 321-0900, email: CindyD@centralfloridazoo.org

ADVISORS continued
Husbandry and Management:

Buceros
Rachel Miller Ritchason, SSP coordinator, Rhinoceros Hornbill
Animal Care Coordinator
Santa Barbara Zoological gardens
500 Ninos Dr
Santa Barbara, CA 93103
Phone: (805) 962-5339 x 139, Fax: (805) 962-1673, email: rritchason@sbzoo.org

Tockus
Matt Schmit, PMP coordinator, Red-billed Hornbill
Bird Department
Houston Zoo Inc.
6200 Hermann Park Dr.
Houston TX, 77030
Phone: (713) 533-6801, Fax: (713) 533-6802, email: mschmit@houstonzoo.org

Hoopoes
Kevin Graham, PMP coordinator, Green Woodhoopoe
Department of Ornithology
Disney's Animal Kingdom
PO Box 10000
Lake Buena Vista, FL 32830
Phone: (407) 938-2501 Fax: 407 939 6240, email: kevin.t.graham@disney.com

Rollers
Tim Snyder, PMP coordinator, Blue-bellied Roller
Curator of Birds
Brookfield Zoo
3300 Golf Road
Brookfield, IL 60513
Phone 708 688-8400 fax: 708 485 6320, email: t.snyder@czs.org

Coraciiformes TAG definition and taxonomy:

The Coraciiformes TAG covers all species in the order Coraciiformes. There are excellent exhibit species in this taxon, because many habitually sit on open perching, searching for prey. While there are threatened forms in most of the families in this order, the majority, and the most threatened forms are the large Asian Hornbills. Ironically, these species are the most challenging to breed, possibly requiring an opportunity to choose mates that is difficult to provide in zoos.

Taxonomy and General References

The taxonomy of some families in the Coraciiformes, notably the Bucerotidae (in some schemes called Bucerotiformes), has been the subject of multiple revisions. Volume VI of the series Handbook of Birds of the World (del Hoyo et al.) covers the order Coraciiformes in detail and it is the best general resource, providing a comprehensive review of the existing literature on the order, as well as discussions of taxonomy. The TAG has selected this as our primary reference and Table 1 lists the 201 species there described, with the current IUCN conservation status of each species. Other taxonomic references will be found in the Bibliography. A comprehensive bibliography of the Coraciiformes can be found on the TAG website (www.coraciiformestag.com).

Families, Genera and Species in the order Coraciiformes:

del Hoyo, J., Elliott, A. and Sargatal, J. eds, 2001. Handbook of Birds of the World, Volume 6,
Mousebirds to Hornbills.

Momotidae (Motmots) 10 species, 6 genera

Todidae (Todies) 5 species, one genus

Brachypteraciidae (Ground Rollers) 6 species, 4 genera

Leptosomidae (Cuckoo Rollers) one species

Coraciidae (Rollers) 12 species, 2 genera

Alcedinidae: (Kingfishers) 87 species, 17 genera

Meropidae (Bee-eaters) 24 species, 3 genera

Upupidae (Hoopoes) one species

Phoeniculidae (Woodhoopoes) 8 species, 2 genera,

Bucerotidae (Hornbills) 14 genera, 53 species,

Coraciiformes TAG Mission Statement:

The Coraciiformes TAG promotes *in situ* conservation of species in the order Coraciiformes and their habitats through participation in and support of field programs, by improving captive management and by using exhibition of birds to influence public opinion to favor conservation activities.

Coraciiformes TAG Goals

1. Identify priority exhibit species for long-term display in AZA institutions and develop long-term population management programs for them.

2. Promote and support taxon priorities and population management programs identified in the Regional Collection Plan, for AZA institutions and others. In order to guide institutions that propose to work with Coraciiformes, each species, and in some case sub-species, has been separately considered, using criteria described below. These criteria have been used to identify priority taxa and recommendations for their management in AZA collections. All of the programs recommended in the first edition of the RCP have been created, except two 'phase in'.

3. Minimize the need for importation of wild specimens for captive programs. Importation of wild birds, whether for display or propagation is costly, difficult and stressful for the birds. It can negatively impact wild populations, by giving them market value, by changing population structure or reducing population numbers. By focusing our efforts on particular taxa and improving our programs, we can reduce the number of birds taken from the wild. This includes using significant importation to found new programs or improve established ones.

4. Improve management and propagation techniques. Replicable and predictable techniques for management and propagation are necessary, to ensure availability of birds for our collections and for applications to conservation in the field.

5. Document successful husbandry protocols, starting with those species in active management programs. Documentation is important, if programs are to progress and build on one another. We will start by documenting priority species, and then expand to related species, looking for common techniques and trying to identify species specific differences.

6. Develop communication resources to ensure wide availability of information relating to all aspects of TAG taxa, both *ex situ* and *in situ.* We need to take advantage of new communication technology, while remaining aware that these are not available to all that need the information we wish to disseminate. The TAG has an active listserv, with members from five continents, as well as an excellent website: http://www.coraciiformestag.com/

7. Increase cooperative interaction with zoos in other regions, as well as the private sector. The Coraciiformes comprises taxa from all continents except Antarctica. Zoos in every region are beginning to develop active programs, often for species held in low numbers. By collaborating, we can increase the size of managed groups, pool information and reduce duplication of effort.

8. Identify and support field projects that contribute to conservation of wild hornbill populations.

Space Assessment:

A space survey was done electronically. The survey was sent to all 122 institutions with IRs to the TAG. Responses were received from 110 institutions for a response rate of 90.2%. The results are shown in table 2. The master data spreadsheet will be available to all program managers.

Table 1: Coraciiformes TAG Space Survey results

Responses from
110/122 with Institutional representatives to the TAG (90.2%)
Current population numbers are from ISIS at the time of the survey.

Taxon	Common Name	Survey Population	Next 3 Years	Target Population	Current Population
Tockus erythrorynchus	Red-billed Hornbill	13.12	22.23.4	40.40	24.23.1
Bycanistes bucinator	Trumpeter Hornbill	12.14.4	13.13.5	25.25	22.22.9
Bycanistes bevis	Silvery-cheeked Hornbill	9.8	6.6	na	11.15.3
Aceros corrugatus	Wrinkled Hornbill	15.13.2	18.18	35.35	25.28.2
Aceros undulatus	Wreathed Hornbill	9.9.3	10.11	na	15.14.1
Buceros bicornis	Great Hornbill	19.10	17.15	na	19.13
rhinoceros	Rhinoceros Hornbill	24.24.4	23.25.1	35.35	25.29
Bucorvus abyssinicus	Northern Ground-hornbill	25.20	27.21.3	50.50	37.32
leadbeateri	Southern Ground Hornbill	29.29.4	39.34.12	63.63	51.56.1
Phoeniculus purpureus	Green Woodhoopoe	33.32.13	45.48.15	50.50	41.44.2
Dacelo novaeguinea	Laughing Kookaburra	61.64.6	67.65.28	100.100	104.103.9
Todiramphus c. cinnamomina	Micronesian Kingfisher	55.43.10	52.41.6	75.75	69.53.10
Momotus momota	Blue-crowned Motmot	36.35.9	49.43.11	100.100	68.74.11
Coracias cyanogaster	Blue-bellied Roller	53.39.7	59.50.6	100.100	75.65.4

Results from the space survey do not accurately reflect species population numbers that are seen in ISIS or the numbers in the studbooks. The survey was mistakenly sent only to Coraciiformes Institutional Representatives rather than all holding institutions. Because of this the numbers are skewed though some trends are telling. In all managed population except Rhinoceros Hornbills and Micronesian Kingfishers there are institutions that are planning to add birds to their collections in the next three years as indicated or have an increase in space for program species as designated on the survey.

While available space is important for all bird programs, space limitations for some species in Coraciiformes are generally less significant than lack of techniques for reliable propagation. Most non-hornbill species work well in community aviaries, making space issues fairly flexible. In addition, most of the taxa identified in this plan have distinct space and husbandry requirements and don't compete for space. Target populations for program species have been set by the PMC in the last population management planning sections. Those species are scheduled for planning this year will have current estimated target populations analyzed.

The space survey also asked about interest in TAG 'phase in' species and whether institutions planned any imports of Coraciiform species in the next three years. Many institutions indicated an interest in a program for the Common Hoopoe. Also several institutions showed a desire to exhibit both White-throated and Carmine Bee-eaters.

Criteria Used in Evaluation of Taxa for Management Programs

Each species, and in one case sub-species, in the order Coraciiformes has been separately considered by the TAG, for each of three Regional Collection Plans. The criteria described below were used to establish program priorities, also described below, for AZA institutions. In some cases, criteria are objective, for example, captive population size. In others, like husbandry, criteria are subjective. The same criterion may apply in different ways to different management programs. For example, a species that is difficult to breed might be a poor selection for an 'exhibit/classroom program,' but that might be the reason for identifying that species for intensive management in an SSP. There are no mathematical formulae that can create a collection plan from these criteria – the brains of the collection planners are essential.

The first Coraciiformes TAG RCP was approved in 1998 – it was actually the first RCP ever approved. That plan identified 16 species as candidates for AZA programs, including several existing programs. In several cases, multiple species in one genus were identified, with the understanding that further evaluation would probably result in final selection of only one species. The second Coraciiformes RCP was approved in 2002. At that time, all recommended programs had been established, with the exception of the two 'phase in' species and the Indian and Oriental Pied Hornbills (genus Anthrococeros). A review of those hornbill populations proved them to be small and aging, and the TAG voted to eliminate those species from the list of recommended programs. Blue-bellied Rollers had been successfully established as a PMP, replacing the more aggressive Lilac-breasted Roller, now recommended as 'phase out'. In the third RCP, most programs have been reduced to one species per genus. In each case, the species selected had the better genetic base and age structure. More details will be provided in the program narrations.

Criteria:

1: Status in the wild: IUCN/BirdLife, CAMP and other ratings
Rare and threatened species are high priority for captive management actions that can support wild populations. This may include creation of a captive population, but might also consist of research in support of *in situ* efforts.

2. Documented captive population size in U.S.: data from studbooks, space surveys and ISIS

3. Documented captive population size outside U.S.: data from studbooks and ISIS

4. Availability: Probability that there are legitimate sources for acquisition of birds in the private sector, non-U.S. zoos, and dealers or by collection of wild specimens.

5. Potential for links with field programs: Species with active or probable field projects will be preferred, if all else is equal.

6. Educational value/ special exhibit value: Species may be important because of appearance, natural history, links with cultural and ethnic groups. A primary function of zoo collections is to stimulate guests to conserve wildlife and it is important to create long term populations of good exhibit taxa.

7. Flagship potential: Species may serve as representatives of entire ecosystems, for Conservation education, legislation, habitat protection

8. Demonstrated interest by zoos and others: In many cases, one of many similar species may have become established in collections through historical accident. These should be retained, unless there is a strong reason for their replacement.

9. Possibility of use as research model: Common species may be valuable as surrogates for developing management and conservation techniques, answering medical and dietary questions and acting as foci for PR, fundraising etc. These actions might eventually justify establishing new captive programs, or might have application to conservation of species in the wild.

10. Funding potential: Some species, because of special circumstances, may be better subjects for fundraising than similar species -- the Micronesian Kingfisher is an example.

Program definitions

Because of resource limitations, not all specimens in any given collection will be part of active management programs. Non-program taxa may still be important to exhibition and education functions of zoos, and the category ' exhibit only ' should not be confused with 'phase out', assigned to birds which are taking space needed for an active program. Non-managed species comprise that proportion of every collection for which it is impossible to provide more than good housing, care and support.

SSP Population: Studbook required, intense management to maintain captive population, compliance by participating institutions required, breeding and transfer recommendations communicated through a Master Plan, program managed by a Species Coordinator, non-member participants must be approved, conservation of the species a consideration, institutional input through IRs.

PMP Population: Studbook required, moderate management to maintain captive population, institutional compliance encouraged, breeding and transfer recommendations communicated through a Population Management Plan, program managed by a PMP Manager, institutional input through TAG IRs, non-member participation through AZA and institutional Acquisition/Disposition policies.

DERP: Display/Education/Research Population: DERPs are not managed under the auspices of AZA or its programs and are not guaranteed population management advice or support from SPMAG/PMC. No studbook or long-term genetic or demographic management is required for these species, but TAGs may choose to identify species champions who may track DERPs through registries.

Phase-Out Population: Not viewed as a managed program. Currently in AZA institutions but should be phased out through a breeding moratorium; phase-out may be monitored through a registry and a species champion may be assigned to oversee this process; they have no studbooks and are not guaranteed population management advice or support from SPMAG/PMC.

Phase-In Population: Taxon not currently in AZA institutions but for which the TAG plans or hopes to initiate a captive population; they have no studbooks and are not guaranteed population management advice or support from SPMAG/PMC. Once in captivity, the taxon will be reassigned to another category as appropriate.

Not Recommended: Taxon not currently in AZA institutions and that the TAG recommends NOT be brought into AZA collections.

AZA Sustainability Program Changes:

Starting the beginning of 2011 we are transitioning over to a new system that has been implemented for designating and building the sustainability of AZA's Animal Programs. The primary point of these new guideline changes is to increase the sustainability of zoological collections. Program changes are intended to foster sustainable populations and are intended to give Program Leaders the clarity, the flexibility, and the support they need. While they will not automatically create sustainable populations, they will create an important foundation for building population sustainability.

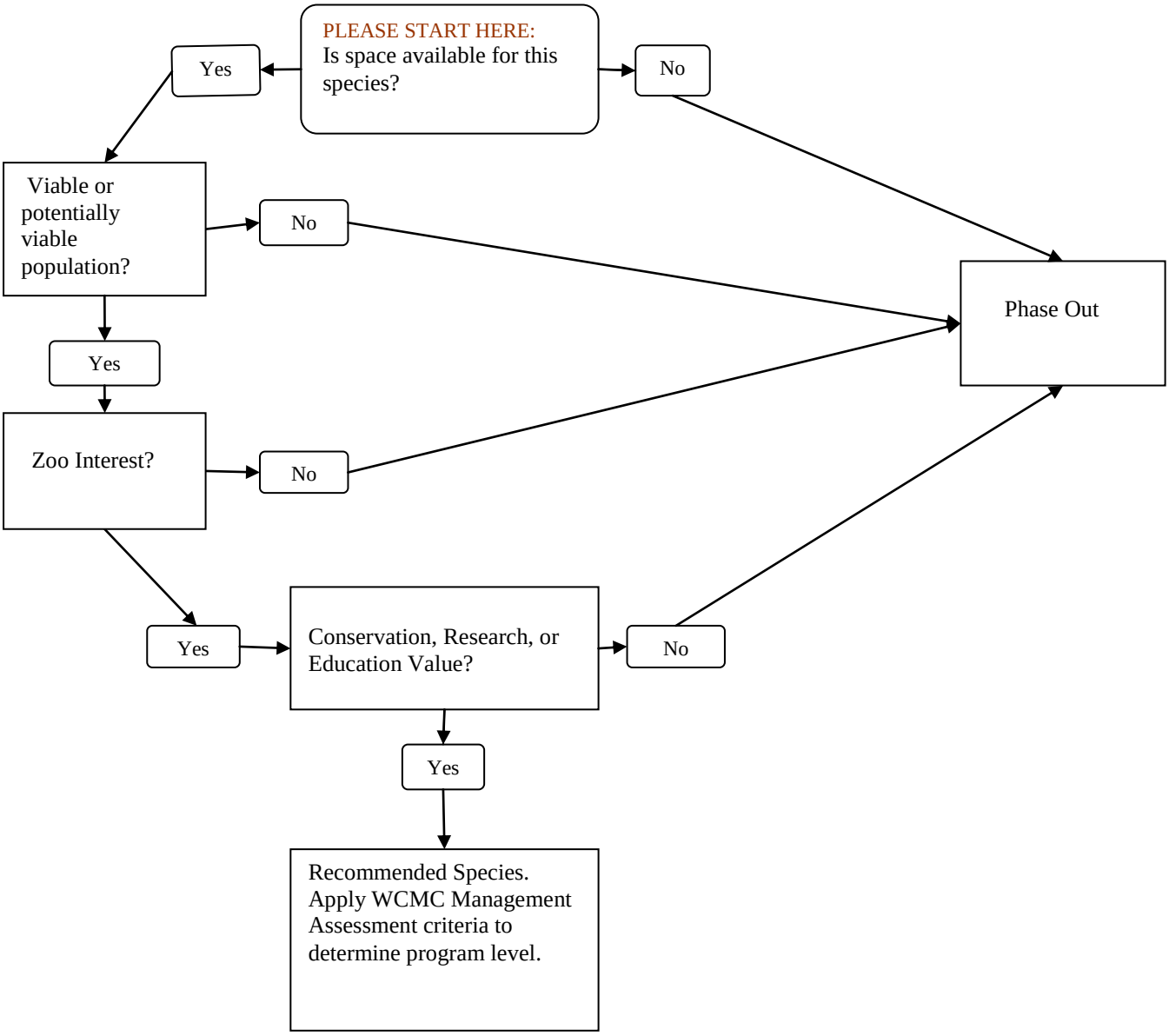
This Regional collection plan has been edited with the older format in mind, however the new recommendations can be used with these decision trees by applying the sustainability criteria in the last box of the decision tree where it states "Apply WCMC Management Assessment Criteria to Determine Program Level". All Coraciiformes Management Programs where listed have their new designations included for reference.

Sustainability Criteria for Recommended Animal Programs **Criteria**	**Green SSP Program**	**Yellow SSP Program**	**Red Program**
TAG recommended for cooperative management	Yes	Yes	Yes
Population Size (N)	50 and greater	50 and greater	49 or fewer individuals
Projected gene diversity (% GD) at 100 years or 10 generations	90.0% or above	Less than 90.0%	Less than 90.0%

2011 Coraciiformes TAG RCP Decision Trees:

Although holding space does not tend to be an issue for taxa in this TAG, the number of endangered, interesting and available Coraciiform taxa far exceeds the limits of space and manpower resources available for managed programs. However different kinds of programs require different levels of resources and activity. In order to optimize our ability to achieve the goals set for the TAG, we used the following two Decision Trees to assign taxa to program categories. The first one is applied to species currently in North American collections. The second tree would be used to access species not currently held in North American collections but for which the TAG plans or hopes to initiate a captive population in the future. As time inevitably brings change, these assignments may also change over time. The decision tree is diagramed in figure 1. Table 4 shows program designation assessment summaries for all taxa recommended for programs. Table 5 lists managers and status of each managed program in the Coraciiformes TAG. Table 6 summarizes current population trends.

Decision Tree for Species Currently in North American Collections:



Decision Tree for Species not held in North America Collection:

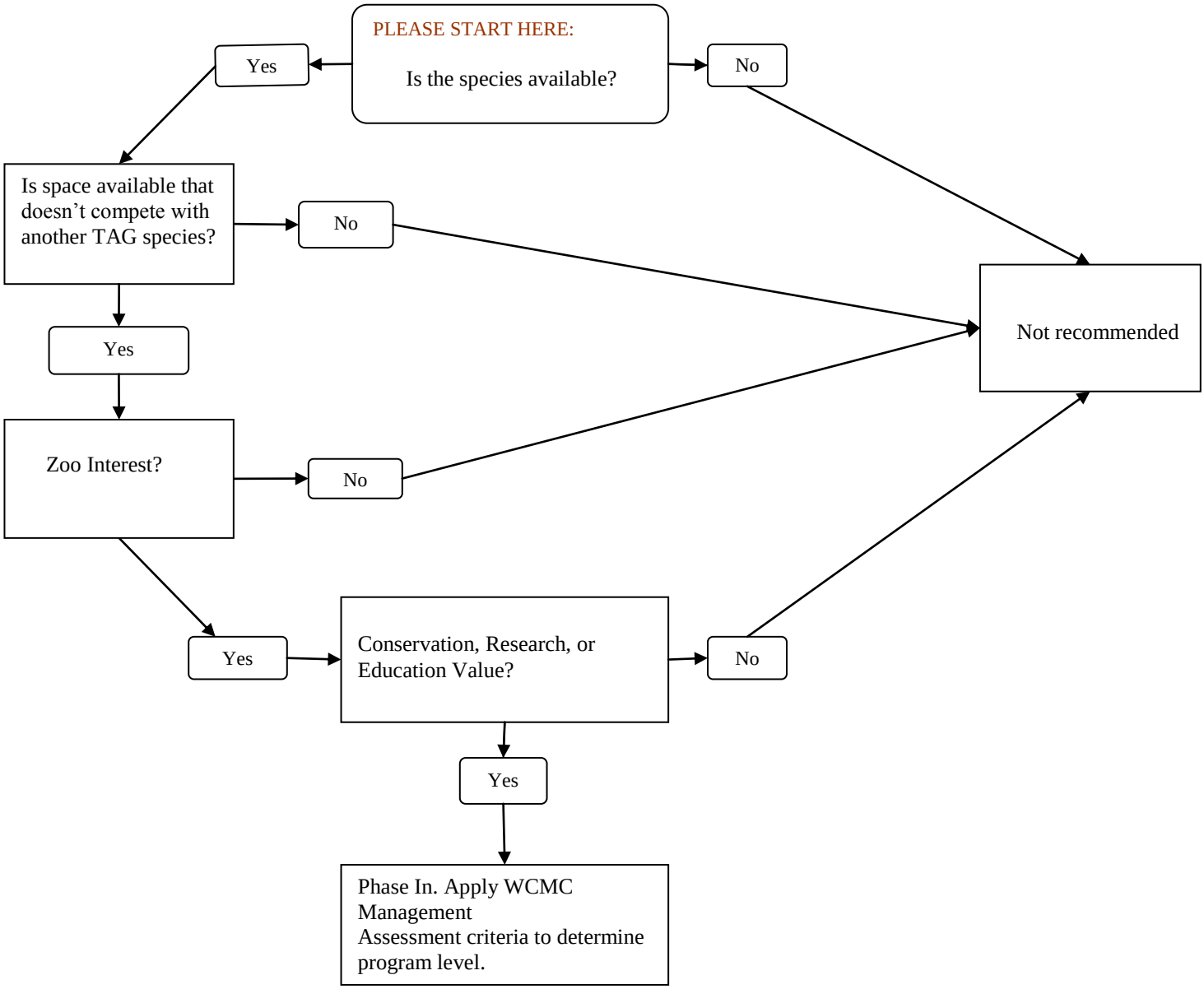


Table 2: Managed Program designation assessment details for Coraciiformes taxa

Criteria	Red-billed hornbill	Trumpeter hornbill	Wrinkled hornbill	Rhino hornbill
Availability within AZA	low	low	low	moderate
Availability outside AZA	moderate	low	low	moderate
Extinction risk without management	high	moderate	moderate	moderate
Extinction risk with management	low	low	low	moderate
Demand within AZA	moderate	moderate	moderate	low
Institutional commitment	moderate	moderate	moderate	moderate
Ease of breeding	moderate	moderate	moderate	moderate
Extinction risk (wild)	LC	LC	LC	NT
Acquisition costs (outside AZA)	low+	high	high	high
Program operating costs	low	low	low	moderate
International program	no	no	no	yes
Link to wild conservation	no	no	indirect	indirect
N American government program	no	no	no	no
Management recommendation	PMP	PMP	PMP	SSP
New Program Designation	yellow	yellow	yellow	yellow

Criteria	Abyssinian ground hornbill	Southern ground hornbill	Green woodhoopoe	Laughing kookaburra
Availability within AZA	low	moderate	low	high
Availability outside AZA	low	low	low	high
Extinction risk without management	high	moderate	moderate	low
Extinction risk with management	low	low	low	low
Demand within AZA	moderate	moderate	moderate	moderate
Institutional commitment	high	high	moderate	high
Ease of breeding	moderate	moderate	high	moderate
Extinction risk (wild)	LC	LC	LC	LC
Acquisition costs (outside AZA)	high	high	high	low
Program operating costs	low	low	low	low
International program	no	yes	no	moderate
Link to wild conservation	no	indirect	no	indirect
N American government program	no	no	no	low
Management recommendation	PMP	PMP	PMP	PMP
New Program Designation	yelllow	yellow	yellow	yellow

Table 2; (continued)

Criteria	Micronesian Kingfisher	Blue-crowned Motmot	Blue-bellied Roller
Availability within AZA	low	high	high
Availability outside AZA	low	moderate	moderate
Extinction risk without management	high	moderate	moderate
Extinction risk with management	moderate	low	low
Demand within AZA	moderate	moderate	moderate
Institutional commitment	high	moderate	moderate
Ease of breeding	moderate	moderate	moderate
Extinction risk (wild)	extinct	LC	LC
Acquisition costs (outside AZA)	n/a	high	moderate
Program operating costs	moderate	low	low
International program	no	no	no
Link to wild conservation	direct	no	no
N American government program	yes	no	no
Management recommendation	SSP	PMP	PMP
New Program Designation	yellow	yellow	yellow

Table 3: 2010 Population Trends

Species	Status	Current Population	Population Target	Growth	2010 Hatches	2010 Deaths
Micronesian Kingfisher	Yellow	69.53.10	75.75.0	1.065	23	7
Great Hornbill	Red	25.22.1	50.50.0	0.941		
Rhinoceros Hornbill	Yellow	25.29.0	35.35.0	1.024		
Abyssinian Ground Hornbill	Yellow	37.32.0	50.50.0	1.068	3	5
Southern Ground Hornbill	Yellow	51.56.1	50.50.0	1.037	5	2
Red-billed Hornbill	Yellow	29.29.0	40.40.0	1.030		
Trumpeter Hornbill	Red	17.19.7	25.25.0	1.020		
Wrinkled Hornbill	Yellow	27.23.3	35.35.0	1.010	7	2
Laughing Kookaburra	Yellow	101.108.6	100.100.0	1.083	30	13
Blue-crowned Motmot	Yellow	77.74.6	75.75.0	1.031	27	21
Blue-bellied Roller	Yellow	66.59.0	63.63.0	1.075	28	16
Green Woodhoopoe	Yellow	44.47.2	50.50.0	1.108	33	25

Table 4: Coraciiformes TAG Managed Program Review, Program Status and Manager Contact Information

Program Species	Program Designation	Approved	Program Leader	Leadership Assumed	Published
Blue-crowned Motmot	PMP/Yellow SSP	Sept. 99	Kevin Graham kevin.t.graham@disney.com 407-938-2501	Sept.99	Nov. 11
Blue-bellied Roller	PMP/Yellow SSP	July. 99	Tim Snyder t.snyder@czs.org 407-688-8400	July. 99	May. 10
Laughing Kookaburra	PMP/Yellow SSP	Sept. 90	Mark Myers Mark.Myers@zoo.org 206-548-2500 x1309	Sept. 90	May. 11
Micronesian Kingfisher	SSP/Yellow SSP	Jan. 86	Beth Bahner Bahner.Beth@phillyzoo.org 215-243-0219	Jan. 86	Aug. 11
Green Woodhoopoe	PMP/Yellow SSP	Dec. 08	Kevin Graham kevin.t.graham@disney.com 407-938-2501	Dec. 08	July. 11
Abyssinian Ground Hornbill	PMP/Yellow SSP	June. 89	Roger Sweeney Roger.Sweeney@norfolk.gov 757-441-2374 x255	Apr. 08	Nov. 11
Southern Ground Hornbill	PMP/Yellow SSP	June.89	Roger Sweeney Roger.Sweeney@norfolk.gov 757-441-2374 x255	Apr. 08	Nov. 11
Red-billed Hornbill	PMP/Yellow SSP	Sept. 99	Matt Schmit mschmit@houstonzoo.org 713-533-6801	Dec. 10	Feb. 09
Rhinoceros Hornbill	SSP/Yellow SSP	June. 89	Rachel Ritchason rritchason@sbzoo.org 805-962-5339 x139	Dec. 10	May. 11
Wrinkled Hornbill	PMP/Yellow SSP	Feb. 99	Eric Kowalzcyk eric.kowalczyk@zoo.org 206-548-2500 x1408	Feb. 99	Oct. 11
Trumpeter Hornbill	PMP/Yellow SSP	Sept. 99	Cindy Dupree CindyD@centralfloridazoo.org 407-323-4450	Oct. 02	Apr. 08

Table 5: Animal Program Sustainability Goals

Blue-crowned Motmot
1. recruit more holding institutions to increase effective population size
2. equalize founder representation through management
3. recruit additional founders from the private sector, other regional zoological facilities, or import new founders from the wild
Blue-bellied Roller
1. investigate the possibility of flocking non-breeding birds in single sex groups to increase population size in current holding facilities
2. identify and utilize facilities that have exhibited skill in breeding this species and focus on highest priority pairs
3. investigate the possibility of creating a cooperative management effort with colleagues in EAZA
Laughing Kookaburra
1. export specimens with unknown pedigrees to other regional zoos to create space for more genetically valuable birds
2. focus on breeding under-represented specimens with substantially known pedigrees
3. investigate partnerships with Australian zoos to develop opportunities for additional periodic importations of founders
Micronesian Kingfisher
1. shift focus from population growth to maximization of gene diversity by equalizing founder representation
2. increase space available for holding non-breeding birds to maximize production of selected pairs
3. implement husbandry practices and develop strategies that would insure success for released birds
Green Woodhoopoe
1. equalization of founder representation through management
2. improve and disseminate husbandry techniques
3. recruit additional founders from the private sector and other regional facilities
Abyssinian Ground Hornbill
1. produce updated population analysis and breeding plan
2. explore opportunities to find additional holding space in mixed exhibit situations
3. assess genetic importance of birds currently held in education programs for potential exchanges
Southern Ground Hornbill
1. follow through with breeding and transfer recommendations
2. encourage holders of breeding birds to try and create an extended family cooperative breeding group
3. improve efforts for potential founders to become reproductively successful
Red-billed Hornbill
1. equalization of founder representation through management
2. improve and disseminate husbandry techniques
3. recruit additional founders from the private sector and other regional facilities
Rhinoceros Hornbill
1. keep breeding and transfer plans current with consistent communication so non-compatible birds can be moved
2. create an animal care manual to disseminate breeding techniques and species specific requirements
3. create a juvenile group of birds to enable mate choice
Wrinkled Hornbill
1. recruit more holding institutions to increase effective population size
2. improve and disseminate husbandry techniques
3. maintain close contact with European population manager for possible future importations
Trumpeter Hornbill
1. equalization of founder representation through management
2. recruit more holding institutions to increase effective population size
3. improve and disseminate husbandry techniques

Program narratives

Momotidae: **Motmots** -- 10 species, one program

Blue-crowned Motmot

Species *Momotus momota* Current Population 78.81.11 Target Population 100.100 PMP/ Yellow

Program Coordinator: Kevin Graham, Disney's Animal Kingdom

The Blue-crowned Motmot studbook is current through January 20, 2010 and was last published on Jan 2010. Another update was published in Jan 2011. The PMP was last completed and published on April 2010. Both the studbook and the PMP are available on the AZA website. The target population is set based on the most recent contacts with IR's and their expectations for holding capacity. Additional institutions will continue to be brought into the management plan when possible to increase holding capacity and maximum population numbers.

The importations of wild-caught birds from Peru and Venezuela in the late 90's and early 2000's along with improvements in husbandry practices has led to a consistent increase in the population totals in AZA facilities. Through almost a decade of management plans, the mean kinship and inbreeding coefficient of the population as a whole has decreased significantly. At this point, the population is projected to retain 90% of the original gene diversity for a period of 18 years, an increase of 14 years over the original tabulation in the first management plan of 2000. At this time, the population is projected to retain 73% of the original gene diversity over a period of 100 years, still below the goal of 90% for 100 years but a vast improvement over the original projection of 41% from 2000. These numbers are based on the expectation that no new potential founders will be incorporated into the population at any point during the 100 years even though motmots are common and are still being imported on an infrequent basis.

Late in 2008, a group of approximately ten pairs of wild-caught birds were brought into the country from Peru by an importer. Half of these birds were purchased by a private aviculturist and the remaining birds were retained by the importer. The private aviculturist and the importer have expressed a willingness to sell birds to zoos, so efforts are being made to bring as many of these genetically valuable birds into the managed population as possible. Also, initial conversations have begun with John Ellis of London Zoo and Jo Gregson of Paignton Zoo to investigate the possibility of breeding sufficient birds in the AZA pairings to send a medium sized group to EAZA to supplement their small and unbalanced population. Since breeding in U.S. institutions has been purposely restricted in recent years, numbers of birds could potentially be produced that would be sufficient to provide a valuable exportation to the EAZA population.

Coraciidae: **Rollers** 12 species, one program

Blue-bellied Roller

Species *Coracias cyanogaster*, Current Population Proposed Target PMP/ Yellow

75.65.4 100.100

Program Coordinator: Tim Snyder, Brookfield Zoo

Population targets set in consultation with the PMC.

In 2008, the TAG voted to increase the target population for the Blue-bellied Roller to 126. In the last PMP update done in May 2010 the PMC recommended increasing the target population to 150. In 2011, the TAG voted to increase the target population to 200 because of the current interest for the species.

Population sustainability goals:
- In order to increase population size within current participating institutions the program is investigating the possibility of flocking non-breeding birds of this species in single sex groups.
- The program is identifying participating institutions that have exhibited great skill in breeding this species and will be utilizing those institutions to focus on the highest priority pairs in an effort to increase gene diversity.
- We are investigating the possibility of creating a cooperative management effort with our colleagues in EAZA

Rollers are an extremely popular exhibit group, generally common in the wild. The Lilac Breasted Roller *Coracias caudata*, was the first species approved for an AZA studbook on the basis of its exhibit value alone. However, this bird may be more aggressive than others in its family, established more by historical accident than design. In 1998, at the TAG meeting to produce the RCP, we agreed to investigate the possibility of developing programs for two or more other species, at least one African form and one Asian form. Until then, the Lilac Breasted Roller would be the recommended species, managed as a PMP, to be phased out when new species were established.

Tim Snyder, Lilac Breasted Roller studbook keeper, investigated the availability of other species and the Blue-bellied Roller was approved as a PMP in 1999 and the Lilac-breasted is being phased out. No Asian rollers have become available.

Brachypteraciidae: **Ground Rollers** -- 6 species, no programs

These poorly known Madagascar endemics are unrepresented in ISIS zoo collections and unlikely to become available. All are rare or vulnerable. No programs recommended.

Leptosomidae: **Cuckoo Roller** -- one species, no programs

Endemic to Madagascar and the Comoro Islands. Not in collections and unlikely to become available. No programs recommended.

Todidae: **Todies** -- 5 species, no programs

Todies are delicate animals, seldom maintained in captivity and difficult to obtain. There is no conservation justification for developing programs for Todies at this time.

Alcedinidae: Kingfishers 87 species, three programs

Taxon	Program category	Current Population	Target
Ceryl rudis	Phase In	0.0	20.20

A review of global ISIS data for Kingfishers shows no Cerylidae in collections, small numbers of one species in the Alcedinidae and several small to medium populations in the genera Dacelo and Halcyon. The most likely explanation for this is that the Dacelonids are predators of small ground animals, easier to transfer to artificial diets than the fish feeding Cerylidae and the insect and fish eating Alcedinidae. The TAG agreed that it would be valuable to develop management protocols for a non-Dacelonid Kingfisher and the Pied Kingfisher (*Ceryl rudis*), a common species with an enormous range, was identified as a potential. Contact was made with the Entebbe Zoo, in Uganda, where Pied Kingfishers nest on the grounds. A keeper from Entebbe visited several US zoos, and Marcia Arland, from the Bronx Zoo, visited Entebbe. The program has stalled because facilities for the program in US zoos could not be identified but the TAG voted to continue to pursue this objective.

Laughing Kookaburra

Species *Dacelo novaeguinea* Current Population 103.104.9 (216) Target Population 100.100 PMP/ Yellow

Program Coordinator Mark Myers, Woodland Park

Population targets set in consultation with the PMC.

The North American Kookaburra population was founded in 1895 and relied on importation of wild specimens until captive breeding became common in the 1960's. The population has grown steadily since then. And the managed population is now being maintained ~ 200 specimens per TAGs recommended target size and confirmed by the last population analysis done in May of 2011. This program was established in 1990.

SSP priorities remain focused on breeding under-represented specimens with substantially known (>60%) pedigrees. Over half the population is excluded from breeding recommendations due to pedigree uncertainties, use in education programs, or medical/geriatric conditions. The breeding population is descended from 25 founders, with 0 potential founders remaining in the living population. This number represents an increase from earlier analyses due to importation of new genetic lines from Australia in 2009. Genetic diversity in the population is moderate relative to many other managed populations (94%), but the potential gene diversity remains high (~96%). Gene diversity is currently above the standard benchmark of 90% but projections indicate gene diversity will drop below 90% in less than 34 years.

Exporting specimens with unknown pedigrees to other regional zoos (i.e. Cali, Columbia) is being pursued in order to create space within AZA zoos for more genetically valuable birds. As partnerships with Australian zoos continue to develop, the opportunity for additional, periodic importations of founders from Australian zoos to support the genetic goals of the program is very promising.

This species is popular because of its large size and ‘laughing’ calls.

Micronesian Kingfisher
Species ***Todiramphus cinnamominus cinnamominus***
Program Category Current Population Target
SSP (yellow) 69.54.6 200+
Coordinator: Beth Bahner, Philadelphia Zoo
Population targets set in consultation with the USFWS & PMC.

The Guam Micronesian kingfisher first arrived in mainland zoos in 1984 as part of the Guam Bird Rescue Project, initiated in 1983 to assist Guam with devastating losses to its avifauna as a result of predation by the introduced brown tree snake. Beth Bahner established the studbook in 1986 and in 1988, Larry Shelton was appointed Species Coordinator. Beth Bahner assumed the position of Species Coordinator in 1990. Starting with a base of 29 wild caught birds, the population grew steadily to a high of 65 birds in 1991 before experiencing a major crash.

From the early 90s to 2004 the population maintained a perverse balance between successful hatches and higher than expected mortality in your adult birds, preventing any significant growth. With a renewed focus on the importance of a lizard based diet the population saw steady growth, averaging an increase of approximately 10 birds per year. By 2010, the population reached a new high of 134 birds in 20 AZA facilities and one Guam DAWR facility.

In 2003, three males were returned to Guam to be managed by the Division of Aquatic & Wildlife Resources (DAWR). Two females were transferred in 2004, establishing a captive breeding opportunity on Guam. In 2008, three additional females and one male were returned to Guam to increase pairing and breeding options. The intent of Guam Bird Rescue Project and the SSP was to produce enough birds to sustain a reintroduction program, however, given the continued existence of the brown tree snake on Guam, the USFWS in collaboration with DAWR, the US Navy, and the SSP is now investigating options for introduction of a population on another island in the Pacific. This would allow the population to grow more rapidly outside the boundaries of institutional limitations increasing the reservoir of, now wild birds, from which to draw when Guam is deemed ready to receive birds. With this goal in mind, the TAG has not established any specific target population size, but has recommended that the program produce enough birds to meet the needs of the USFWS Recovery Plan.

Strategies for increasing sustainability:

1) Given current space limitations in participating AZA zoos, the program is shifting its focus from population growth to maximization of gene diversity by equalizing founder representation. This goal will improve the genetic quality of the population used to establish a release population on Guam or another Pacific Island.
2) To improve sustainability of the population, we need to increase space available for holding non-breeding birds. To maximize reproduction of selected pairs, additional space is required to accommodate chicks that are not paired until the season after their first year and over represented birds. Ideally, additional holding space would be allocated at the breeding facilities as disparate management styles associated with rapid expansion can negatively impact the population.
3) In order to develop strategies for releasing birds, we need to consider changes to husbandry practices which will put birds in a better position to succeed in the wild. To this end a Husbandry Workshop is recommended in conjunction with the production of an Animal Care Manual – update to the 1989 edition of the Micronesian Kingfisher Husbandry Manual.

Meropidae: **Bee-eaters** 24 species, no programs

Until recently, Bee-eaters have been uncommon in collections; as aerial insectivores, they are difficult to accustom to a captive diet. In the last 20 years, however, their numbers have increased and zoos, both in the US and in Europe, have begun to solve the problems inherent in their management. As brightly colored, colonial birds with open habits, their potential for exhibit/education is high, although no forms are endangered. Three species, *Merops nubicus* (Carmine), *M. albicollis* (White-throated) and *M. bullock*oides (White-fronted) are most common in AZA zoos. The White-throated Bee-eater could soon be considered for a PMP. At this point, the emphasis is on learning Bee-eater aviculture. Because the family is of special interest, Martin Vince, Riverbanks Zoo, has agreed to identify and disseminate information as it develops. Information is also posted on the TAG website.

Upupidae: ***Common Hoopoe One species, one program***

Species Program category
Upupa epops Phase in

The Common Hoopoe is an extremely desirable exhibit bird, now in low numbers in U.S. collections. Because of high interest and space available for at least 100 birds, it was designated for a proposed new program in the first edition of the RCP. A group of birds was scheduled to arrive in fall of 2003 but this fell through because of logistical and health problems of the exporter. The TAG continues to pursue this program. Contact Martin Vince for more information.

Phoeniculidae: **Woodhoopoes and Scimitar-bills**: 8 species, one program

Green Woodhoopoe

Species *Phoeniculus purpureus* Existing Population Target Population
42.44.7 50.50 PMP/Yellow

Program Manager: Kevin Graham, Disney's Animal Kingdom
Population targets set in consultation with the PMC. The Green Woodhoopoe studbook is current through February 2011. The PMP was last completed and published on March 2011. Both the studbook and the PMP are available on the AZA website. The target population is set based on the most recent contacts with IR's and their expectations for future holding capacity. The captive population has already exceeded the previous RCP target of 40.40 birds and the demand for birds remains high, so this estimate needs to be upwardly adjusted. Based on the most recent survey done, a recommended new target population is 75.75 birds

The Green Woodhoopoe, *Phoeniculus purpureus*, is a good exhibit species with an interesting natural history. It is not rare, but management is important due to excessive inbreeding, because of low founder numbers. Because the birds are hole nesters, with an extreme curiosity in their surroundings, escape occurrence is a significant concern to the population. Roughly 8-10% of the historical captive population has escaped from zoological institutions, showing a need for greater care in choosing or building enclosures.

Over the past two decades, population annual growth rates attributed to captive hatches have varied from year to year but the population has exhibited an overall trend of increase despite a marked decrease in the population in the late 80s and early 90s. Since 1999 institutions have maintained the highest living captive population, staying at about 50 birds. Of these, most are offspring from a very small number of breeders. Captive Green Woodhoopoes have lived to their late-teens. They have not been observed to reproduce beyond the ages of ten and seven years for males and females respectively, thus exhibiting a relatively long period of reproductive senescence.

Bucerotidae: **Hornbills** 53 species, six SSPs

Among the Coraciiformes, the Hornbills are most commonly found in collections and include the most rare and endangered forms. In some taxonomies, they are considered a separate order. Their unusual nesting habits and the fact that many species are large and spectacular have made them of special interest. However, they do not breed reliably and have small clutch sizes. Developing techniques for improving reproduction and husbandry is a high priority. In the past, the TAG has supported attendance by range country field researchers at the International Hornbill Conference in South Africa in 2006 and provided similar support for the International Hornbill Conference in Singapore in 2009. In addition, TAG institutions, especially Woodland Park and San Diego, have supported field conservation in Thailand, through the 'Adopt a Hornbill Nest' program. Unfortunately, although we now have a large collection of Buceros tail feathers, we no longer have a partner in either Malaysia or Indonesia to distribute them to Dyak tribes. We continue to look for one, however.

Wrinkled Hornbill			
Species *Aceros corrugatus*	Current Population 25.28.2	Target Population 35.35	PMP/Yellow
Knobbed Hornbill			
Species *Aceros Cassidix*	6.8.1		DERP/ Red
Papuan Hornbill			
Species *Rhyticeros plicatus*	6.3		DERP/ Red
Wreathed Hornbill			
Species *Rhyticeros undulates*	17.14.1		DERP/ Red

Program Manager: Eric Kowalczyk, Woodland Park
Population targets set in consultation with the PMC

The original charge for this program was to evaluate AZA populations of *Aceros corrugatus, Aceros cassidix* and *Rhyticeros undulatus*, determine how many species we could realistically work with and make recommendations for program categories. Space limitations restrict the program to one species, *Aceros corrugatus*, the Wrinkled Hornbill.

There are only a few reliable breeding pairs of *Aceros corrugatus*. If this continues, there will be a decrease in the genetic diversity of the total captive population. Monitor these pairs annually (as is being done in conjunction with the Population Management Center at LPZoo) by analysis and sending out breeding and transfer recommendations. We continue looking for new institutions (and the private sector) that would like to work with this species. Also we will continue to maintain close contact with the European Population Manager for this species and may look into the possibility of importing birds from Europe to increase genetic diversity in North American population.

Wrinkled Hornbill photo by Dennis Dow

The population of *Rhyticeros undulatus* is small and competes with *A. corrugatus.* Some institutions continue to breed *Rhyticeros undulates.* Likewise, some institutions are attempting to breed Aceros cassidix to maintain this species in AZA institutions. These other species may in the future be managed as Red programs.

Rhinoceros Hornbill

Species *Buceros rhinoceros*	Captive Population	Target Population	SSP/Yellow
	25.29	35.35	

Program Manager: Rachel Miller Ritchason, Santa Barbara Zoo
Populations targets set in consultation with the PMC.
PMP was last completed in May 2011.

Developing reliable avicultural techniques is a priority, as well as supporting programs in the field. Recent work has provided information on mating behavior, nutrition and physiology. In contrast, several new, young pairs of *B rhinoceros* have been established and are expected to begin breeding soon. The current goals of this program are to increase breeding success in the captive population and support ex situ conservation efforts.

Three goals to increase sustainability of *Buceros rhinoceros* include:

- Create a juvenile group to give birds a mate choice with the goal of increasing breeding success of captive bred birds and reducing aggression between non-compatible birds.
- Create an Animal Care manual to disseminate proven breeding techniques and species specific requirements.
- Continue to keep Breeding and Transfer plans current so non-compatible birds can be moved quickly. Consistent communication will encourage active participation in the program by institutions holding the birds.

Great Hornbill

Species *Buceros bicornis*	Current population	SSP/ Red
	19.13	

Program Manager: Lee Schoen, Audubon Zoo
Last studbook update on this species was done in Feb. 2010. At that time the captive population was 22.19. Current population as June 2011 according to ISIS is 19.13. The population of *Buceros bicornis*, comprises aging animals with little reproduction and increasing mortality. Breeding remains sporadic and increasing the rate of reproduction is a primary goal. The program is currently looking for ways to increase chances of breeding by relocating to facilities that have had some success with the species. Coordination with EAZA program may offer some hope for maintenance of this population.

Red-billed Hornbill	Current Population	Target Population	
Species *Tocus erythrorynchus*	29.29	40.40	PMP/ Yellow*

Program Manager: Matt Schmit, Houston Zoo
Population targets set in consultation with the PMC
There is interest in this species, but reproduction has been slow. The presence of new birds in the private sector may pose a good chance of revitalizing the population. The program manager is focusing on ensuring that husbandry practices are distributed to all institutions in the program.
* Recent studbook publication shows that the population at 48 specimens has dropped below the minimum population number of 50 to qualify for a Yellow SSP status. The program manager is working with the PMC and is confident that this population will meet the population number qualifications before the year is over.

Southern Ground Hornbill Current population. Target
Species *Bucorvus ledbeateri* 51.56.1 63.63 PMP/ Yellow
Program Manager: Roger Sweeney, Virginia Zoo
Population targets for Southern Ground Hornbill set in consultation with the PMC.

Good exhibit species that has the potential to be displayed as an extended family cooperative breeding group. Conservation status of this species has been raised in recent years and there is an active field conservation program in Southern Africa that many AZA zoos participate in. Captive population seems strong with the latest population analysis & breeding and transfer plan completed in November 2011. Three goals related to increasing sustainability for this SSP are: (1) Follow through with breeding and transfer recommendations from the 2011 population analysis plan. (2) Encourage all holders of breeding birds to try and create an extended family cooperative breeding group with offspring retained as nest helpers. (3) Encourage all efforts for potential founders to become reproductively successful.

Northern Ground Hornbill
Bucorvus abyssinicus 37.32 50.50 PMP/ Yellow
Program Manager: Roger Sweeney, Virginia Zoo
Population targets for Northern Ground Hornbill set in consultation with the PMC

Another good display species that has been successfully kept in many mixed species exhibits. Population has limited founder base but husbandry and breeding parameters are well established and successful. The Northern Ground Hornbill has not been looked at by the PMC since 2006 but has been scheduled for Spring 2012. Three goals related to increasing sustainability for this SSP are: (1) Produce updated population analysis & breeding and transfer plan. (2) Explore opportunity to find additional cage space for this species in mixed exhibit situations. (3) Assess genetic importance of birds currently held in education programs to see if any of these could be exchanged into breeding situations, if genetically important to the population.

Trumpeter Hornbill	Current population	Target	PMP/ Yellow
Species *Bycanistes bucinator*	21.26.6	30.30	
Silvery-cheeked Hornbill			
Species *Bycanistes brevis*	12.16.8		DERP/ Red

Program Manager, Cindy Dupree, Central Florida Zoo
Originally both the Silvery-cheeked Hornbill and Trumpeter Hornbill were being considered for the PMP. After researching and consultation with the PMC the Trumpeter Hornbill was the best candidate and was chosen for the PMP in 2008. The Trumpeter Hornbill PMP is scheduled to be reviewed this year at the PMC.

- This species has a good genetic diversity at this time we have planned for a slow growth of this population in order to keep the genetic diversity and allow for space to be provided for this nice medium sized Hornbill
- This medium sized Hornbill seems to work well in mixed species exhibits. The goal would be to see if more institutions, that are able, try this species in mixed species exhibits.
- This Hornbill also has some good potential to be used as education birds. Some of the birds in the population are used as education birds and are great ambassadors for Hornbills.

It was concluded that the population of Silvery-cheeked Hornbills was likely to phase itself out, unless new birds become available. The population is small, with little reproduction. However, this is an attractive species and the TAG will maintain the program as a DERP, while the option of acquiring new birds is pursued.

REFERENCES

De Schauensee, Rodolphe Meyer, 1970. A Guide to the Birds of South America. Livingston Publishing Co., Wynnewood, PA, for The Academy of Natural Sciences of Philadelphia.

del Hoyo, J., Elliott, A. and Sargatal, J. eds, 2001 Handbook of Birds of the World, vol. 6, Mousebirds to Hornbills. Lynx Editions, Barcelona

Fry, C. Hilary, Kathie Fry and Alan Harris, 1992. Kingfishers, Bee-eaters and Rollers. Princeton University Press, Princeton, NJ.

Fry, C. Hilary, Stuart Keith and Emil K Urban, 1988. The Birds of Africa, volume III. Academic Press, NY.

Kemp, Alan, 1995. The Hornbills. Oxford University Press, New York.

Langrand, Olivier, 1990. Guide to the Birds of Madagascar. Yale University Press, New Haven.

White-throated Bee-eaters D. Shapiro, copyright Wildlife Conservation Society

Table 6: Species in the order Coraciiformes (after del Hoyo *et al*., 2001) and their IUCN conservation Status. NT=Near Threatened, LC=Least Concern, V=Vulnerable, E=Endangered, C=Critical

Family	Genus	species	subspecies	Common name	IUCN status
Coraciidae				**ROLLERS**	
	Coracias	*garrulus*		European Roller	NT
	Coracias	*abyssinica*		Abyssinian Roller	LC
	Coracias	*caudatus*		Lilac-breasted Roller	LC
	Coracias	*spatulatus*		Racket-tailed Roller	LC
	Coracias	*naevia*		Purple	LC
	Coracias	*benghalensis*		Indian Roller	LC
	Coracias	*temminckii*		Purple-winged	LC
	Coracias	*cyanogaster*		Blue-bellied Roller	LC
	Eurystomus	*glaucurus*		Cinnamon	LC
	Eurystomus	*gularis*		Blue-throated Roller	LC
	Eurystomus	*orientalis*		Dollar Bird	LC
	Eurystomus	*azureus*		Azure Roller	NT
Brachypteraciidae	*Brachypteracias*	*leptosomus*		Short-legged Ground Roller	V
	Brachypteracias	*squamiger*		Scaly Ground Roller	V
	Atelornis	*pittoides*		Pitta-like Ground roller	LC
	Atelornis	*crossleyi*		Rufous-headed ground roller	NT
	Uratelornis	*chimaera*		Long-tailed Ground Roller	V
Leptosomidae	*Leptosomus*	*discolor*		Cuckoo Roller	LC
Momotidae				**MOTMOTS**	
	Hylomanes	*momotula*		Tody Motmot	LC
	Aspatha	*gularis*		Blue-throated Motmot	LC
	Electron	*platyrhynchum*		Broad-billed Motmot	LC
	Electron	*carinatum*		Keel-billed Motmot	V
	Eumomota	*superciliosa*		Turquoise -browed Motmot	LC
	Baryphthengus	*ruficapillus*		Rufous-capped Motmot	LC
	Baryphthengus	*martii*		Rufous Motmot	LC
	Momotus	*momota*		Blue-crowned	LC
	Momotus	*mexicanus*		Russet-crowned	LC
	Momotus	*aequatorialis*		Highland	LC
Todidae				**TODIES**	
	Todus	*multicolor*		Cuban Tody	LC
	Todus	*angustirostris*		Narrow-billed Tody	LC
	Todus	*mexicanus*		Puerto Rican Tody	LC
	Todus	*todus*		Jamaican Tody	LC
	Todus	*subulatus*		Broad-billed	LC

Table 6, continued: Species in the order Coraciiformes (after del Hoyo, 2001) and their IUCN conservation status. NT=Near Threatened, LC=Least Concern, V=Vulnerable, E=Endangered, C=Critical

Alcedinidae				**KINGFISHERS**	
	Alcedo	*hercules*		Great Blue	NT
	Alcedo	*atthis*		River	LC
	Alcedo	*semitorquata*		Half-collared	LC
	Alcedo	*quadribrachys*		Shining Blue	LC
	Alcedo	*meninting*		Blue-eared	LC
	Alcedo	*azurea*		Azure	LC
	Alcedo	*websteri*		Bismarck	V
	Alcedo	*cyanopecta*		Philippine Pectoral	LC
	Alcedo	*argentata*		Silvery	V
	Alcedo	*cristata*		Malachite	LC
	Alcedo	*leucogaster*		White-bellied	LC
	Alcedo	*coerulescens*		Caerulean	LC
	Alcedo	*lepida*		Variable Dwarf	LC
	Alcedo	*vintsiodes*		Madagascar Malachite	LC
	Alcedo	*euryzona*		Blue-banded	V
	Ceyx	*erithacus*		Oriental Dwarf	LC
	Ceyx	*melanurus*		Philippine Dwarf	V
	Ceyx	*fallax*		Celebes Dwarf	NT
	Ceyx	*madagascariensis*		Madagascar Pygmy	LC
	Ceyx	*pictus*		African Pygmy	LC
	Ceyx	*lecontei*		African Dwarf	LC
	Lacedo	*pulchella*		Banded	LC
	Dacelo	*novaeguineae*		Laughing Kookaburra	LC
	Dacelo	*leachii*		Blue-winged Kookaburra	LC
	Dacelo	*tyro*		Spangled Kookaburra	LC
	Dacelo	*gaudichaud*		Rufous-bellied Kookaburra	LC
	Clytoceyx	*rex*		Shovel-billed	LC
	Cittura	*cyanotis*		Lilac-cheeked	NT
	Pelargopsis	*amauroptera*		Brown-winged	LC
	Pelargopsis	*capensis*		Stork-billed	LC
	Pelargopsis	*melanorhyncha*		Black-billed	LC
	Halcyon	*coromanda*		Ruddy Kingfisher	LC
	Halcyon	*badia*		Chocolate-backed	LC
	Halcyon	*smyrnensis*		White-throated	LC
	Halcyon	*pileata*		Black-capped	LC
	Halcyon	*cyanoventris*		Java	LC
	Halcyon	*leucocephala*		Grey-headed	LC
	Halcyon	*senegalensis*		Woodland	LC
	Halcyon	*senegaloides*		African Mangrove	LC
	Halcyon	*malimbica*		Blue-breasted	LC
	Halcyon	*albiventris*		Brown-hooded	LC
	Halcyon	*chelicuti*		Striped	LC
	Todiramphus	*chloris*		Collared	LC

Table 6, continued: Species in the order Coraciiformes (after del Hoyo, 2001) and their IUCN conservation status. NT=Near Threatened, LC=Least Concern, V=Vulnerable, E=Endangered, C=Critical, Ex=Extinct in the wild

Alcedinidae con't.				Kingfishers continued	
	Todiramphus	*cinnamomina*		Micronesian	LC
		cinnamomina	cinnamomina	Guam	Ex
	Todiramphus	*nigrocyanea*		Blue-black	LC
	Todiramphus	*winchelli*		Rufous-lored	LC
	Todiramphus	*diops*		Blue-and-White	LC
	Todiramphus	*lazuli*		Lazuli	LC
	Todiramphus	*macleayii*		Forest	LC
	Todiramphus	*albonotatus*		New Britain	LC
	Todiramphus	*leucopygius*		Ultramarine	LC
	Todiramphus	*farquhari*		Chestnut-bellied	LC
	Todiramphus	*pyrrhopygius*		Red-backed	LC
	Todiramphus	*funebris*		Sombre	LC
	Todiramphus	*chloris*		Mangrove	LC
	Todiramphus	*saurophaga*		Beach	LC
	Todiramphus	*australasia*		Cinnamon-banded	LC
	Todiramphus	*sancta*		Sacred	LC
	Todiramphus	*veneratus*		Tahiti	LC
	Todiramphus	*tutus*		Chattering	LC
	Caridonax	*fulgidus*		White-rumped	LC
	Syma	*torotoro*		Yellow-billed	LC
	Syma	*megarhyncha*		Mountain	LC
	Melidora	*macrorrhina*		Hook-billed	LC
	Actenoides	*bougainvillei*		Moustached	V
	Actenoides	*concretus*		Rufous-collared	NT
	Actenoides	*lindsayi*		Spotted	LC
	Actenoides	*hombroni*		Blue-capped	V
	Actenoides	*monachus*		Green-backed	NT
	Actenoides	*princeps*		Scaly-breasted	LC
	Tanysiptera	*hydrocharis*		Aru Paradise	LC
	Tanysiptera	*galatea*		Common Paradise	LC
	Tanysiptera	*carolinae*		Numfor Paradise	NT
	Tanysiptera	*nympha*		Rufous-breasted Paradise	LC
	Tanysiptera	*danae*		Brown-headed Paradise	LC
	Tanysiptera	*sylvia*		Buff-breasted	LC
	Tanysiptera	*ellioti*		Kofiau Paradise	LC
	Tanysiptera	*riedelii*		Biak Paradise	LC
	Megaceryle	*maxima*		Giant	LC
	Megaceryle	*lugubris*		Crested	LC
	Megaceryle	*alcyon*		Belted	LC
	Megaceryle	*torquata*		Ringed	LC
	Ceryle	*rudis*		Pied	LC
	Chloroceryle	*amazona*		Amazon	LC
	Chloroceryle	*americana*		Green	LC
	Chloroceryle	*inda*		Green-and-Rufous	LC
	Chloroceryle	*aenea*		American Pygmy	LC

Table 6, continued: Species in the order Coraciiformes (after del Hoyo, 2001) and their IUCN conservation status. NT=Near Threatened, LC=Least Concern, V=Vulnerable, E=Endangered, C=Critical

Meropidae				**BEE-EATERS**	
	Nyctyornis	*amictus*		Red-bearded	LC
	Nyctyornis	*athertoni*		Blue-bearded	LC
	Meropogon	*forsteni*		Purple-bearded	LC
	Merops	*gularis*		Black	LC
	Merops	*muelleri*		Blue-headed	LC
	Merops	*bulocki*		Red-throated	LC
	Merops	*bullockoides*		White-fronted	LC
	Merops	*pusillus*		Little	LC
	Merops	*variegatus*		Blue-breasted	LC
	Merops	*oreobates*		Cinnamon-chested	LC
	Merops	*hirundinaeus*		Swallow-tailed	LC
	Merops	*breweri*		Black-headed	LC
	Merops	*revoilii*		Somali	LC
	Merops	*albicollis*		White-throated	LC
	Merops	*orientalis*		Little Green	LC
	Merops	*boehmi*		Boehm's	LC
	Merops	*viridis*		Blue-throated	LC
	Merops	*persicus*		Blue-cheeked	LC
	Merops	*superciliosus*		Olive	LC
	Merops	*ornatus*		Rainbow	LC
	Merops	*apiaster*		European	LC
	Merops	*leschenaulti*		Bay-headed	LC
	Merops	*malimbicus*		Rosy	LC
	Merops	*nubicus*		Carmine	LC
Upupidae				**HOOPOES**	
	Upupa	*epops*		Common Hoopoe	LC
Phoeniculidae				**WOODHOOPOES**	
	Phoeniculus	*purpureus*		Green Woodhoopoe	LC
	Phoeniculus	*castaneiceps*		Forest	LC
	Phoeniculus	*bollei*		White-headed	LC
	Phoeniculus	*somaliensis*		Black-billed	LC
	Phoeniculus	*damarensis*		Violet	LC
	Rhinopomastus	*cyanomelas*		Common Scimitarbill	LC
	Rhinopomastus	*aterrimus*		Black Woodhoopoe	LC
	Rhinopomastus	*minor*		Abyssinian Scimitarbill	LC

Table 6, continued: Species in the order Coraciiformes (after del Hoyo, 2001) and their IUCN conservation status. NT=Near Threatened, LC=Least Concern, V=Vulnerable, E=Endangered, C=Critical

Bucerotidae				**HORNBILLS**	
	Ceratogymna	*elata*		Yellow-casqued	NT
	Ceratogymna	*atrata*		Black-casqued	LC
	Bycanistes	*fistulator*		Piping	LC
	Bycanistes	*bucinator*		Trumpeter	LC
	Bycanistes	*cylindricus*		Brown-cheeked	NT
	Bycanistes	*subcylindricus*		Grey-cheeked	LC
	Bycanistes	*brevis*		Silvery-cheeked	LC
	Anthracoceros	*coronatus*		Indian Pied	NT
	Anthracoceros	*albirostris*		Oriental Pied	LC
	Anthracoceros	*malayanus*		Black	NT
	Anthracoceros	*montani*		Sulu	C
	Anthracoceros	*marchei*		Palawan	V
	Anorrhinus	*tickelli*		Tickell's Brown	NT
	Anorrhinus	*austeni*		Austen's Brown	NT
	Anorrhinus	*galeritus*		Bushy-crested	LC
	Penelopides	*panini*		Visayan Tarictic	E
	Penelopides	*exarhatus*		Sulawesi Tarictic	LC
	Penelopides	*manillae*		Luzon Tarictic	LC
	Penelopides	*affinis*		Mindanao Tarictic	LC
	Penelopides	*mindorensis*		Mindoro Tarictic	E
	Berenicornis	*comatus*		White-Crowned	NT
	Aceros	*nipalensis*		Rufous-necked	V
	Aceros	*corrugatus*		Wrinkled	NT
	Aceros	*leucocephalus*		Writhed	NT
	Aceros	*waldeni*		Rufous-headed	C
	Aceros	*cassidix*		Knobbed	LC
	Rhyticeros	*narcondami*		Narcondam	V
	Rhyticeros	*undulatus*		Wreathed	NT
	Rhyticeros	*subruficollis*		Plain-pouched	V
	Rhyticeros	*everetti*		Sumba	V
	Rhyticeros	*plicatus*		Papuan	NT
	Buceros	*rhinoceros*		Rhinoceros	NT
	Buceros	*bicornis*		Great	NT
	Rhinoplax	*vigil*		Helmeted	NT
	Tockus	*alboterminatus*		Crowned	LC
	Tockus	*bradfieldi*		Bradfield's	LC
	Tockus	*fasciatus*		African Pied	LC
	Tockus	*hemprichii*		Hemprich's	LC
	Tockus	*pallidirostris*		Pale-billed	LC
	Tockus	*nasutus*		African Grey	LC
	Tockus	*monteiri*		Monteiro's	LC
	Tockus	*erythrorynchus*		Red-billed	LC
	Tockus	*leucomelas*		S. Yellow-billed	LC
	Tockus	*flavirostris*		E. Yellow-billed	LC
	Tockus	*deckeni*		Von der Decken's	LC

Table 6, continued: Species in the order Coraciiformes (after del Hoyo, 2001) and their IUCN conservation status. NT=Near Threatened, LC=Least Concern, V=Vulnerable, E=Endangered, C=Critical

Bucerotidae, con't				Hornbills, continued	
	Tockus	*hartlaubi*		Black Dwarf-hornbill	LC
	Tockus	*camurus*		Red-billed Dwarf-hornbill	LC
	Tropicranus	*albocristatus*		Long-tailed	LC
	Ocyceros	*griseus*		Malabar Grey	LC
	Ocyceros	*gingalensis*		Sri Lankan Grey	LC
	Ocyceros	*birostris*		Indian Grey	LC
	Bucorvus	*abyssinicus*		Abyssinian Ground-hornbill	LC
	Bucorvus	*leadbeateri*		Southern Ground-hornbill	LC

Table 7: North American and Global ISIS population data for species of Coraciiformes (Jan 2011)

Genus	*species*	Common name	AZA PROGRAM	ISIS N America	ISIS global
		ROLLERS			
Coracias	*garrulus*	European Roller	No program	3.5	14.21.2
Coracias	*abyssinica*	Abyssinian Roller	No program	0.10	0.10
Coracias	*caudatus*	Lilac-breasted Roller	Phase out	9.9.11	64.32.44
Coracias	*spatulatus*	Racket-tailed Roller	No program	12.13.6	13.11.10
Coracias	*naevia*	Purple	No program	0.5	6.6.2
Coracias	*benghalensis*	Indian Roller	No program	3.1	4.1.2
Coracias	*temminckii*	Purple-winged	No program		
Coracias	*cyanogaster*	Blue-bellied Roller	PMP	73.60.11	98.81.10
Eurystomus	*glaucurus*	Broad-billed	No program		2.0.3
Eurystomus	*gularis*	Blue-throated Roller	No program		
Eurystomus	*orientalis*	Dollar Bird	No program	10.12	14.12.1
Eurystomus	*azureus*	Azure Roller	No program		
Brachypteracias	*leptosomus*	Short-legged Ground Roller	No program		
Brachypteracias	*squamiger*	Scaly Ground Roller	No program		
Atelornis	*pittoides*	Pitta-like Ground roller	No program		1.2
Atelornis	*crossleyi*	Rufous-headed ground roller	No program		
Uratelornis	*chimaera*	Long-tailed Ground Roller	No program		
Leptosomus	*discolor*	Cuckoo Roller	No program		
		MOTMOTS			
Hylomanes	*momotula*	Tody Motmot	No program		
Aspatha	*gularis*	Blue-throated Motmot	No program		
Electron	*platyrhynchum*	Broad-billed Motmot	No program		
Electron	*carinatum*	Keel-billed Motmot	No program		
Eumomota	*superciliosa*	Turquoise -browed Motmot	No program		
Baryphthengus	*ruficapillus*	Rufous-capped Motmot	No program		
Baryphthengus	*martii*	Rufous Motmot	No program		0.0.1
Momotus	*momota*	Blue-crowned	PMP	57.63.14	65.78.19
Momotus	*mexicanus*	Russet-crowned	No program		
Momotus	*aequatorialis*	Highland	No program		
		TODIES			
Todus	*multicolor*	Cuban Tody	No program		
Todus	*angustirostris*	Narrow-billed Tody	No program		
Todus	*mexicanus*	Puerto Rican Tody	No program		
Todus	*todus*	Jamaican Tody	No program		
Todus	*subulatus*	Broad-billed	No program		

Table 7: North American and Global ISIS population data for species of Coraciiformes (continued)

Genus	*species*	Common name	AZA PROGRAM	ISIS N America	ISIS global
		KINGFISHERS			
Alcedo	*hercules*	Great Blue	No program		
Alcedo	*atthis*	River	No program		1.1.1
Alcedo	*semitorquata*	Half-collared	No program		
Alcedo	*quadribrachys*	Shining Blue	No program		
Alcedo	*meninting*	Blue-eared	No program		
Alcedo	*azurea*	Azure	No program		
Alcedo	*websteri*	Bismarck	No program		
Alcedo	*cyanopecta*	Philippine Pectoral	No program		
Alcedo	*argentata*	Silvery	No program		
Alcedo	*cristata*	Malachite	No program	0.1	0.1
Alcedo	*leucogaster*	White-bellied	No program		
Alcedo	*coerulescens*	Caerulean	No program		
Alcedo	*lepida*	Variable Dwarf	No program		
Alcedo	*vintsiodes*	Madagascar Malachite	No program		
Alcedo	*euryzona*	Blue-banded	No program		
Ceyx	*erithacus*	Oriental Dwarf	No program		0.0.1
Ceyx	*melanurus*	Philippine Dwarf	No program		
Ceyx	*fallax*	Celebes Dwarf	No program		
Ceyx	*madagascariens*	Madagascar Pygmy	No program		
Ceyx	*pictus*	African Pygmy	No program		
Ceyx	*lecontei*	African Dwarf	No program		
Lacedo	*pulchella*	Banded	No program		
Dacelo	*novaeguineae*	Laughing Kookaburra	PMP	91.108.13	228.228.50
Dacelo	*leachii*	Blue-winged Kookaburra	No program	7.2	43.39.10
Dacelo	*tyro*	Spangled Kookaburra	No program		
Dacelo	*gaudichaud*	Rufous-bellied Kookaburra	No program		
Clytoceyx	*rex*	Shovel-billed	No program		
Cittura	*cyanotis*	Lilac-cheeked	No program		
Pelargopsis	*amauroptera*	Brown-winged	No program		
Pelargopsis	*capensis*	Stork-billed	No program		
Pelargopsis	*melanorhyncha*	Black-billed	No program		
Halcyon	*coromanda*	Ruddy Kingfisher	No program		0.0.4
Halcyon	*badia*	Chocolate-backed	No program		
Halcyon	*smyrnensis*	White-throated	No program	8.6	11.6.5
Halcyon	*pileata*	Black-capped	No program		0.0.1

Table 7: North American and Global ISIS population data for species of Coraciiformes (continued)

Genus	*species*	Common name	AZA PROGRAM	ISIS N America	ISIS global
Halcyon	*cyanoventris*	Java	No program		0.0.3
Halcyon	*leucocephala*	Grey-headed	No program	3.0	6.1.1
Halcyon	*senegalensis*	Woodland	No program	1.0	1.0
Halcyon	*senegaloides*	African Mangrove	No program		
Halcyon	*malimbica*	Blue-breasted	No program	13.15.1	14.17.8
Halcyon	*albiventris*	Brown-hooded	No program		6.8
Halcyon	*chelicuti*	Striped	No program		
Todiramphus	*chloris*	Collared	No program	5.3.1	22.23.15
Todiramphus	*c. cinnamomina*	Micronesian (Guam)	SSP	58.52.8	58.52.8
Todiramphus	*nigrocyanea*	Blue-black	No program		
Todiramphus	*winchelli*	Rufous-lored	No program		
Todiramphus	*diops*	Blue-and-White	No program		
Todiramphus	*lazuli*	Lazuli	No program		
Todiramphus	*macleayii*	Forest	No program		3.7.3
Todiramphus	*albonotatus*	New Britain	No program		
Todiramphus	*leucopygius*	Ultramarine	No program		
Todiramphus	*farquhari*	Chestnut-bellied	No program		
Todiramphus	*pyrrhopygius*	Red-backed	No program		2.10
Todiramphus	*funebris*	Sombre	No program		
Todiramphus	*chloris*	Mangrove	No program		
Todiramphus	*saurophaga*	Beach	No program		
Todiramphus	*australasia*	Cinnamon-banded	No program		
Todiramphus	*sancta*	Sacred	No program		13.9.6
Todiramphus	*veneratus*	Tahiti	No program		
Todiramphus	*tutus*	Chattering	No program		
Caridonax	*fulgidus*	White-rumped	No program		
Syma	*torotoro*	Yellow-billed	No program		
Syma	*megarhyncha*	Mountain	No program		
Melidora	*macrorrhina*	Hook-billed	No program		
Actenoides	*bougainvillei*	Moustached	No program		
Actenoides	*concretus*	Rufous-collared	No program		
Actenoides	*lindsayi*	Spotted	No program		
Actenoides	*hombroni*	Blue-capped	No program		
Actenoides	*monachus*	Green-backed	No program		
Actenoides	*princeps*	Scaly-breasted	No program		
Tanysiptera	*hydrocharis*	Aru Paradise	No program		
Tanysiptera	*galatea*	Common Paradise	No program		
Tanysiptera	*carolinae*	Numfor Paradise	No program		
Tanysiptera	*nympha*	Rufous-breasted Paradise	No program		
Tanysiptera	*danae*	Brown-headed Paradise	No program		
Tanysiptera	*sylvia*	Buff-breasted	No program		
Tanysiptera	*ellioti*	Kofiau Paradise	No program		
Tanysiptera	*riedelii*	Biak Paradise	No program		
Megaceryle	*maxima*	Giant	No program		
Megaceryle	*lugubris*	Crested	No program		0.0.1
Megaceryle	*alcyon*	Belted	No program	0.0.1	0.0.1
Megaceryle	*torquata*	Ringed	No program		

Table 7: North American and Global ISIS population data for species of Coraciiformes (continued)

Genus	*species*	Common name	AZA PROGRAM	ISIS N America	ISIS global
Chloroceryle	*amazona*	Amazon	No program		
Chloroceryle	*americana*	Green	No program		
Chloroceryle	*inda*	Green-and-Rufous	No program		
Chloroceryle	*aenea*	American Pygmy	No program		
		BEE-EATERS			
Nyctyornis	*amictus*	Red-bearded	No program		
Nyctyornis	*athertoni*	Blue-bearded	No program		
Meropogon	*forsteni*	Purple-bearded	No program		
Merops	*gularis*	Black	No program		
Merops	*muelleri*	Blue-headed	No program		
Merops	*bulocki*	Red-throated	No program	1.0	1.0.15
Merops	*bullockoides*	White-fronted	Research	13.19	23.25.79
Merops	*pusillus*	Little	No program		
Merops	*variegatus*	Blue-breasted	No program		
Merops	*oreobates*	Cinnamon-chested	No program		
Merops	*hirundinaeus*	Swallow-tailed	No program		
Merops	*breweri*	Black-headed	No program		
Merops	*revoilii*	Somali	No program		
Merops	*albicollis*	White-throated	Research	24.21.1	24.21.24
Merops	*orientalis*	Little Green	No program		
Merops	*boehmi*	Boehm's	No program		
Merops	*viridis*	Blue-throated	No program		
Merops	*persicus*	Blue-cheeked	No program		
Merops	*superciliosus*	Olive	No program		
Merops	*ornatus*	Rainbow	No program		6.4.1
Merops	*apiaster*	European	No program		17.10.7
Merops	*leschenaulti*	Bay-headed	No program		
Merops	*malimbicus*	Rosy	No program		
Merops	*nubicus*	Carmine	Research	29.17.1	121.92.28
		HOOPOES			
Upupa	*epops*	Common Hoopoe	Phase In	0.10	12.11.30
		WOODHOOPOES			
Phoeniculus	*purpureus*	Green Woodhoopoe	PMP	36.37.6	52.46.38
Phoeniculus	*castaneiceps*	Forest	No program		
Phoeniculus	*bollei*	White-headed	No program		
Phoeniculus	*somaliensis*	Black-billed	No program		
Phoeniculus	*damarensis*	Violet	No program		
Rhinopomastus	*cyanomelas*	Common Scimitarbill	No program		
Rhinopomastus	*aterrimus*	Black Woodhoopoe	No program		
Rhinopomastus	*minor*	Abyssinian Scimitarbill	No program		
		HORNBILLS			
Ceratogymna	*elata*	Yellow-casqued	No program	1.1	1.3
Ceratogymna	*atrata*	Black-casqued	No program	5.1	14.15
Bycanistes	*fistulator*	Piping	No program	1.0.1	6.6.1
Bycanistes	*bucinator*	Trumpeter	PMP	23.23.8	50.62.17
Bycanistes	*cylindricus*	Brown-cheeked	No program		
Bycanistes	*subcylindricus*	Grey-cheeked	No program	0.1	4.8.1

Table 7: North American and Global ISIS population data for species of Coraciiformes (continued)

Genus	*species*	Common name	AZA PROGRAM	ISIS N America	ISIS global
Bycanistes	*brevis*	Silvery-cheeked	DERP	11.15.03	44.42.7
Anthracoceros	*coronatus*	Indian Pied	No program		3.4.1
Anthracoceros	*albirostris*	Oriental Pied	No program	2.4	24.38.17
Anthracoceros	*malayanus*	Black	No program	1.2.3	19.20.8
Anthracoceros	*montani*	Sulu	No program		
Anthracoceros	*marchei*	Palawan	No program		0.0.2
Anorrhinus	*tickelli*	Tickell's Brown	No program		1.6
Anorrhinus	*austeni*	Austen's Brown	No program		
Anorrhinus	*galeritus*	Bushy-crested	No program		3.5
Penelopides	*panini*	Visayan Tarictic	No program		10.8
Penelopides	*exarhatus*	Sulawesi Tarictic	No program	5.5	9.8.1
Penelopides	*manillae*	Luzon Tarictic	No program		2.2
Penelopides	*affinis*	Mindanao Tarictic	No program		
Penelopides	*mindorensis*	Mindoro Tarictic	No program		
Berenicornis	*comatus*	White-Crowned	No program	3.4	16.23.3
Aceros	*nipalensis*	Rufous-necked	No program		
Aceros	*corrugatus*	Wrinkled	PMP	22.23	50.41.9
Aceros	*leucocephalus*	Writhed	No program		3.40
Aceros	*waldeni*	Rufous-headed	No program		
Aceros	*cassidix*	Knobbed	no program	7.7.1	10.16.1
Rhyticeros	*narcondami*	Narcondam	No program		
Rhyticeros	*undulatus*	Wreathed	DERP	3.3	45.43.4
Rhyticeros	*subruficollis*	Plain-pouched	No program		3.2
Rhyticeros	*everetti*	Sumba	No program		
Rhyticeros	*plicatus*	Papuan	No program	3.3	32.33
Buceros	*rhinoceros*	Rhinoceros	SSP	21.25.3	58.56.7
Buceros	*bicornis*	Great	SSP	19.13	74.76.5
Buceros	*hydrocorax*	Rufous	No Program		6.6.3
Rhinoplax	*vigil*	Helmeted	No program		
Tockus	*alboterminatus*	Crowned	No program	2.2	13.11.4
Tockus	*bradfieldi*	Bradfield's	No program		
Tockus	*fasciatus*	African Pied	No program	1.0	1.0
Tockus	*hemprichii*	Hemprich's	No program		
Tockus	*pallidirostris*	Pale-billed	No program		
Tockus	*nasutus*	African Grey	No program	2.2	27.26.7
Tockus	*monteiri*	Monteiro's	No program		
Tockus	*erythrorynchus*	Red-billed	PMP	21.20.3	48.47.10
Tockus	*leucomelas*	S. Yellow-billed	No program	0.1.3	4.5.3
Tockus	*flavirostris*	E. Yellow-billed	No program	9.6	21.15
Tockus	*deckeni*	Von der Decken's	No program	14.14.5	62.58.13
Tockus	*hartlaubi*	Black Dwarf-hornbill	No program		
Tockus	*camurus*	Red-billed Dwarf-hornbill	No program		
Tropicranus	*albocristatus*	Long-tailed	No program	0.0.1	0.0.1/1
Ocyceros	*griseus*	Malabar Grey	No program		
Ocyceros	*gingalensis*	Sri Lankan Grey	No program		
Ocyceros	*birostris*	Indian Grey	No program		
Bucorvus	*abyssinicus*	Abyssinian Ground-hornbill	PMP	36.32.2	72.68.12
Bucorvus	*leadbeateri*	Southern Ground-hornbill	PMP	41.47.3	146.138.16